GW - 001

REPORTS

Investigation Report Group 3

2011

Western Refining
LOGISTICS

WNR LISTED NYSE

May 17, 2012

John E. Kieling, Acting Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505

RECEIVED OCD

2012 MAY 18 A 8:50

UPS Tracking #: 1Z 881 839 0 5480 4038 (Delivery to NMED)
Certified Mail #: 7010 1870 0002 6760 0115 (Delivery to OCD)

Re: Response to NMED Comments dated February 24, 2012
Notice of Disapproval Area of Concern (AOC) Assessment Report
Investigation Report Group 3 Response to Comment No. 13 of the
June 21, 2011 Approval with Modifications (October 13, 2011)
Western Refining Southwest, Inc., Bloomfield Refinery
EPA ID# NMD089416416
HWB-WRB-10-001

Dear Mr. Kieling:

Western Refining Southwest, Inc. - Bloomfield Refinery (Western) has prepared the following responses to your comments received on the above referenced AOC Assessment Report. Pursuant to discussions with your staff members (Leona Tsinnajinnie and Dave Cobrain), the requested revisions to the AOC Assessment Report are not being provided at this time. Instead, additional requested information is being provided in this response letter, and a new AOC Investigation Work Plan will be submitted to the New Mexico Environment Department (NMED) Hazardous Waste Bureau on or before June 15, 2012.

NMED Comment No. 1 - Response to Comment No. 13 (Crude Sampling Rack Assessment Report):

Western states, "[t]he only material known to have been handled at the crude sampling rack is crude oil. All containers of the waste materials associated with the testing activities (e.g., excess crude oil and separated water and/or sediments) were poured down the utility sink in the crude sampling building, which drains directly to the crude sump located just north of the crude unloading bays." Western did not provide sufficient information concerning the utility sink and crude sump. Provide the following information in the revised Report.

a. *Indicate the operational status of the utility sink. If the operations have ceased, indicate what measures have been taken to prevent unauthorized discharge to the crude sump.*

b. *Indicate the operational status of the crude sump. If the crude sump is still in use, indicate if there are any plans to abandon or remove the crude sump once operations have ceased.*

c. *Describe the current condition of the crude sump (e.g., dimensions, piping, catch basins, damage). In addition, explain how the waste is handled (i.e., piped to another unit or manually removed), the frequency it is emptied and cleaned, and indicate if there are any documented releases.*

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d. *Provide a scaled figure of the crude sampling rack, the sampling and analysis building, the crude sump, and the crude unloading bays. Include all piping and ancillary equipment.*

e. *Provide photographs of the crude sump in relation to the sampling and analysis building, crude sampling rack, and crude unloading bays.*

f. *Provide a figure of the crude sump with dimensions and process piping.*

Propose collection of soil samples at the crude sump to determine if a release occurred. Submit a work plan that includes proposed investigation activities and the aforementioned information. Samples must be collected to depths at least five feet directly below the base of the crude sump and adjacent to the crude sump to evaluate for releases. All samples collected must be analyzed for total petroleum hydrocarbons (TPH) as diesel range organics (DRO), gasoline range organics (GRO), and oil range organics (ORO) and include Skinner List Metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs).

Western Response No. 1:

a. The utility sink is still in-place but has not been actively used since the crude sampling activities stopped in November 1996. The crude sump, which is located north of the crude unloading racks, is designed to receive and contain petroleum hydrocarbons, thus no "unauthorized" discharges occurred when the sink was actively being used. At this time, the building in which the utility sink is located is used only to refill self-contained breathing apparatus for truck drivers and no liquids are stored or used within the building. If any liquids were placed in the utility sink, the liquids would flow to the crude sump and then be pumped to the refinery's wastewater treatment system; no "unauthorized" discharges would occur.

b. The crude sump is operational and is an important element of operations at the crude receiving rack that are designed to prevent releases to the environment. There are no plans to stop crude unloading operations at the crude receiving rack, and thus there are no plans to abandon or remove the associated crude sump. It should be noted again that the referenced sump is actually located near the crude receiving rack and not the crude sampling rack. The area surrounding the crude sump was recently investigated as part of the Group No. 3 investigation activities. Please refer to the Group No. 3 Investigation Report [December 2009, (revised April 2011)] for a full description of the investigation activities performed. For NMED's convenience, a summary of the Group 3 investigations activities performed is provided below.

Group No.3 Investigation Activities Summary

At the Crude Receiving area, five soil borings (AOC 22-7, AOC 22-8, AOC 22-9, AOC 22-14, and AOC 22-16) were drilled near the crude receiving sump, with one boring (AOC 22-16) completed as monitoring well MW-63. Monitoring well MW-63 is located down-gradient of the crude sump. The enclosed Figure 1 shows the sample locations near the crude sump.

Eleven soil samples were collected from these soils borings as follows; AOC 22-7 (0-0.5' & 1.5-2'), AOC 22-8 (0-0.5' & 1.5-2'), AOC 22-9 (0-0.5' & 1.5-2'), AOC 22-14 (0-0.5'& 1.5-2'), and AOC 22-16 (0-0.5', 1.5-2', & 36-38'). Ground water was only encountered in boring AOC 22-16 (MW-63) and a water sample was collected. All soil and ground water samples were submitted to an analytical laboratory for analysis, with the results discussed in the Group No. 3 Investigation Report. Only total petroleum hydrocarbons were detected in soils at concentrations above the respective most conservative screening levels at the two soil borings (AOC 22-14 and AOC 22-16) located on the western side of the sump. These detected concentrations were generally low with a maximum of only 1,800 mg/kg motor oil range organics detected compared to a respective screening level of 1,000 mg/kg. Methyl tert-butyl ether was the only organic constituent detected in the groundwater sample at a concentration above the screening level (48 ug/l versus 12 ug/l).

c. The crude oil sump is made of steel reinforced concrete. The dimensions are approximately six feet by six feet and 11 feet deep. There are no signs of deterioration of the structure (e.g., cracks or spalling of the surface) that indicate a potential for failure. Discharge lines enter the sump from the crude receiving area and the former crude sampling building. The sump is equipped with a sump pump that operates on an automatic level control system. Fluids that discharge into the sump are pumped via mostly aboveground lines to the wastewater treatment plant. Details of investigation activities conducted in this area are included in the previously submitted Group No. 3 Investigation Report.

d. See enclosed Figure 1, which shows the relative location of the crude sampling rack, the crude laboratory building, the crude sump, and the crude unloading bays.

e. An aerial photo showing the location of the crude sump in relation to the crude laboratory building, crude sampling rack, and crude unloading (receiving)rack is provided in Attachment A.

f. See enclosed Figure 1 for a scaled depiction of the crude sump and piping at the crude sump.

NMED requested that Western propose collection of soil samples at the crude sump. As explained above, the crude sump has already been investigated as part of the Group No. 3 investigation activities. The soil and ground water samples collected near the crude sump were analyzed for TPH as DRO, GRO, and ORO; Skinner List Metals; VOCs; and SVOCs, as requested by NMED.

NMED Comment No. 2- Response to Comment No. 13 (Diesel AST Assessment Report):

Western states, "[the diesel aboveground storage tank (AST)] was used to store diesel in the past for limited fueling of company vehicles. The tank is believed to have been put into service [prior] to 1982 and was taken out of service before November 2008. The tank is made of welded steel and has an estimated capacity of 300 barrels. The tank sits on top of a concrete slab and thus any releases from the tank would be readily apparent; however, no indications of any releases have been reported." Submit a work plan to investigate the AST fuel lines and dispensers to confirm that there were no releases at the site. Propose to collect samples along the fuels lines to the pumps and include the proposed sample locations on a figure depicting the fuel lines, the diesel AST, and the pumps in the revised Report. The samples must be analyzed for DRO, ORO, GRO, Skinner List Metals, VOCs, and SVOCs.

Western Response No. 2: A work plan will be submitted on or before June 15, 2012 that provides details for an investigation of the AST fuel lines and dispensers. Proposed investigation activities will include the collection of soil samples along the fuels lines that run from the AST to the pumps and near the fuel pumps. Proposed samples will be analyzed for DRO, ORO, GRO, Skinner List Metals, VOCs, and SVOCs.

NMED Comment No. 3 - Response to Comment No. 13 (Diesel Pumps Assessment Report):

Western states, "[t]he diesel pumps were used to dispense fuel for company vehicles. There are two pumps located in one central island, which has a concrete apron on both sides of the pumps to help contain any small spills that may [occur] during fueling of vehicles. Each concrete apron is sloped to a center concrete sump, which is designed to capture small spills. The pumps are estimated to have been put into service prior to 1982 and were taken out of service in November 2008." Provide the following information in the revised Report.

a. *Describe the concrete sump (i.e., if it is closed at the bottom or if it drains to another unit). Indicate if any releases or overflows from the sump have occurred.*

b. *Indicate the operational status of the sump. If the sump is still in use, indicate if there are any plans to remove or abandon the sump once operations have ceased. In addition, describe the current condition of the sump, the dimensions, and any piping that connects to other wastewater facilities.*

c. *Provide a scaled figure of the diesel pumps and sump including the location of the diesel AST in relation to the pumps. Include fuel lines, piping, and ancillary equipment (see Comment 2, above).*

d. *Propose to collect samples beneath and in the vicinity of the fuel lines, pumps, and sump (see Comment 2) to evaluate for releases.*

Western may propose to combine this investigation with other work scheduled at the facility. Western must provide a work plan with figures that identify the proposed sample locations at each area of investigation in accordance with the requirement of the July 27, 2007 Order (Order) including a proposed schedule for conducting the work.

Western Response No. 3: The following information presented in the responses below will also be incorporated into the Background Section of the new AOC Investigation Work Plan.

a. There are two pumps located in one central island, which has concrete aprons on both sides with approximate dimensions of 15 feet wide by 35 feet long. The two concrete sumps are located near the center of each concrete apron. Each apron is sloped to allow fluids to drain to the respective centered sump. Each sump is approximately 18 inches by 18 inches and one foot deep. There are no drain lines from the sumps. The sumps were designed to contain small releases that occur on top of the concrete aprons when the area was in operation. There are no documented releases or overflows from the sumps.

b. As discussed above, each sump is approximately 18 inches by 18 inches and one foot deep. The sumps are still in-place but are not considered to be in operation since the fueling pumps are not currently in service and have not been in service since November 2008. Currently the sumps are in good condition and any fluids captured are the result of precipitation events. There are no drain lines from the sumps. Any accumulation of rainwater in the sumps is evacuated using the on-site vacuum truck and brought to the Refinery's wastewater treatment system. Western recurrently has no plans to permanently remove the sumps.

c. A scaled figure (Figure 2) showing the location of the diesel pumps, sumps, and diesel AST in relation to the pumps is enclosed.

d. The new AOC Investigation Work Plan will propose the collection of soil samples beneath and in the vicinity of the fuel lines, pumps, and sumps to evaluate for potential releases from these facilities.

NMED Comment No. 4

Figure 1 (AOC Location Map) shows the topography and general overview of the Bloomfield Refinery; however, the figure does not depict the crude oil sampling rack, diesel AST, and diesel pumps in relation to the other process equipment. Provide a more detailed Figure 1 that shows the crude oil sampling racks, the diesel AST, and the diesel pumps in relation to nearby features and ancillary equipment (see Comments 2 and 3, above).

Western Response No. 4: New figures (Figures 1 and 2) are enclosed that provide a more detailed depiction of the crude oil sampling rack, diesel AST, and diesel dispenser pumps. Photographs in Attachment A also provide more information on the relative location of the various facility components and ancillary equipment. Similar figures and the photographs will be included in the new AOC Investigation Work Plan.

NMED Comment No. 5

Attachment A (Photographs) contains photographs of the crude sampling rack, analysis building, diesel AST, and diesel pumps. In future submittals, provide page numbers on all photographs.

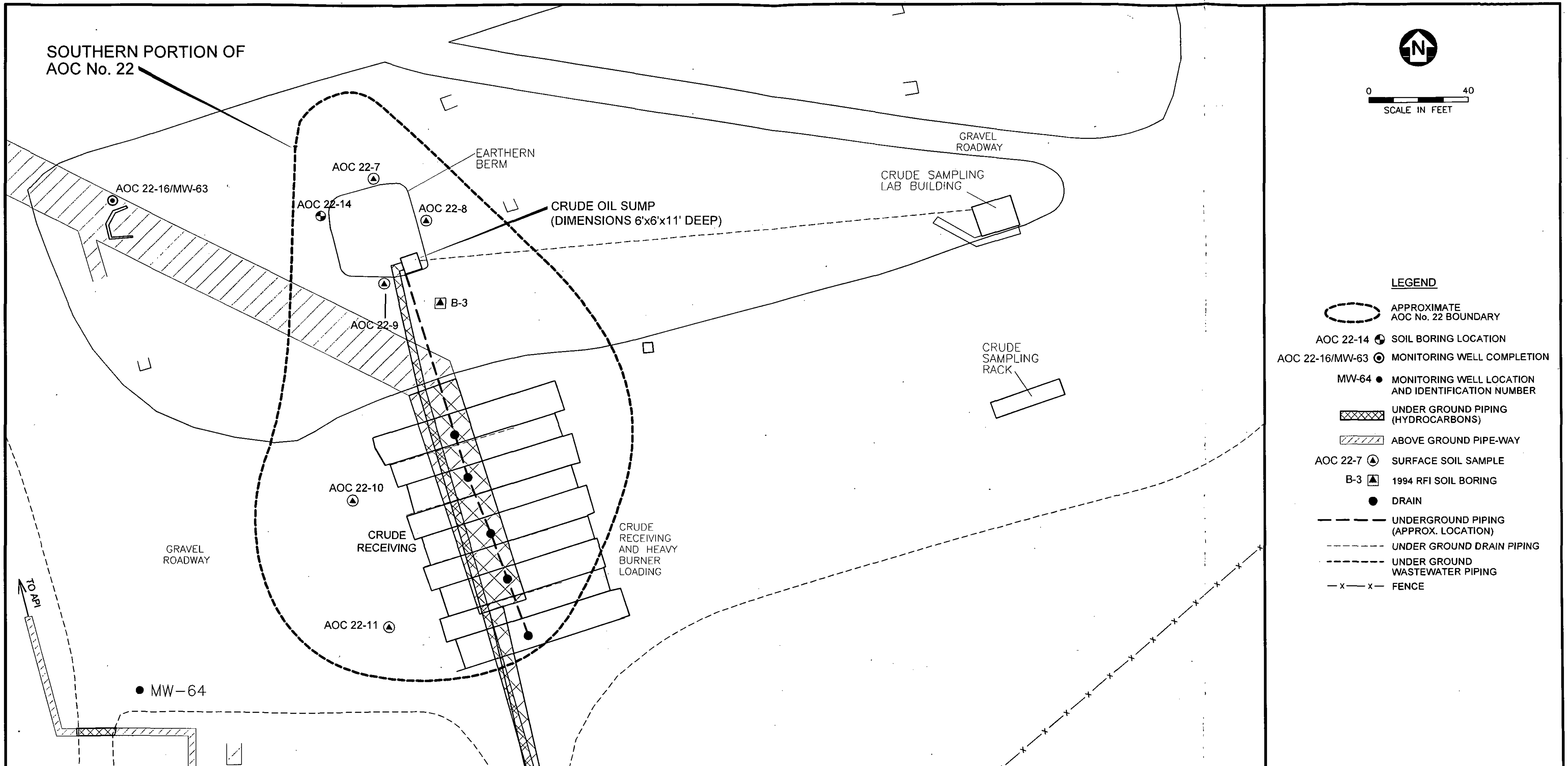
Western Response No. 5: Page numbers will be included in future submittals that contain photographs.

If there are any questions regarding the above responses or enclosures, please contact me at (505) 632-4171. The investigation work plan referenced in Comments 1, 2, and 3 will be submitted to NMED by June 15, 2012.

Sincerely,

James R. Schmaltz
Health, Safety, Environmental, and Regulatory Director
Western Refining Southwest, Inc., Bloomfield Refinery

cc: Dave Cobrain – NMED HWB
Leona Tsinnajinnie – NMED HWB
Carl Chavez - NMOCD
Allen Hains – Western Refining El Paso
Kelly Robinson – Western Refining Bloomfield

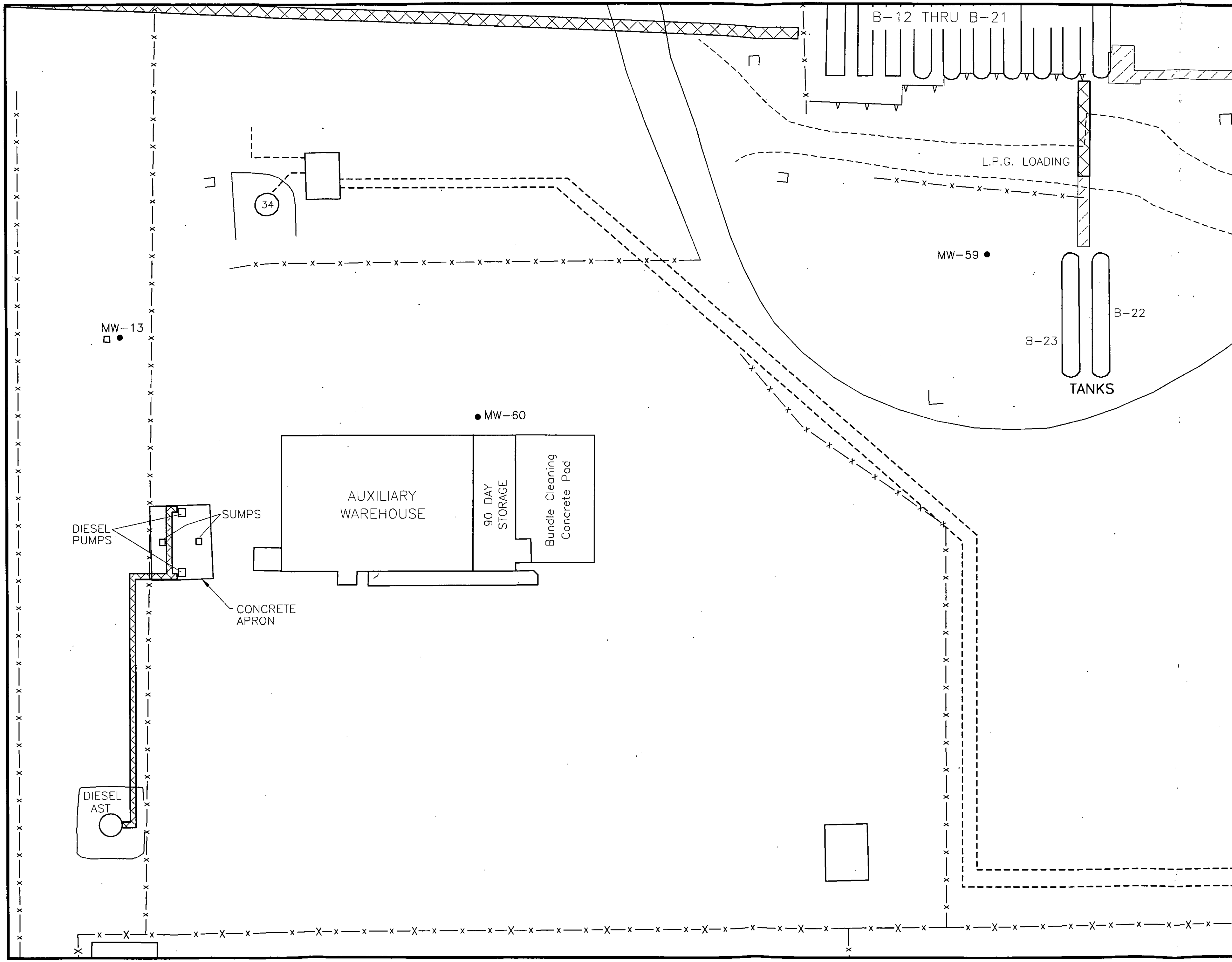


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 05/07/12	FILE: WestRef-B128

FIGURE 1
AOC No. 22
AND CRUDE OIL TESTING RACK
BLOOMFIELD REFINERY

RPS
Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298



N

0 50
SCALE IN FEET

LEGEND

MW-60 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER

UNDER GROUND PIPING (HYDROCARBONS)

ABOVE GROUND PIPE-WAY

UNDER GROUND WASTEWATER PIPING

—x—x— FENCE

Western Refining
WESTERN REFINING SOUTHWEST

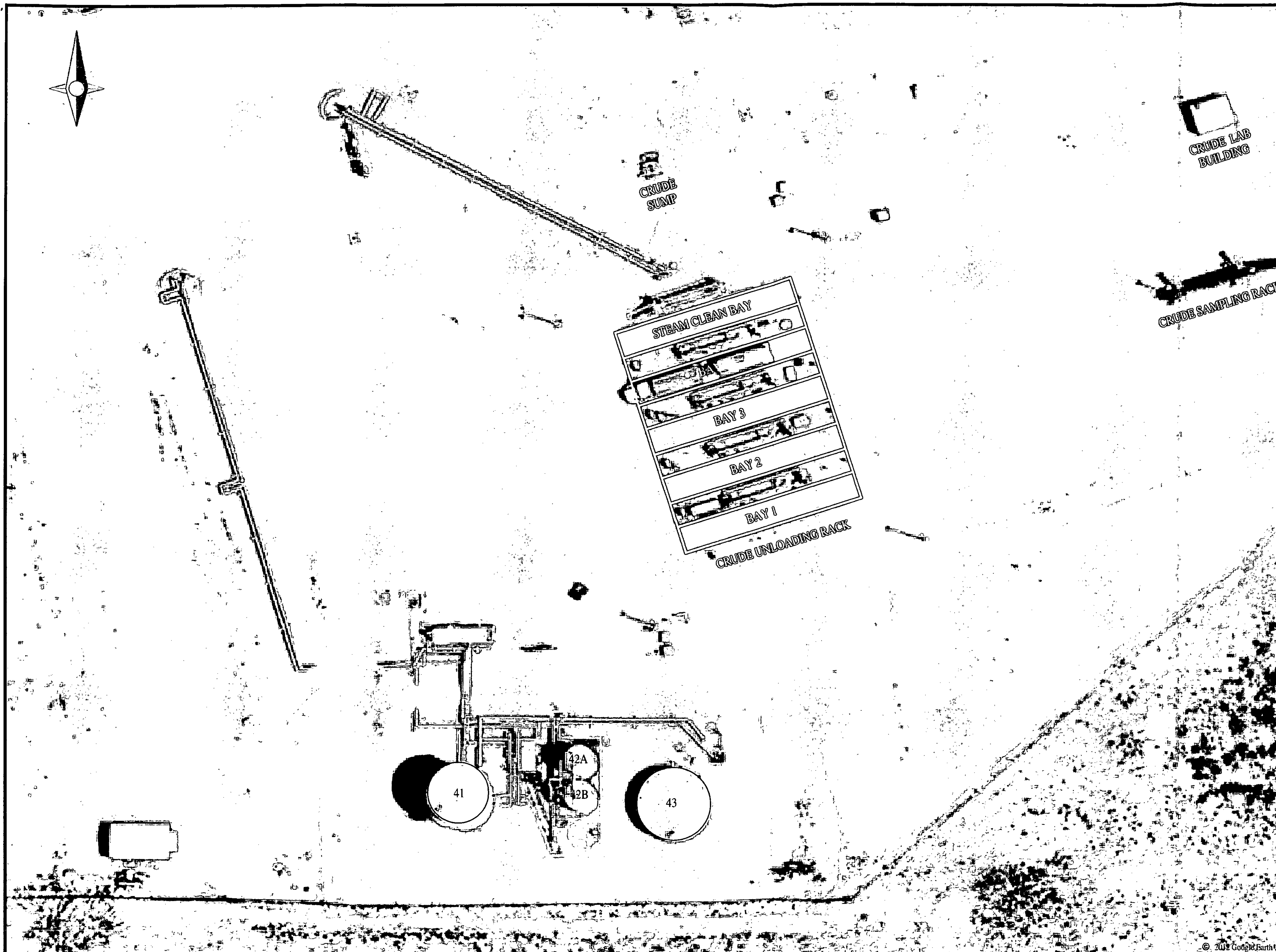
PROJ. NO.: Western Refining	DATE: 05/07/12	FILE: WestRef-B129

FIGURE 2
FORMER DIESEL FUELING AREA
BLOOMFIELD REFINERY

RPS

Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298

ATTACHMENT A



0 12.5 25 50
Feet

Western Refining

Bloomfield Refinery
Crude Unloading Area

May 2012

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

DAVE MARTIN
Secretary

BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 24, 2012

Mr. Randy Schmaltz
Environmental Manager
Western Refining, Southwest, Inc.
Bloomfield Refinery
P.O. Box 159
Bloomfield, New Mexico 87413

RE: NOTICE OF DISAPPROVAL
AREA OF CONCERN (AOC) ASSESSMENT REPORT
INVESTIGATION REPORT GROUP 3 RESPONSE TO COMMENT NO. 13 OF THE JUNE 21, 2011 APPROVAL WITH MODIFICATIONS (OCTOBER 13, 2011)
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY
EPA ID# NMD089416416
HWB-WRB-10-001

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) has received Western Refining Southwest, Inc., Bloomfield Refinery's (Western) *Response to Comment No. 13 of the June 21, 2011 Approval with Modifications – Investigation Report Group 3* (Report) dated October 13, 2011. NMED has reviewed the Report and hereby issues this notice of disapproval.

Comment 1 - Response to Comment No. 13 (Crude Sampling Rack Assessment Report):

Western states, "[t]he only material known to have been handled at the crude sampling rack is crude oil. All containers of the waste materials associated with the testing activities (e.g., excess crude oil and separated water and/or sediments) were poured down the utility sink in the crude sampling building, which drains directly to the crude sump located just north of the crude unloading bays." Western did not provide sufficient information concerning the utility sink and crude sump. Provide the following information in the revised Report.

a. Indicate the operational status of the utility sink. If operations have ceased, indicate what measures have been taken to prevent unauthorized discharge to the crude sump.

b. Indicate the operational status of the crude sump. If the crude sump is still in use, indicate if there are any plans to abandon or remove the crude sump once operations have ceased.

c. Describe the current condition of the crude sump (e.g., dimensions, piping, catch basins, damage). In addition, explain how the waste is handled (i.e., piped to another unit or manually removed), the frequency it is emptied and cleaned, and indicate if there are any documented releases.

d. Provide a scaled figure of the crude sampling rack, the sampling and analysis building, the crude sump, and the crude unloading bays. Include all piping and ancillary equipment.

e. Provide photographs of the crude sump in relation to the sampling and analysis building, crude sampling rack, and crude unloading bays.

f. Provide a figure of the crude sump with dimensions and process piping.

Propose collection of soil samples at the crude sump to determine if a release occurred. Submit a work plan that includes proposed investigation activities and the aforementioned information. Samples must be collected to depths at least five feet directly below the base of the crude sump and adjacent to the crude sump to evaluate for releases. All samples collected must be analyzed for total petroleum hydrocarbons (TPH) as diesel range organics (DRO), gasoline range organics (GRO), and oil range organics (ORO) and include Skinner List Metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs).

<u>Comment 2 - Response to Comment No. 13 (Diesel AST Assessment Report):</u>

Western states, "[the diesel aboveground storage tank (AST)] was used to store diesel in the past for limited fueling of company vehicles. The tank is believed to have been put into service [prior] to 1982 and was taken out of service before November 2008. The tank is made of welded steel and has an estimated capacity of 300 barrels. The tank sits on top of a concrete slab and thus any releases from the tank would be readily apparent; however, no indications of any releases have been reported." Submit a work plan to investigate the AST fuel lines and dispensers to confirm that there were no releases at the site. Propose to collect samples along the fuels lines to the pumps and include the proposed sample locations on a figure depicting the fuel lines, the diesel AST, and the pumps in the revised Report. The samples must be analyzed for DRO, ORO, GRO, Skinner List Metals, VOCs, and SVOCs.

Comment 3 - Response to Comment No. 13 (Diesel Pumps Assessment Report):

Western states, "[t]he diesel pumps were used to dispense fuel for company vehicles. There are two pumps located in one central island, which has a concrete apron on both sides of the pumps to help contain any small spills that may [occur] during fueling of vehicles. Each concrete apron is sloped to a center concrete sump, which is designed to capture small spills. The pumps are estimated to have been put into service prior to 1982 and were taken out of service in November 2008." Provide the following information in the revised Report.

a. Describe the concrete sump (i.e., if it is closed at the bottom or if it drains to another unit). Indicate if any releases or overflows from the sump have occurred.

b. Indicate the operational status of the sump. If the sump is still in use, indicate if there are any plans to remove or abandon the sump once operations have ceased. In addition, describe the current condition of the sump, the dimensions, and any piping that connects to other wastewater facilities.

c. Provide a scaled figure of the diesel pumps and sump including the location of the diesel AST in relation to the pumps. Include fuel lines, piping, and ancillary equipment (*see* Comment 2, above).

d. Propose to collect samples beneath and in the vicinity of the fuel lines, pumps, and sump (*see* Comment 2) to evaluate for releases.

Western may propose to combine this investigation with other work scheduled at the facility. Western must provide a work plan with figures that identify the proposed sample locations at each area of investigation in accordance with the requirement of the July 27, 2007 Order (Order) including a proposed schedule for conducting the work.

Comment 4

Figure 1 (AOC Location Map) shows the topography and general overview of the Bloomfield Refinery; however, the figure does not depict the crude oil sampling rack, diesel AST, and diesel pumps in relation to the other process equipment. Provide a more detailed Figure 1 that shows the crude oil sampling racks, the diesel AST, and the diesel pumps in relation to nearby features and ancillary equipment (*see* Comments 2 and 3, above).

Comment 5

Attachment A (Photographs) contains photographs of the crude sampling rack, analysis building, diesel AST, and diesel pumps. In future submittals, provide page numbers on all photographs.

Western must address all comments in this NOD and submit a revised AOC Assessment Report to NMED on or before **May 18, 2012**. The AOC Assessment Report must be prepared in accordance with Section IV.B.8 of the Order. The work plan referenced in Comments 1, 2, and 3 must be submitted to NMED by **June 15, 2012**.

If you have any questions regarding this letter, please contact Leona Tsinnajinnie of my staff at (505) 476-6057.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
L. Tsinnajinnie, NMED HWB
C. Chavez, OCD
A. Hains, Western Refining Company, El Paso, Texas

File: HWB-WRB-10-001 and Reading 2012

Western Refining™

WNR LISTED NYSE

RECEIVED OCD

2011 OCT 17 P 10: 26

October 13th, 2011

John E. Kieling, Acting Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505

Certified Mail #: 7009 2250 0002 3833 5056

Re: Response to Comment No. 13 of the June 21, 2011 APPROVAL WITH MODIFICATIONS - INVESTIGATION REPORT GROUP 3 WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY EPA ID# NMD089416416 HWB-WRB-10-001

Dear Mr. Kieling:

Western Refining Southwest, Inc., Bloomfield Refinery has prepared the following in response to your referenced comment (shown below). The following response includes the Assessment Reports, as requested, pursuant to Section IV.B.8 of the July 27, 2007 Order for the crude sampling rack, diesel aboveground storage tank (AST), and diesel pumps that are located near the Group No. 3 Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs).

NMED's Comment No. 13: - Comment 37/Response 37 (Response Letter dated April 28, 2011):

NMED's January 24, 2011 NOD Comment 37 states, "[p]rovide more information for the crude sampling rack east of AOC No. 22, the L.P.G. loading area north of SWMU No.4, the diesel AST southwest of AOC No. 25, and the gasoline pumps west of AOC No. 25 to determine whether they are operational/inactive. Include a discussion of any historical releases, description of the activities conducted at the SWMUs/AOCs, and indicate if these SWMUs/AOCs should be included in the Phase II investigation."

Western's Response: "[t]hese locations were in existence at the time NMED issued the July 27, 2007 Order and were never identified as SWMUs or AOCs. There have not been any releases or changes in operation since that time to indicate that they should be considered either a SWMU or AOC.

The crude sampling rack once consisted of a centrifuge and counter used to collect very small quantities of crude oil to support an evaluation [of] the quality of crude delivered to the crude receiving racks. The sampling rack has not been in-service since 1996. There are no documented releases to indicate environmental impacts at this location.

The LPG loading area, which is operation, is used for loading LPG to tanker trucks. The very nature of LPG (low vapor pressure - evaporates at temperatures as low as -33 to -44 degrees Fahrenheit at atmospheric pressure) means that the loading activities would not have the potential to impact soil or groundwater.

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The diesel [aboveground storage tank (AST)] southwest of AOC No. 25, which was owned and operated by the Transportation Department of Giant, not the refinery, has not been in use since January 2009 and there have not been any documented releases from this tank. The diesel pumps located west of AOC No. 25 has not been in service since January 2009."

NMED's Comment: NMED agrees that the LPG loading area should not be considered as a potential SWMU or AOC. However, it is possible that contaminant releases occurred at the crude sampling rack, diesel AST, and diesel/gasoline pumps. The July 27, 2007 Order (Order) does not make a distinction regarding the owner or operators for trucking and refining. The crude sampling rack, diesel AST, and diesel/gasoline pumps are located within the refinery boundary and are associated with the facility operations; therefore these sites are subject to corrective action under the Order. In accordance with Section IV.B.8 (Newly Discovered SWMU's and AOC's) of the Order, Western must submit an Assessment Report for the crude sampling rack, diesel AST, and diesel/gasoline pumps. After review of the report, NMED will determine if further investigation is warranted at these locations. If NMED determines additional investigation is necessary, Western will be notified in writing and the Order will be modified to add the sites as AOCs to the list in Section IV.B.3, and the investigation schedule in Section IV.B.5 and Section XI, Table 1.

Western's Response to Comment No. 13:

Western has developed the following Assessment Reports, as requested by NMED, for the Crude Sampling Rack, Diesel AST, and Diesel pumps.

Crude Sampling Rack Assessment Report

The location of the crude sampling rack and the associated sampling and analysis building is shown on the enclosed Figure 1. Photographs are included in Attachment A. The crude sampling rack was used to collect very small quantities of crude oil (e.g., less than one pint) to support an evaluation of the quality of crude being delivered to the crude receiving racks. The crude rack provided Operators access to the crude tanks without climbing the trailers. The testing of the crude samples was performed inside the small building located north of the sampling rack using a centrifuge and counter to help determine the water and sediment content. The sampling rack and associated analysis building began operation in 1979 and was operated until November 1996. From 1996 to present, sampling of the in-coming crude was no long required. Currently the crude sampling building is used to re-fill SCBA's for truck drivers, as needed.

The actual rack consists of an overhead metal structure approximately five feet wide and 20 feet long, from which a sample of the crude oil could be collected from the top of the tanker trucks prior to off loading at the nearby crude receiving racks. There is no piping, either above ground or below ground, associated with the sampling rack. The sampling and analysis building is constructed on a concrete slab.

The only material known to have been handled at the crude sampling rack is crude oil. All containers of the waste materials associated with the testing activities (e.g., excess crude oil and separated water and/or sediments) were poured down the utility sink in the crude sampling building, which drains directly to the crude sump located just north of the crude unloading bays.

There is no information available to indicate that there was a release of contaminants into the environment from operations at the crude sampling rack or the associated sampling and analysis building. The handling of only small volumes of crude oil at this location makes it unlikely that a significant release of contaminants could have occurred during historical operations at the crude sampling rack.

Diesel AST Assessment Report

The diesel AST is shown in the far southwest corner of the refinery property on Figure 1. Photographs are included in Attachment A. This AST was used to store diesel in the past for limited fueling of company vehicles. The tank is believed to have been put into service in prior to 1982 and was taken out of service before November 2008. The tank is made of welded steel and has an estimated capacity of 300 barrels. The tank sits on top of a concrete slab and thus any releases from the tank would be readily apparent; however, no indications of any releases have been reported.

Diesel Pumps Assessment Report

The diesel pumps, which are located to the west of AOC No. 25 Auxiliary Warehouse and 90-day storage area, are shown on Figure 1. Photographs are included in Attachment A. The diesel pumps were used to dispense diesel fuel for company vehicles. There are two pumps located in one central island, which has a concrete apron on both sides of the pumps to help contain any small spills that may occurring during fueling of vehicles. Each concrete apron is sloped to a center concrete sump, which is designed to capture small spills. The pumps are estimated to have been put into service prior to 1982 and were taken out of service in November 2008.

There have not been any documented releases at the fueling pumps themselves; however, on January 26, 2004 there was a documented spill that occurred in the area adjacent to the fueling bays. The spill resulted in the release of approximately 118 gallons of gasoline. The impacted soil was excavated and disposed of off-site. The cause of the spill is not related to the operation of the diesel fueling pumps. During fueling of his tanker truck with diesel, the truck driver opened a valve on one tanker compartment, which contained gasoline. In doing so, 118 gallons of gasoline spilled from the tanker compartment onto the ground. This spill was reported to the NMED, New Mexico Oil Conservation Division (NMOCD), and also the National Response Center.

Approximately 500 cubic yards of potentially impacted soil was excavated on January 31, 2004 and confirmation samples were collected on February 2, 2004. The confirmation samples indicate that the release was remediated to the applicable standards in New Mexico Oil Conservation Division's *Guidelines for the Remediation of Leaks, Spills, and Releases*. The documentation available for this incident is enclosed in Attachment B.

If you have questions regarding the above responses or the enclosures, please contact me at (505) 632-4171.

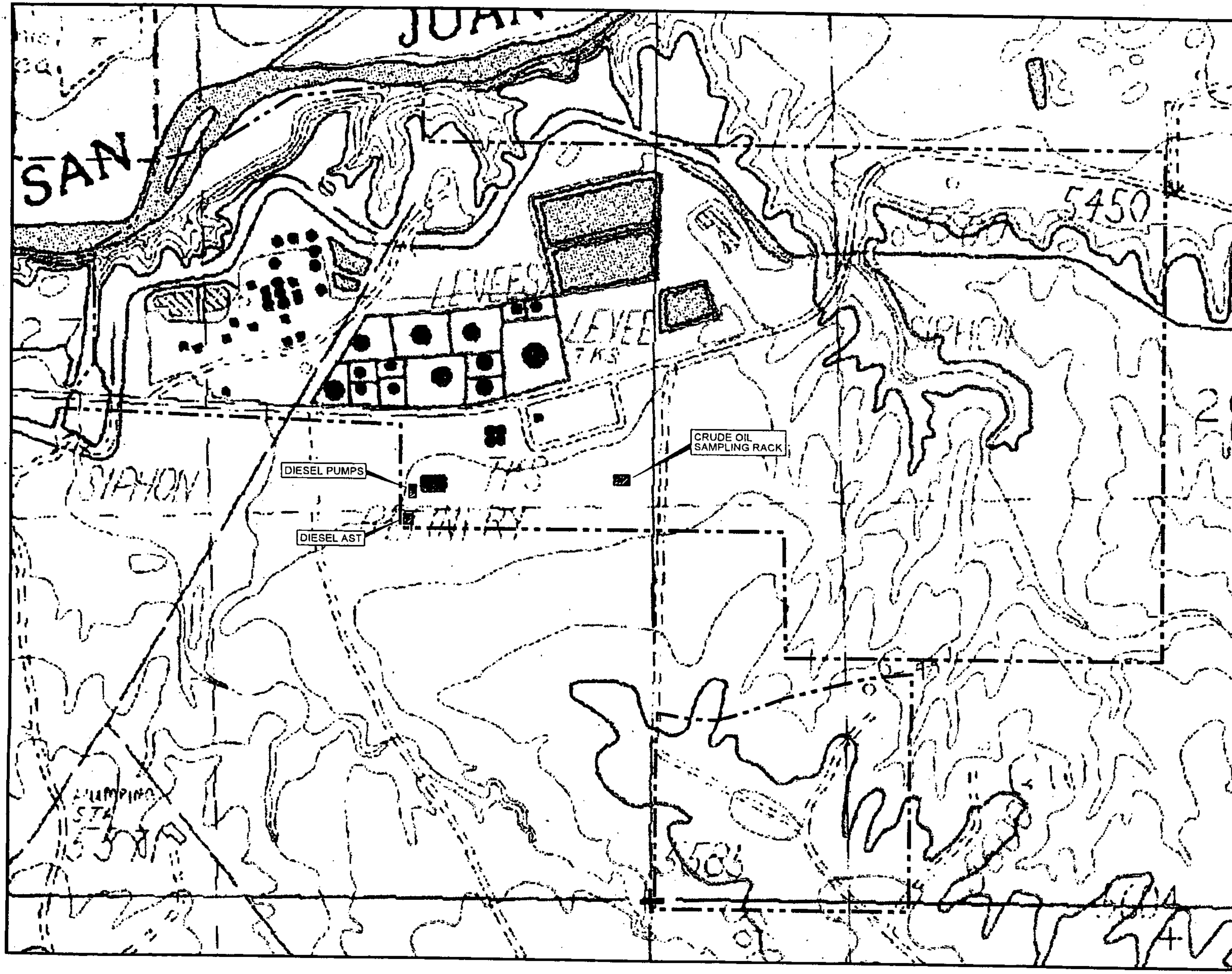
Sincerely,

James R. Schmaltz
Health, Safety, Environmental, and Regulatory Director
Western Refining Southwest, Inc., Bloomfield Refinery

Enclosures

cc: Dave Cobrain – NMED HWB
Leona Tsinnajinnie – NMED HWB
Carl Chavez - NMOCD
Allen Hains – Western Refining El Paso

Figures



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

0 500
SCALE IN FEET

NEW MEXICO

QUADRANGLE LOCATION

LEGEND

AOC LOCATION

WESTERN PROPERTY BOUNDARY

Western Refining
WESTERN REFINING SOUTHWEST

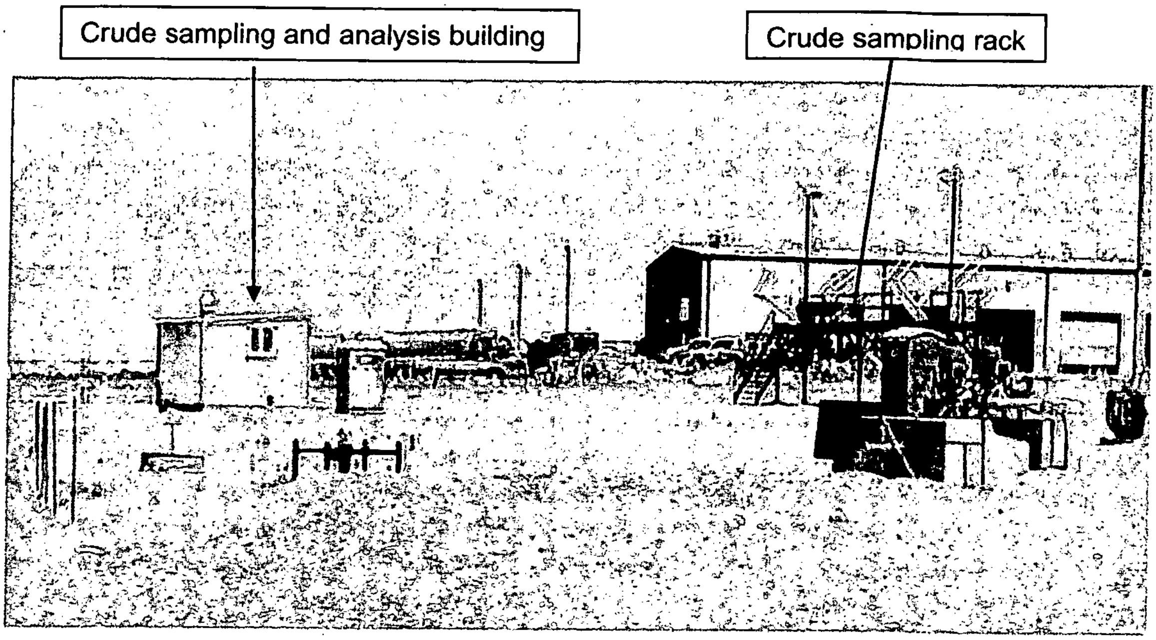
PROJ. NO.:Western Refining | DATE:09/26/11 | FILE: WestRef-B113

FIGURE 1
AOC LOCATION MAP
BLOOMFIELD REFINERY

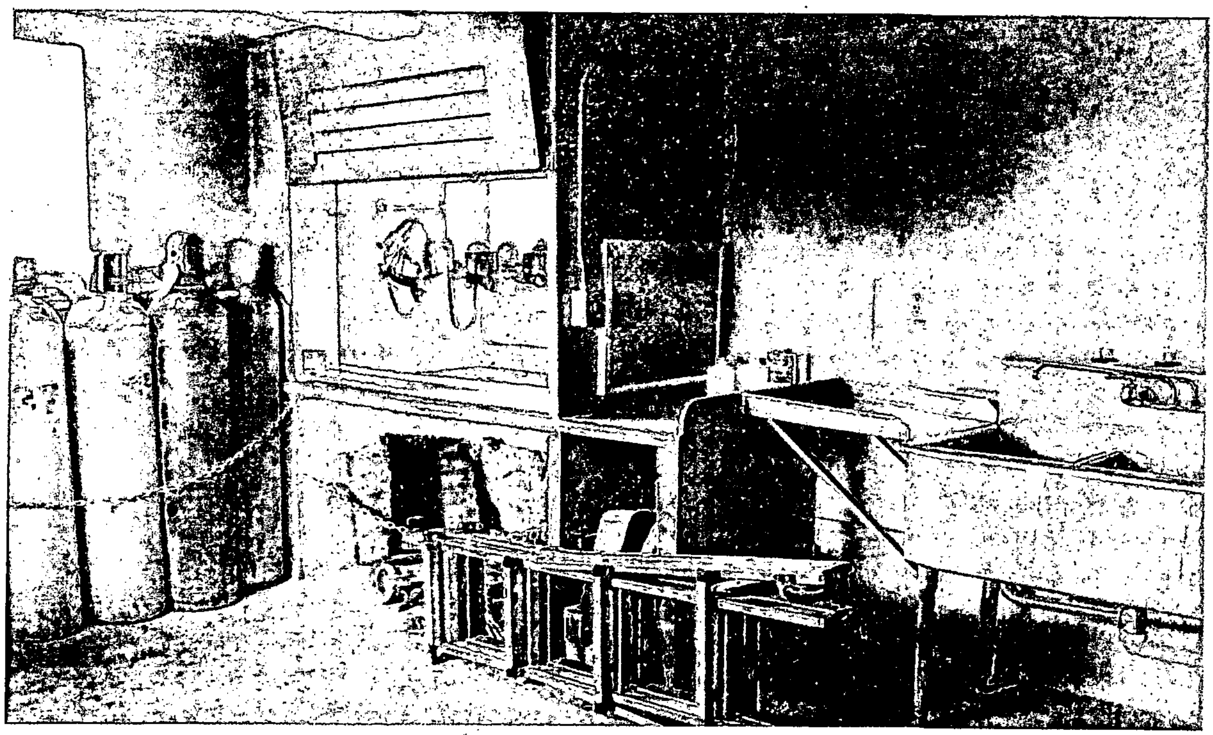
RPS

Cielo Center
1250 S. Capital of Texas Highway
Building 3, Suite 200
Austin, Texas 78746
TBPE No. 1298

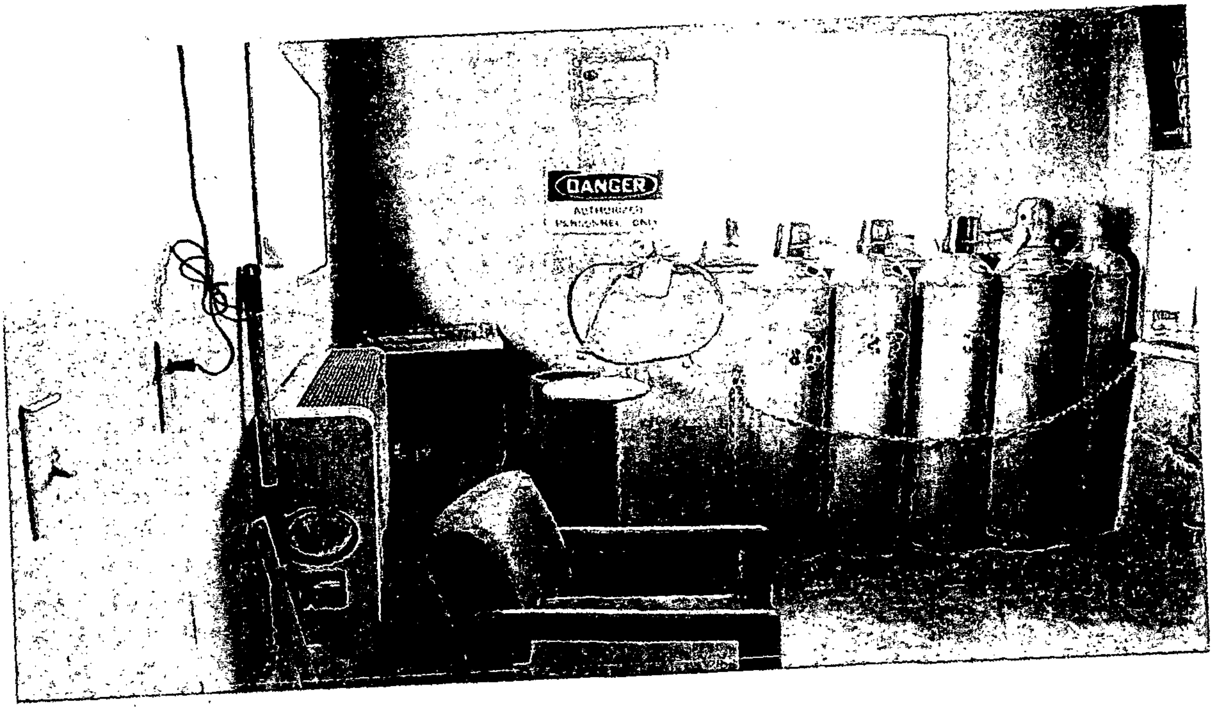
Attachment A - Photographs



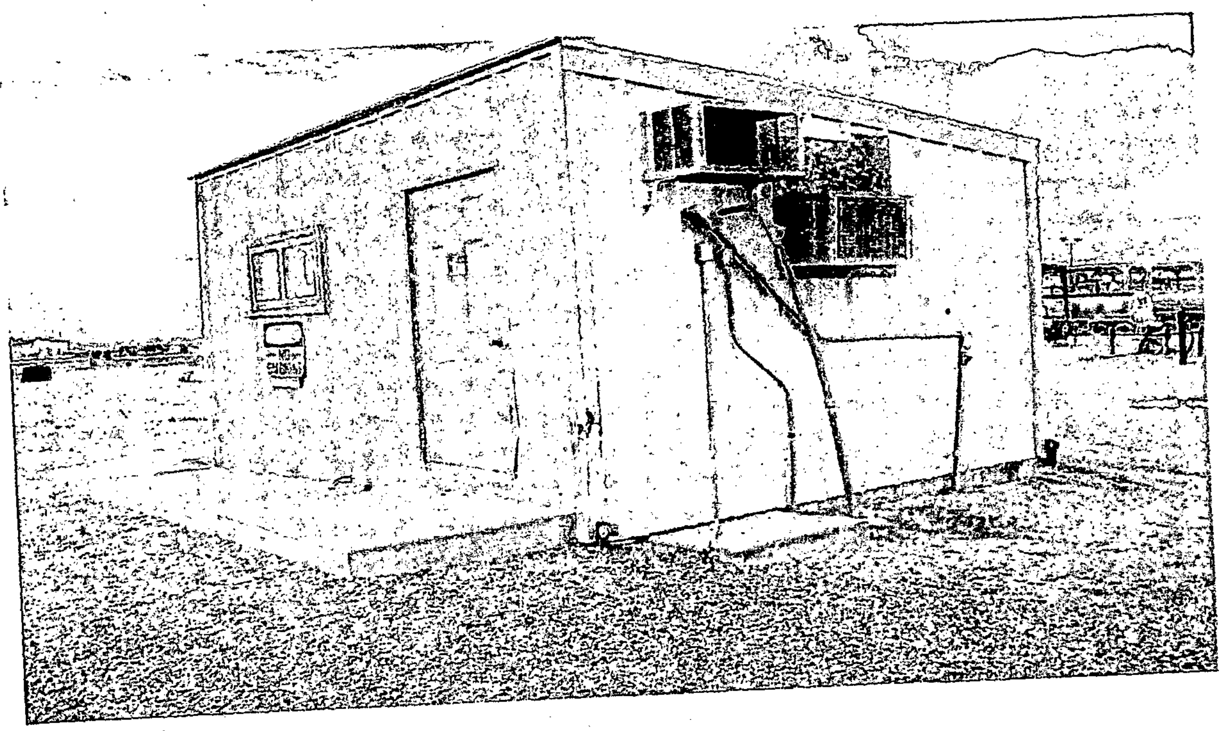
Crude sampling rack and crude analysis building located on southeastern portion of refinery property.

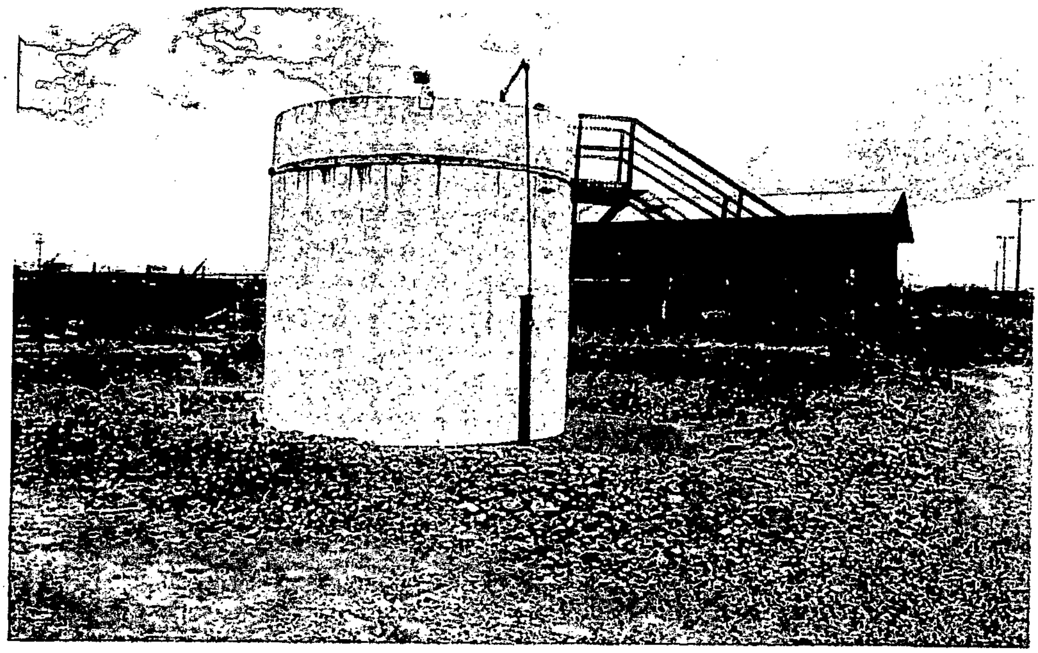


Interior of crude sampling and analysis building.

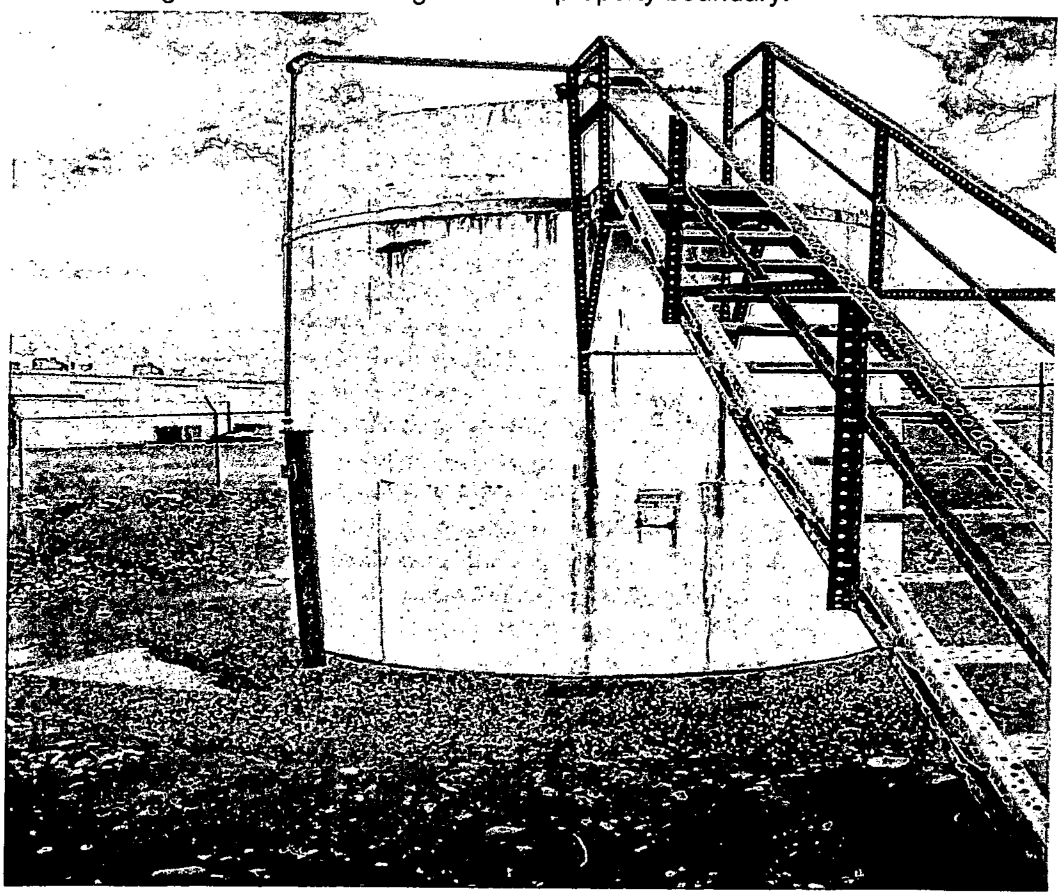


Interior of crude sampling and analysis building.

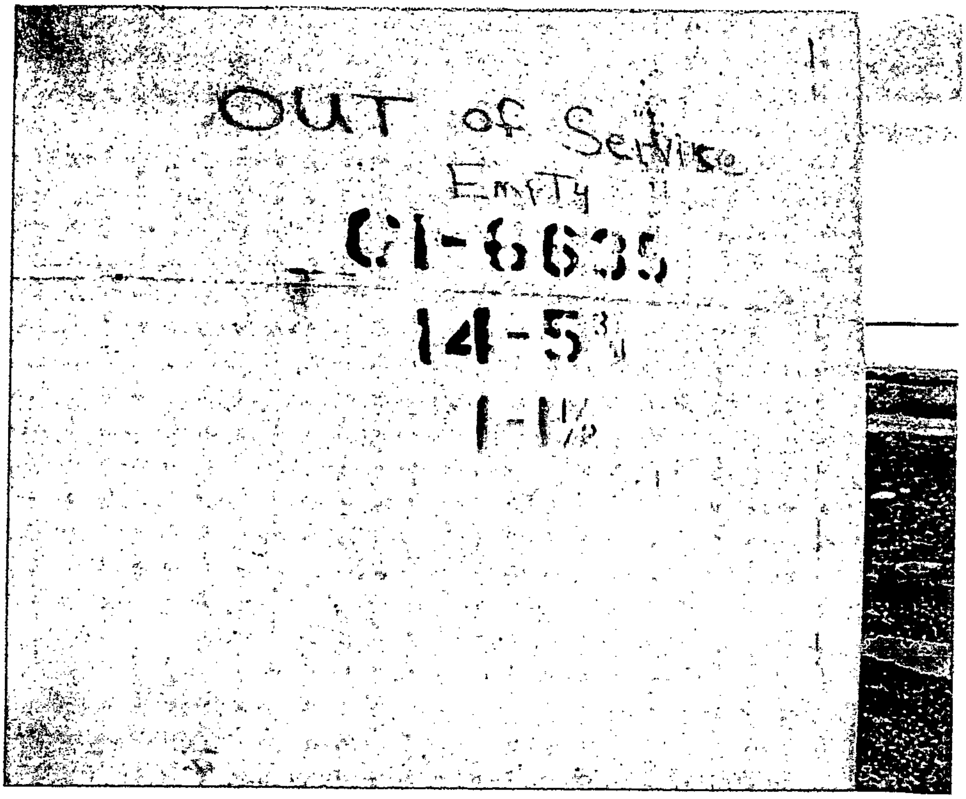

Exterior of crude sampling and analysis building.



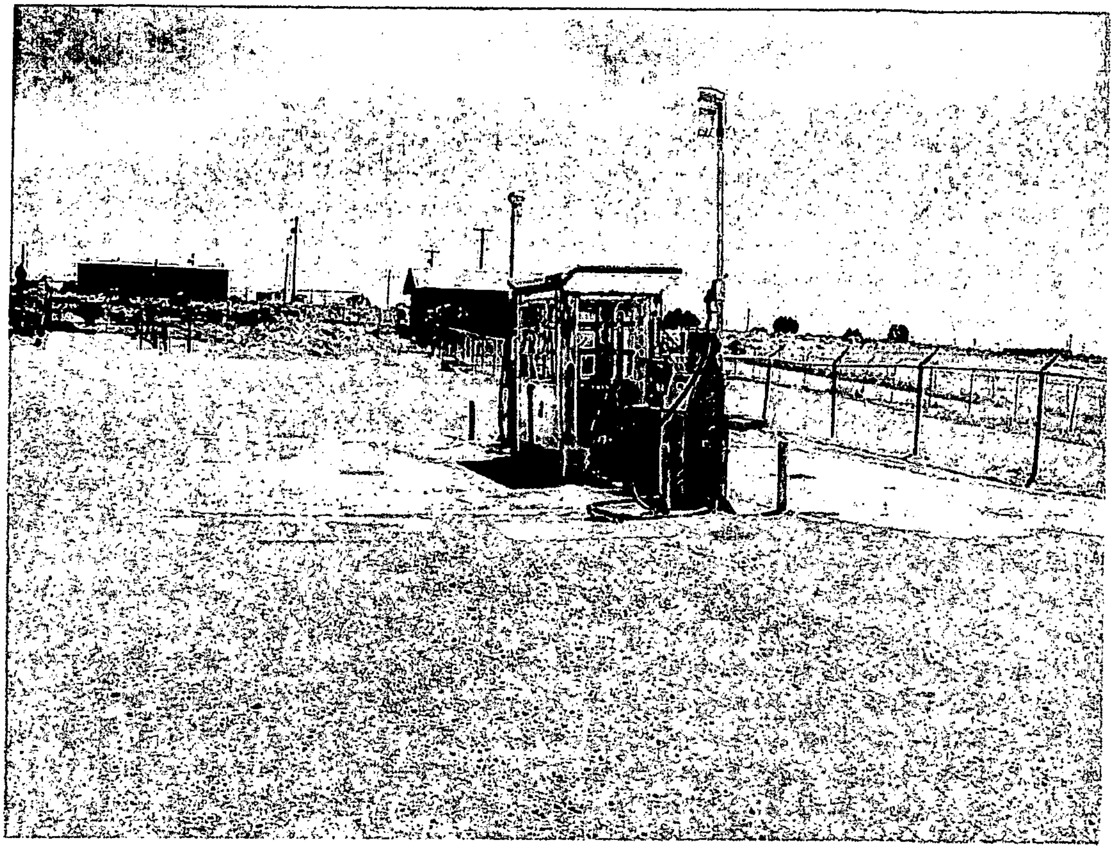
Diesel storage tank located along southern property boundary.



Diesel storage tank near southern property boundary sitting on concrete pad.



Diesel storage tank.



Diesel fuels pumps located west of AOC No. 25 Auxiliary Warehouse and 90-day Storage Area.

Attachment B – Documentation for Spill near Diesel Pumps

Lodestar Services, Incorporated
PO Box 3861 Farmington, NM 87499-3861 Office (505) 334-2791

DRAFT

February 10, 2004

Mr. Barry Holman
Giant Transportation, Inc.
111 CR 4990
Bloomfield, NM 87413

RE: Diesel Rack Summary Report

Dear Mr. Holman,

On January 26, 2004 Lodestar Services, Inc. (Lodestar) visited the site of a gasoline release adjacent to a diesel loading rack on Giant Industries, Inc.'s (Giant's) Bloomfield Refinery property south of Sullivan road in Bloomfield, NM. Lodestar's mission was to determine closure criteria, verify that impacted soil had been removed, and collect closure samples following Giant's excavation of the site.

The site is located in the NE ¼ of the SE ¼ of section 27, Township 29 North, Range 11 West, and is on the United States Geological Survey 7.5 minute topographic quadrangle "Bloomfield". The site elevation is approximately 5540 feet above mean sea level. Depth to ground water in the vicinity of the release is approximately 40 feet. There is one ground water monitoring well approximately 40 feet north of the release.

Giant completed excavation of the impacted soil on the 31st of January and Lodestar completed closure sampling on Monday February 2, 2004. A site map is provided as Figure 1. Nine wall and 5 bottom samples were collected and immediately split for headspace and laboratory analysis. The five floor samples (10,11,12,13, and 14) and four of the wall samples, (2,4,7,and 9) were composited into one floor and one wall sample. These samples were then submitted to Envirotech Inc. for benzene, toluene, ethylbenzene, xylene, (BTEX) and total petroleum hydrocarbons (THP) analyses by US environmental Protection Agency methods 8021 and 8015 respectively. Soil samples were maintained on ice and strict chain-of-custody procedures followed until the samples were hand delivered.

The closure criteria found in the New Mexico Oil Conservation Division's *Guidelines for the Remediation of Leaks, Spills, and Releases* for sites where ground water is less than 50 feet beneath ground surface is as follows:

Constituent	Standard (mg/kg)
Benzene	10
Total BTEX	50
TPH	100

DRAFT

The results of field headspace analyses are as follows:

Sample	Depth	Headspace Analysis	Sample	Depth	Headspace Analysis
	feet	ppm		feet	ppm
1	2	62.1	8	2.75	2.9
2	1	41.3	9	4.5	2.8
3	2	12.4	10	6	3.1
4	2.5	22.2	11	8	0.4
5	2.25	12.5	12	1.5	5.2
6	4	36.2	13	3	7.4
7	1	3.6	14	8	0.9

The results of laboratory analyses are as follows:

Sample	Headspace Analysis	Benzene	Total BTEX	THP
	ppm	µg/kg	µg/kg	mg/kg
4 wall composite	2.7	23.5	23.5	ND
5 point bottom	3.5	2.5	2.5	ND

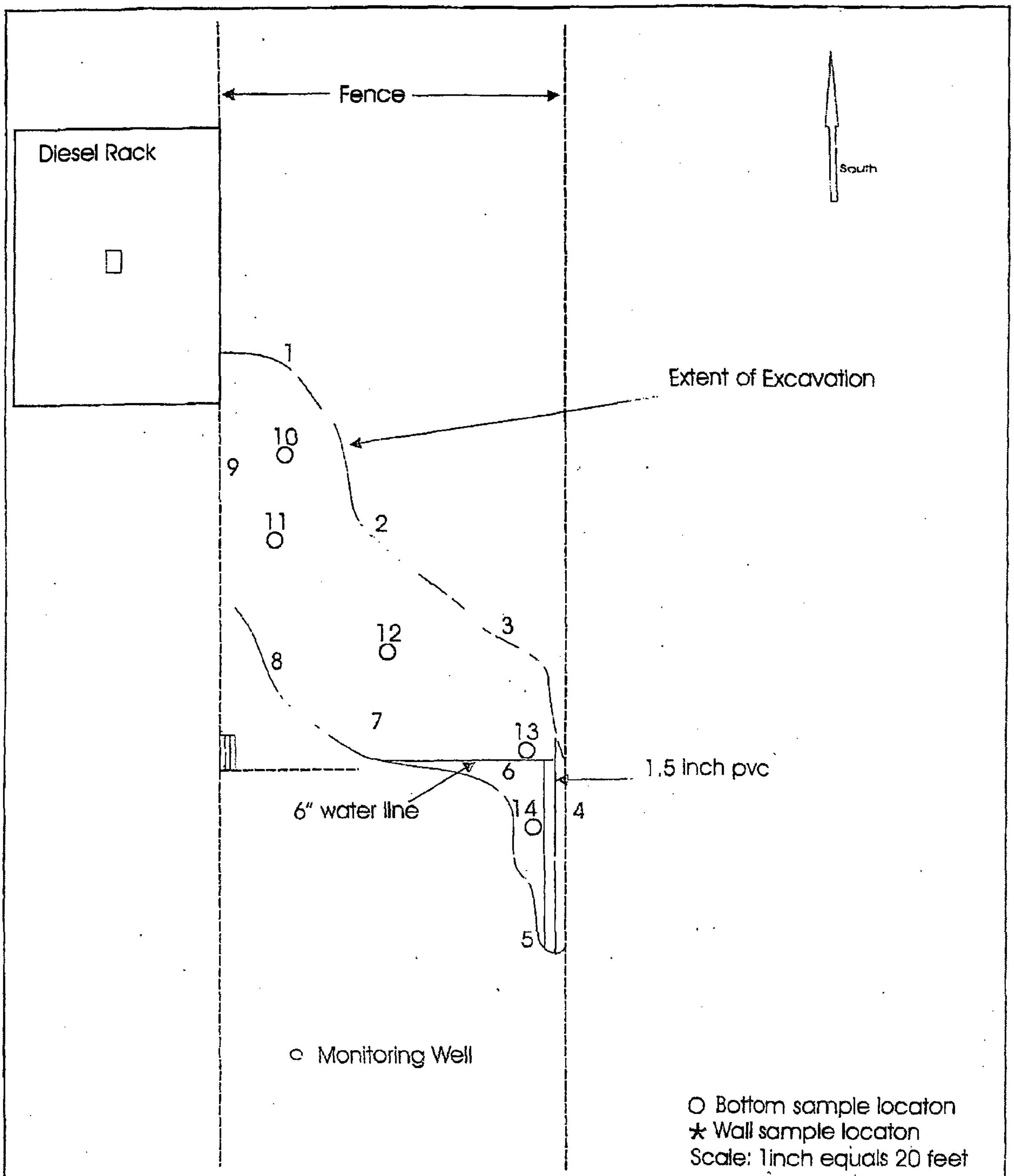
Laboratory reports are attached. Backfilling the excavation was completed by Giant.

Should you have any questions or require additional information you may contact me at (505) 334-2791.

Respectfully Submitted,

Martin Nee
Lodestar Services, Inc.

CC: File



Lodestar Services, Inc PO Box 3861 Farmington, NM 87499	Site Diagram Giant Diesel Rack	Figure 1 Drawn By MJN 2/6/04

Emergency Response Notification Form

Company:	Notifier's Name: JAMES R. SCHMALTZ
Giant Bloomfield Refinery 50 County Road 4990 Bloomfield, NM 87413 (505) 632-8013	Position: ENVIRONMENTAL SUPERVISOR

Incident Description (Source or Cause):

GASOLINE SPILL : A TRANSPORTATION EMPLOYEE CAUSED A SPILL AT THE FUELING STATION LOCATED ON THE REFINERY'S PROPERTY

Date: SPILL WAS FOUND 4/26/04

Time: 7:00AM

Location: REFINERY FUEL STATION

Material Released & Estimated Quantity:

118 GALLONS OF GASOLINE

Response Actions Taken:

MATERIAL WAS REMOVED AND TAKEN TO AN OCD APPROVED FACILITY

Impact (Injuries, Evacuation, Damage):

SOIL DAMAGE

Additional Information:

Agencies Notified (circle all that apply):

NRC USCG SERC NMOCD NMED LEPC Police/Fire Other ________

NRC CONTACT MRS JONES 711583

GIANT
REFINING COMPANY

February 3, 2003

Mr. Denny Foust
New Mexico Oil Conservation Division
1000 Rio Brazos Road
Aztec, New Mexico 87410

Re: Disposal of Petroleum Contaminated Soil

Dear Mr. Foust,

As per OCD Rulebook Section 19.15.9.712, San Juan Refining Company is requesting permission to dispose of Petroleum contaminated soil from an event at the Bloomfield Refinery in the San Juan County Landfill.

The waste in question is from a gasoline spill that occurred at the transportation fueling station located on refinery property.

I have included with this letter a waste profile and analytical results from test preformed on this waste. Envirotech Labs preformed the tests.

We thank you for your prompt attention and look forward to hearing from you concerning this request. If you have questions please call me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Environmental Supervisor
San Juan Refining Company

cc. Chad King
Ed Riege
Barry Holman

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Service Agreement on File? ☐YES ☐NO

Profile Number: WMI PCS # 06351E

☐Hazardous ☒Non-Hazardous ☐TSCA 1-26-04

Renewal Date: / /

A. Waste Generator Information

1. Generator Name: Giant
2. SIC Code:
3. Facility Street Address: 111 cr. 4990
4. Phone: (505) 632-4077
5. Facility City: Bloomfield
6. State/Province: NM
7. Zip/Postal Code: 87413
8. Generator USEPA/Federal ID #:
9. County: San Juan
10. State/Province ID #:
11. Customer Name: Giant
12. Customer Phone: (505)320-3415
13. Customer Contact: Gary Winn
14. Customer Fax: 505 632-4073
15. Billing Address Same ☐Same as above

B. Waste Stream Information

1. Description
   a. Name of Waste: Petroleum (Gasoline) Contaminated Soil
   b. Process Generating Waste: Tanker Spill

c. Color	d. Strong odor (describe):	e. Physical state @ 70°F	f. Layers	g. Free liquid range
Brown	Fuel	☒Solid ☐Liquid ☐Gas ☐Sludge ☐Other	☒Single Layer ☐Multi-layer	0 to 0 % h. pH: Range 5 to 9

i. Liquid Flash Point: ☐<73°F ☐73-99°F ☐100-139°F ☐140-199°F ☐≥ 200°F ☒Not applicable

j. Chemical Composition (List all constituents [including halogenated organics, debris, and UHC's] present in any concentration and submit representative analysis):

Constituents	Concentration Range	Constituents	Concentration Range
Petroleum Contaminated Soil	100%		

TOTAL COMPOSITION MUST EQUAL OR EXCEED 100%

k. Check all that apply
☐Oxidizer ☐Pyrophoric ☐Explosive ☐Radioactive
☐Carcinogen ☐Infectious ☐Shock Sensitive ☐Water Reactive

l. Does the waste represented by this profile contain any of the carcinogens which require OSHA notification? (list in Section B.1.j)........ ☐YES ☒NO

m. Does the waste represented by this profile contain dioxins? (list in Section B.1.j)........ ☐YES ☒NO

n. Does the waste represented by this profile contain asbestos?........ ☐YES ☒NO
If yes........ ☐friable ☐non-friable

o. Does the waste represented by this profile contain benzene?........ ☒YES ☐NO
If yes, concentration Less than 0.5 ppm
Is the waste subject to the benzene waste operations NESHAP?........ ☐YES ☒NO

p. Is the waste subject to RCRA Subpart CC controls?........ ☐YES ☒NO
If yes, volatile organic concentration ______ ppmw

q. Does the waste contain any Class I or Class II ozone-depleting substances?........ ☐YES ☒NO

r. Does the waste contain debris? (list in Section B.1.j)........ ☐YES ☒NO

2. **Quantity of Waste**
Estimated Annual Volume 500 ☐Tons ☒Yards ☐Drums ☐Other (specify)

3. **Shipping Information**
   a. Packaging:
   ☒Bulk Solid; Type/Size: Belly-Dump ☐Bulk Liquid; Type/Size:
   ☐Drum; Type; Size: ☐Other:
   b. Shipping Frequency: Units 15-20 yards per load Per: ☐Month ☐Quarter ☐Year ☒One time ☐Other
   c. Is this a U.S. Department of Transportation (USDOT) Hazardous Material? (If no, skip d, e, and f)........ ☐YES ☒NO

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Profile Number: WMI 063

Profile #:

d. Reportable Quantity (lbs.; kgs.): n/a   e. Hazard Class/ID #:
f. USDOT Shipping Name: n/a
g. Personal Protective Equipment Requirements: n/a
h. Transporter/Transfer Station: WM of NM

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

1. Is this a USEPA hazardous waste (40 CFR Part 261)? If the answer is no, skip to 2 ☐YES ☒NO
   a. If yes, identify ALL USEPA listed and characteristic waste code numbers (D, F, K, P, U)
   b. If a characteristic hazardous waste, do underlying hazardous constituents (UHCs) apply? (If yes, list in Section B.1.j) ☐YES ☐NO
   c. Does this waste contain debris? (If yes, list size and type in Chemical Composition - B.1.) ☐YES ☐NO
2. Is this a state hazardous waste? ☐YES ☒NO
   Identify ALL state hazardous waste codes
3. Is the waste from a CERCLA (40 CFR 300, Appendix B) or state mandated clean-up? ☐YES ☒NO
   If yes, attach Record of Decision (ROD), 104/106 or 122 order or court order that governs site clean-up activity. For state mandated clean-up, provide relevant documentation.
4. Does the waste represented by this waste profile sheet contain radioactive material, or is disposal regulated by the Nuclear Regulatory Commission? ☐YES ☒NO
5. Does the waste represented by this waste profile sheet contain concentrations of Polychlorinated Biphenyls (PCBs) regulated by 40 CFR 761? (If yes, list in Chemical Composition - B.1.j) ☐YES ☒NO
   a. If yes, were the PCBs imported into the U.S.? ☐YES ☐NO
6. Do the waste profile sheet and all attachments contain true and accurate descriptions of the waste material, and has all relevant information within the possession of the Generator regarding known or suspected hazards pertaining to the waste been disclosed to the Contractor? ☒YES ☐NO
7. Will all changes which occur in the character of the waste be identified by the Generator and disclosed to the Contractor prior to providing the waste to the Contractor? ☒YES ☐NO

☐Check here if a Certificate of Destruction or Disposal is required.

Any sample submitted is representative as defined in 40 CFR 261 - Appendix I or by using an equivalent method. I authorize WMI to obtain a sample from any waste shipment for purposes of recertification. If this certification is made by a broker, the undersigned signs as authorized agent of the generator and has confirmed the information contained in this Profile Sheet from information provided by the generator and additional information as it has determined to be reasonably necessary. If approved for management, Contractor has all the necessary permits and licenses for the waste that has been characterized and identified by this approved profile.

Certification Signature: Gary Wi   Title: Environmental Mgr
Name (Type or Print): Gary Winn   Company Name: Giant Industries, Inc.   Date: 1/
☐Check if additional information is attached. Indicate the number of attached pages

D. WMI Management's Decision   **FOR WMI USE ONLY**

1. Management Method ☐Landfill ☐Non-hazardous Solidification ☐Bioremediation ☐Incineration ☐Hazardous Stabilization ☐Other (Specify)
2. Proposed Ultimate Management Facility:
3. Precautions, Special Handling Procedures, or Limitation on Approval:

Special Waste Decision ☐Approved ☐Disapproved
Salesperson's Signature: Date:
Division Approval Signature (Optional): Date:
Special Waste Approvals Person Signature: Date:

505-722-3[illegible]

Form WMI-HW 08/96

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

Instructions

Information on this form is used to determine if the waste may be transported, treated, stored or disposed in a legal, safe, and environmentally sound manner. This information will be maintained in strict confidence. Answers must be provided for sections A, B, and C and must be printed in ink or typed. A response of "NONE" or NA" (not applicable) can be made if appropriate. If additional space is needed, indicate on the form that additional information is attached, and attach the information to Generator's Waste Profile Sheet. If you have questions concerning this form, please contact the Contractor's sales representative.

A. Waste Generator Information

1. **Generator Name** - Enter the name of the facility where the waste is generated.
2. **SIC Code** - Enter the four digit Standard Industrial Classification Code for the facility where the waste is generated.
3. **Facility Street Address** - Enter the street address (not P.O. Box) of the facility where the waste is generated.
4. **Phone** - Enter Generator's area code and phone number.
5. **Facility City** - Enter the city where the waste is generated.
6. **State/Province** - Enter the state or province where the waste is generated.
7. **Zip/Postal Code** - Enter the generating facility's zip or postal code.
8. **Generator USEPA/Federal ID #** - Enter the identification number issued by the USEPA, Canadian, or Mexican Federal Agency to the facility generating the waste (if applicable).
9. **County** - Enter the county where the waste is generated.
10. **State/Province ID #** - Enter the identification number issued by the state or province to the facility generating the waste (if applicable).
11. **Customer Name** - Entity that the Contractor is directly working with regarding the represented waste stream. If the same as the Generator, mark "Same as Above".
12. **Customer Phone** - Enter technical contact's area code and telephone number.
13. **Customer Contact** - Enter the name of the person who can answer technical questions about the waste.
14. **Customer Fax** - Area code and facsimile number for the customer.
15. **Billing Address** - Address where bill for services should be sent.

B. Waste Stream Information

1.a. **Name of Waste** - Enter a name generally descriptive of this waste (e.g., paint sludge, fluorescent bulbs).

1.b. **Process Generating Waste** - Describe the process generating the waste in detail. List the specific process/operation or source that generates the waste (e.g., incineration of municipal refuse, asbestos removal, wastewater treatment, building maintenance).

At a minimum, the Generator should answer the following questions in determining the process generating the waste.

- What chemicals are stored and/or used at the facility?
- Is the waste generated from the production/manufacturing of any of the following industries: wood preservation; inorganic pigments; organic pigments; pesticides; explosives; petroleum refining; iron and steel, copper, lead or zinc production?
- Is the waste a result from degreasing, solvent parts cleaning, recovery/reclaiming of solvents (bottoms), wastewater treatment (sludges), or electroplating?

1.c. **Color** - Describe the color of the waste (e.g., blue, transparent, varies).

1.d. **Strong odor** - <u>DO NOT SMELL THE WASTE!</u> If the waste has a known odor, then describe (e.g., acrid, pungent, solvent, sweet).

1.e. **Physical state @ 70°F** - If the four boxes provided do not apply, a descriptive phrase may be entered after "Other" (e.g., multi-phase).

1.f. **Layers** - Single Layer means the waste is homogenous. Multi-layer means the waste is comprised of two or more layers (e.g., oil/water/sludge).

1.g. **Free liquid range** - Range (in percent by volume) of free liquids in the waste.

1.h. **pH Range** - Indicate the pH range.

1.i. **Liquid Flash Point** - Indicate the flash point obtained using the appropriate test method.

1.j. **Chemical Composition** - List all organic and/or inorganic components of the waste using chemical names. If trade names are used, attach Material Safety Data Sheets or other documents that adequately describe the composition of the waste. For each component, estimate the range (in percent) in which the component is present.

1.k. Check all that apply.

1.l. Identify any element, chemical compound, or mixture in concentration of 0.1 percent or greater that is considered a carcinogen or potential carcinogen pursuant to OSHA.

1.m. Indicate if the waste contains any dioxins (list in Section B.1.j).

1.n. Indicate if the waste contains asbestos. Indicate if the asbestos is friable.

1.o. Indicate if the waste contains benzene, the level in ppm, and whether it is subject to the benzene NESHAP.

1.p. Indicate if the waste is subject to RCRA Subpart CC control. In addition, indicate the volatile organic concentration, if known, in parts per million weight.

1.q. Indicate if the waste contains any Class I or Class II ozone-depleting controlled substances.

1.r. Indicate if the waste contains debris (list size and type in B.1.j).

2. **Quantity of Waste** - Approximate volume in tons, yards, or other (e.g., drums, gallons) that will be received by the ultimate management facility. This volume amount is not intended for use in complying with state and/or permit restrictions.

3.a. **Packaging** - Choose the appropriate option or "other" along with a description.

3.b. **Shipping Frequency** - Choose the appropriate option or "other" along with a description.

3.c. **Is this a U.S. Department of Transportation (USDOT) hazardous material?** - Choose the appropriate response: yes or no.

3.d. **Reportable Quantity (lbs.; kgs.)** - If the answer to 3.c. is yes, enter the Reportable Quantity (RQ) established by 40 CFR 302.4 or equivalent Canadian or Mexican regulation for this waste. Indicate the appropriate units for the RQ.

3.e. **Hazard Class/ID #** - If the answer to 3.c. is yes, indicate the proper USDOT hazard class and identification number.

WASTE MANAGEMENT

GENERATOR'S WASTE PROFILE SHEET

PLEASE PRINT IN INK OR TYPE

3.f. **USDOT Shipping Name** - IF the answer to 3.c. is yes, enter the proper USDOT shipping name for the waste.

3.g. **Personal Protective Equipment Requirements** - All personal protective equipment necessary to safely manage the waste stream.

3.h. **Transporter/Transfer Station** - Transporter and/or transfer station name.

C. Generator's Certification (Please check appropriate responses, sign, and date below.)

Indicate the appropriate response to questions/statements 1, 2, 3, 4, 5, 6, and 7. By signing this Generator's Waste Profile Sheet, the Generator certifies the responses are true and accurate with respect to the waste stream(s) listed.

Certification Signature - Signature of an authorized employee of the Generator or representative of the generator if authorized in writing by the generator.
Title - Enter Employee's title.
Name - Type or Print Employee's name.
Company Name - Company employing the person certifying the Generator's Waste Profile Sheet.
Date - Enter the date this Generator's Waste Profile Sheet is signed.

D. WMI Management's Decision — FOR WMI USE ONLY

To be completed by WMI.

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

January 28, 2004

Mr. Gary Winn
Giant Transportation
111 CR 4990
Bloomfield, New Mexico 87413

Phone: (505) 632-4009
Fax: (505) 632-4073

Client No.: 97059-007

Dear Mr. Winn,

Enclosed are the analytical results for the sample collected from the location designated as "Giant Rack". One soil sample was collected by Giant designated personnel on 1/26/04, and delivered to the Envirotech laboratory on 1/26/04 for Total Petroleum Hydrocarbons (TPH) per USEPA Method 8015 and BTEX per USEPA Method 8021.

The sample was documented on Envirotech Chain of Custody No. 11789 and assigned Laboratory Nos. 27647 (Spoil #1) for tracking purposes.

The sample was analyzed on 1/27/04 using USEPA or equivalent methods.

Should you have any questions or require additional information, please do not hesitate to contact us at (505) 632-0615.

Respectfully submitted,
Envirotech, Inc.

Chandra Olaguez
602-454-2001

Christine M. Walters

Christine M. Walters
Lab Coordinator / Environmental Scientist

enclosure

CMW/cmw

C:/files/labreports/giant/.wpd

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	Giant	Project #:	97059-007
Sample ID:	Spoil #1	Date Reported:	01-27-04
Laboratory Number:	27647	Date Sampled:	01-26-04
Chain of Custody:	11789	Date Received:	01-26-04
Sample Matrix:	Soil	Date Analyzed:	01-27-04
Preservative:	Cool	Date Extracted:	01-27-04
Condition:	Cool & Intact	Analysis Requested:	BTEX

Parameter	Concentration (ug/Kg)	Det. Limit (ug/Kg)
Benzene	ND	1.8
Toluene	349	1.7
Ethylbenzene	ND	1.5
p,m-Xylene	310	2.2
o-Xylene	ND	1.0
Total BTEX	659	

ND - Parameter not detected at the stated detection limit.

Surrogate Recoveries:	Parameter	Percent Recovery
	Fluorobenzene	94 %
	1,4-difluorobenzene	94 %
	Bromochlorobenzene	94 %

References: Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Giant Rack.

Christine M Walters
Analyst

Sandrea R Jackson
Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Client:	Giant	Project #:	97059-007
Sample ID:	Spoil #1	Date Reported:	01-27-04
Laboratory Number:	27647	Date Sampled:	01-26-04
Chain of Custody No:	11789	Date Received:	01-26-04
Sample Matrix:	Soil	Date Extracted:	01-27-04
Preservative:	Cool	Date Analyzed:	01-27-04
Condition:	Cool and Intact	Analysis Requested:	8015 TPH

Parameter	Concentration (mg/Kg)	Det. Limit (mg/Kg)
Gasoline Range (C5 - C10)	0.9	0.2
Diesel Range (C10 - C28)	ND	0.1
Total Petroleum Hydrocarbons	0.9	0.2

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: Giant Rack.

Christine M Walters
Analyst

Sandra R Jackson
Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA METHOD 8021
AROMATIC VOLATILE ORGANICS

Client:	N/A	Project #:	N/A
Sample ID:	01-27-BTEX QA/QC	Date Reported:	01-27-04
Laboratory Number:	27647	Date Sampled:	N/A
Sample Matrix:	Soil	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	01-27-04
Condition:	N/A	Analysis:	BTEX

Calibration and Detection Limits (ug/L)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Benzene	4.2776E-002	4.2905E-002	0.3%	ND	0.2
Toluene	4.8966E-002	4.9064E-002	0.2%	ND	0.2
Ethylbenzene	7.4036E-002	7.4259E-002	0.3%	ND	0.2
p,m-Xylene	6.8275E-002	6.8480E-002	0.3%	ND	0.2
o-Xylene	5.5866E-002	5.5978E-002	0.2%	ND	0.1

Duplicate Conc. (ug/Kg)	Sample	Duplicate	%Diff.	Accept Range	Detect. Limit
Benzene	ND	ND	0.0%	0 - 30%	1.8
Toluene	349	342	2.0%	0 - 30%	1.7
Ethylbenzene	ND	ND	0.0%	0 - 30%	1.5
p,m-Xylene	310	300	3.2%	0 - 30%	2.2
o-Xylene	ND	ND	0.0%	0 - 30%	1.0

Spike Conc. (ug/Kg)	Sample	Amount Spiked	Spiked Sample	% Recovery	Accept Range
Benzene	ND	50.0	50.0	100%	39 - 150
Toluene	349	50.0	402	101%	46 - 148
Ethylbenzene	ND	50.0	49.0	98.0%	32 - 160
p,m-Xylene	310	100	400	97.6%	46 - 148
o-Xylene	ND	50.0	53.0	106%	46 - 148

ND - Parameter not detected at the stated detection limit.

References:

Method 5030B, Purge-and-Trap, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Method 8021B, Aromatic and Halogenated Volatiles by Gas Chromatography Using Photoionization and/or Electrolytic Conductivity Detectors, SW-846, USEPA December 1996.

Comments: QA/QC for samples 27647 and 27649.

Christine M Walters
Analyst

Sandrea R Jackson
Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

EPA Method 8015 Modified
Nonhalogenated Volatile Organics
Total Petroleum Hydrocarbons

Quality Assurance Report

Client:	QA/QC	Project #:	N/A
Sample ID:	01-27-8015 QA/QC	Date Reported:	01-27-04
Laboratory Number:	27647	Date Sampled:	N/A
Sample Matrix:	Methylene Chloride	Date Received:	N/A
Preservative:	N/A	Date Analyzed:	01-27-04
Condition:	N/A	Analysis Requested:	TPH

[illegible]	Cal Date	I-Cal RF	C-Cal RF	% Difference	Accept. Range
Gasoline Range C5 - C10	04-29-03	1.8591E-002	1.8572E-002	0.10%	0 - 15%
Diesel Range C10 - C28	04-29-03	1.5507E-002	1.5492E-002	0.10%	0 - 15%

Blank Conc. (mg/L - mg/Kg)	Concentration	Detection Limit
Gasoline Range C5 - C10	ND	0.2
Diesel Range C10 - C28	ND	0.1
Total Petroleum Hydrocarbons	ND	0.2

Duplicate Conc. (mg/Kg)	Sample	Duplicate	% Difference	Accept. Range
Gasoline Range C5 - C10	0.9	0.9	0.0%	0 - 30%
Diesel Range C10 - C28	ND	ND	0.0%	0 - 30%

Spike Conc. (mg/Kg)	Sample	Spike Added	Spike Result	% Recovery	Accept. Range
Gasoline Range C5 - C10	0.9	250	250	99.6%	75 - 125%
Diesel Range C10 - C28	ND	250	250	100%	75 - 125%

ND - Parameter not detected at the stated detection limit.

References: Method 8015B, Nonhalogenated Volatile Organics, Test Methods for Evaluating Solid Waste, SW-846, USEPA, December 1996.

Comments: QA/QC for samples 27647, 27649 - 27650.

Christine M Walters
Analyst

Landrea R Jackson
Review

CHAIN OF CUSTODY RECORD

11789

Client / Project Name: Giant

Project Location: Giant Rack

Sampler: MJN

Client No.: 97059-007

Sample No./ Identification	Sample Date	Sample Time	Lab Number	Sample Matrix	No. of Containers	BTEX 8021	8015 TPH					Remarks
Spoil #1	1/26/04	14:55	27647	Soil	1	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	1-26-04	1510	Christine M Walters	1/26/04	15:10
Relinquished by: (Signature)			Received by: (Signature)		
Relinquished by: (Signature)			Received by: (Signature)		

320-9675 call

ENVIROTECH INC.
5796 U.S. Highway 64
Farmington, New Mexico 87401
(505) 632-0615

Sample Receipt	Y	N	N/A
Received Intact	✓		
Cool - Ice/Blue Ice	✓		

Western Refining

WNR NYSE

RECEIVED OCD

2011 SEP 13 P 11:44

September 12, 2011

John E. Kieling, Acting Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505

UPS Mail Tracking #: **1Z 881 839 01 5237 0144 (delivery to NMED)**
Certified Mail #: **7010 1870 0000 0709 5003 (delivery to NMOCD)**

Re: Response to June 21, 2011 APPROVAL WITH MODIFICATIONS
INVESTIGATION REPORT GROUP 3
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY
EPA ID# NMD089416416
HWB-WRB-10-001

Dear Mr. Kieling:

Western Refining Southwest, Inc., Bloomfield Refinery (Western) has prepared the following responses to your comments received from the New Mexico Environment Department (NMED) in a letter dated June 21, 2011 on the above referenced investigation report.

NMED Comment No. 1- Section 2.5 (AOC No. 24 Tank Areas 41 and 43), pages 5-6:

Western's Statement: "Tank 43 is not currently in service. There was a small spill of approximately 100 to 150 gallons of oily water that spilled near Tank 43 in 2006."

NMED's Comment: *In future documents, if spills are discussed, provide additional infonnation to describe the cleanup process, management of waste, and the volumes released and recovered.*

> **Western Response No. 1:** Western will incorporate this information in the future when available. It was not included in this particular report because the information does not exist.

NMED Comment No. 2 - Section 5 (Regulatory Criteria), pages 38 and 40:

Western's Statement: *"[t]he ground water cleanup levels are based on New Mexico [Water Quality Control Commission (WQCC)] standards (20.6.2.7 WWNMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WQCC standard nor an MCL is available, then the cleanup level is based on an [Environmental Protection Agency (EPA)] Regional Screening Level. Table 8 presents the ground water cleanup levels, with the applicable cleanup level highlighted."*

NMED's Commitment: *The hierarchy for groundwater screening levels is addressed in Comment 5 of NMED's June 6, 2011, Approval with Modifications Group 2 Investigation Report. In the comment, NMED states, "[i]f neither a WQCC standard nor an MCL is available, Western must use the NMED Soil Screening Levels (SSLs) tap water column found in Table A-I of the August 2009 NMED SSLs for comparison. In the absence of a NMED tap water value, the EPA*

50 County Road 4990, Bloomfield, New Mexico 87413 • 505 632-4101 • www.wnr.com

Regional Screening Level for tap water must be used. This must be applied to future documents." In addition, on page 40, Western states that there are several constituents that do not have a soil or groundwater screening level such as phenanthrene. Phenanthrene is listed in Table A-I of the NMED SSLs including a tap water screening level of 1.10 E-03 ug/L. Check all groundwater data tables to ensure all appropriate screening levels (WQCC standards, EPA MCLs, NMED or EPA tap water level) have been referenced in the data tables in future documents. No revision is necessary.

Western Response No. 2: In future documents, Western will utilize the NMED Tap Water values as directed.

NMED Comment No. 3 - Section 5 (Regulatory Criteria), page 39:

Western's Statement: *"[t]he screening levels that are compared to individual sample results are presented in Table[s] 9, 10, and 11 for soils and Table 14 for ground water."*

NMED's Comment: *The reference to Table 14 for groundwater is a typographical error. Table 16 (Ground Water Analytical Results Summary) is the correct table to reference in this section. Ensure that future documents contain the correct references to tables; no revision is necessary.*

Western Response No. 3: None required.

NMED Comment No. 4 - Section 5 (Regulatory Criteria), pages 39-40:

Western's Statement: *"[a] review of the NMED [Total Petroleum Hydrocarbons (TPH)] Screening Guidelines (dated 2006) indicates that the screening levels were developed based on screening levels and compositional assumptions developed by the Massachusetts Department of Environmental Protection (MADEP)... [t]he TPH screening concentrations were updated using the 2009 MADEP screening levels and the compositional assumptions from the 2006 TPH Screening Guidelines."*

NMED's Comment: *The use of the 2009 MADEP screening levels is addressed in Comment 6 of NMED's June 6, 2011 Approval with Modifications Group 2 Investigation Report. In the comment, NMED states, "[e]ven though the MADEP TPH screening levels have been updated, NMED has not updated nor adopted these screening levels. Western must continue to apply NMED's October 2006 TPH screening levels with the exception of the value developed by Western." The reference to the 2009 MADEP screening levels must be removed from future documents. Western does not indicate which TPH screening level tables (Table 2a: TPH Screening Guidelines for Potable Groundwater (GW-l) or Table 2b: TPH Screening Guidelines – Vapor Migration and Inhalation of Groundwater (GW-2) were used in the Report. Based on the response to Comment 25 from the April 25, 2011 response letter, Table 2a was applied. Future documents must identify the table being referenced in the Regulatory Criteria Section.*

Western Response No. 4: None required.

NMED Comment No. 5 - Section 6.1.3 (AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks), pages 46-47:

Western's Statement: *"[t]he following qualitative risk evaluation is only an initial screening not a substitute for a quantitative risk assessment, which would be developed as a separate risk assessment document... [f]our of the constituents are listed as potential carcinogens based on the NMED and EPA sources referenced in Section 5.0. This could result in the cumulative* *carcinogenic risk level of at least 4.0 E-05, which exceeds the NMED target cumulative risk level of 1.0 E-05 for carcinogens."*

NMED's Comment: *Western provided a qualitative risk evaluation and a quantitative evaluation of the cumulative carcinogenic risk level of 4.0 E-05 for AOC No. 22. Western did not explain or show calculations of how the cumulative carcinogenic risk level was determined or derived. In addition, Western did not discuss any conclusions derived from the qualitative or quantitative cumulative risk evaluation. Because additional investigation at AOC No. 22 is proposed, no revision is necessary. Future documents must clearly explain all evaluations (e.g., provide calculations and conclusions).*

> **Western Response No. 5:** As stated in the report, "four of the constituents are listed as potential carcinogens based on the NMED and EPA sources referenced in Section 5.0. This could result in the cumulative carcinogenic risk level of at least 4.0 E-05." The derivation of the value of 4.0 E-05 was derived by simply multiplying the risk level of 1.0 E-05, which was used to derive the individual screening levels, by four (the number of constituents with concentrations above the screening level).
>
> 1.0 E-05 x 4 = 4.0 E-05
>
> The conclusion is, as stated, that the resulting value of 4.0 E-05 exceeds the NMED target cumulative risk level of 1.0 E-05 for carcinogens. Western will include clear explanation of calculations and derived conclusions in future document.

<u>NMED Comment No. 6 - Section 7 (Conclusions and Recommendations), pages 55-62:</u>

NMED Comment: *Western discusses the conclusions and recommendations for each SWMU and AOC in Section 7. Western requests Corrective Action Complete without Controls for AOC No. 23 (Southeast Holding Ponds) and AOC No. 2S (Auxiliary Warehouse and 90-Day Storage Area). This determination will be made upon completion of the background study. In addition, evaluation of cumulative risk/hazard must be completed at each site. The following must be considered when deciding if an AOC or SWMU has achieved corrective action complete status:*

a. *Soils; compare detections to background concentrations once these are determined.*
b. *At sites containing concentrations of multiple constituents above background, calculate the cumulative risk/hazard using the maximum detection values for each constituent detected (See Section 5 of the NM SSL guidance). If the risk is greater than 1 E-05 or the hazard index is greater than one, then further site-specific evaluation or a site-specific risk assessment is necessary.*
c. *Groundwater; New Mexico considers all groundwater to be a resource. Compare detections to background values once these are established.*
d. *Detections of contaminants in groundwater at concentrations above background levels and the groundwater standards; groundwater must be further evaluated. Determine the sources of contamination.*
e. *Recommend site attribution analysis for metals (demonstrate if metals are site related contaminants or are present at naturally occurring concentrations) in soil and groundwater.*

In each case, Western must be able to support their recommendation for a corrective action complete determination. For example, Western makes varying statements in the Report that indicate soil and groundwater contamination do not "present", "indicate", or "pose" an unacceptable risk to human health and the environment but this conclusion was not *substantiated. Any conclusions made by Western must be supported by data or left out of the Report.*

Upon completion of the background study, Western must re-evaluate the data collected at each AOC or SWMU to determine if additional corrective action is warranted or if the AOC or SWMU qualifies for a corrective action complete status. Western may be required to submit a work plan, if additional work is necessary, or provide additional information to demonstrate that corrective action is complete.

Western Response No. 6: None required.

NMED Comment No. 7 - General Comments about all the Tables

NMED's Comment: *Many of the tables included Regional Screening Levels (RSLs) rather than NMED SSLs. It is not clear why RSLs were used rather than the NMED SSLs. In addition, the RSLs are based on a carcinogenic risk level of 1.0 E-06. The State of New Mexico applies a carcinogenic risk level of 1.0 E-05. All carcinogenic RSLs must be modified to reflect a 1.0 E-05 risk level. Modifying the RSLs accordingly does not appear to result in any changes to the conclusions of risk. However, for future reports/investigations, ensure that all screening levels applied are consistent with NMED target risk levels.*

Western Response No. 7: Western used the EPA RSLs as specified in the Order issued by NMED on July 27, 2007, including adjusting the soil RSLs to a risk level of 1.0E-05 as per the Order. In future documents, Western will use the NMED Tap Water Levels as directed above in Comment No. 2 and will adjust the EPA water RSLs to a risk level of 1.0 E-05.

NMED Comment No. 8 - Table 6 (Residential Soil Screening Levels) and Table 7 (Non-Residential Soil Screening Levels):

NMED's Comment: *Western applied the chromium III Residential and Industrial value rather than the chromium VI value. Western must apply the chromium VI standard unless an explanation is provided for using the chromium III value. This applies to all future submittals. No revision is necessary.*

Western Response No. 8: Western will utilize the chromium VI screening levels in future documents unless information is available to support use the chromium III screening levels.

NMED Comment No. 9 - Table 8 (Ground Water Screening Levels):

NMED's Comment: *Table 8 contains some incorrect screening levels. For example, Table 8 identifies the EPA screening level for tap water for benzyl alcohol as 18,000 ug/L; the correct screening level is 3,700 ug/L. Review the data table to check for errors.*

Table 8 also reports WQCC standards, EPA tap water screening levels, and MCLs. The NM tap water screening levels must also be included in Table 8 (see Comment 2). This must be added in future documents; no revision is necessary.

Western Response No. 9: The EPA screening level for benzyl alcohol is 18,000 ug/l in the April 2009 version of the EPA tables. The screening level of the 3,700 ug/L was included in the June 2011 EPA Regional Screening Levels, which was published after this Investigation Report was published. In addition, per earlier discussions with NMED, the decision was made to use the same set of EPA screening level tables throughout at least the first set of investigation reports for the RFI units. The purpose being to provide consistency in screening levels across the various areas of investigation.

NMED Comment No. 10 - Table 9 (Group 3 Soil Analytical Results Summary - SWMUs No.4 and 5, AOC No. 23 and AOC No. 25), Table 10 (Group 3 Soil Analytical Results Summary - AOC No. 22 (product Loading Rack) and AOC No.26), and Table 11 (Group 3 Soil Analytical Results Summary - AOC No. 22 (Crude Receiving Rack) and AOC No. 24):

NMED's Comment: *Western applies the calculated residential screening level of 1.80 E+03 mg/kg to Tables 9, 10, and 11 of the Report. However, Appendix I (TPH Screening Level Calculations and Laboratory Chromatograms) lists a value of 1.83 E+03 mg/kg for the residential scenario. Address this discrepancy in the response letter; no revision is necessary.*

Western Response No. 10: The value of 1.8 E+03 is the result of rounding the value of 1.83 E +03 to two significant digits.

NMED Comment No. 11 - Table 16 (Ground Water Analytical Results Summary):

NMED's Comment: *Table 16 does not include the NM tap water screening levels. In future reports, the NM tap water screening levels must be included in addition to the WQCC standards, EPA MCLs, and EPA tap water screening levels (see Comment 2). Western also applies the #3 and #6 fuel oil groundwater TPH screening level for Table 16, which is indicated in the footnotes of the table. The application of the #3 and #6 fuel oil groundwater TPH screening level is not discussed in Section 5 (Regulatory Criteria) and Western did not discuss the TPH screening level guidelines for groundwater and how they determined which criteria to use. In future documents provide a discussion explaining the selection of groundwater TPH screening levels. Provide an explanation for using the #3 and #6 fuel oil screening level in the response letter. No revision is necessary.*

Western Response No. 11: A review of the detections of TPH in groundwater indicates that the impacted area is centered at the product loading racks with significantly lower concentrations extending down-gradient toward SWMU No. 4. As discussed in Section 1.0, "Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and LPG." Of the possible products to have been have handled at the product loading racks (i.e., gasoline, diesel fuels, jet fuels, kerosene, and fuel oils), fuel oils have the lowest applicable screening level in the NMED TPH guidance document. The value of 1.34 mg/l (#3 and #6 fuel oils) was used in Table 16 for comparison the TPH detections in the area of the product loading racks and the down-gradient area.

NMED Comment No. 12 - Figures 3 (Cross Section A-A', West to East) and 4 (Cross Section B-B', North to South):

NMED's Comment: *Figures 3 and 4 show the cross sections selected monitoring and recovery wells at the facility, but the figures do not provide all information for all the wells (e.g., screened intervals). Figure 3 does not include the screened intervals for wells MW-40, MW-41, RW-42, and MW-5. Figure 4 does not include the screened intervals for MW-1 and MW-3. Revise the figures and depict the screened intervals for all wells in future reports. No revision is necessary.*

Western Response No. 12: The drilling logs for MW-40 and MW-41 do not include information as to where the screen was set. Future reports will include the screen intervals for all wells for which such information is available.

NMED Comment No. 13 - Comment 37/Response 37 (Response Letter dated April 28, 2011):

NMED's January 24, 2011 NOD Comment 37 states, "[p]rovide more information for the crude sampling rack east of AOC No. 22, the L.P.G. loading area north of SWMU No.4, the diesel AST southwest of AOC No. 25, and the gasoline pumps west of AOC No. 25 to determine whether they are operational/inactive. Include a discussion of any historical releases, description of the activities conducted at the SWMUs/AOCs, and indicate if these SWMUs/AOCs should be included in the Phase II investigation."

Western Response No. 13: These locations were in existence at the time NMED issued the July 27, 2007 Order and were never identified as SWMUs or AOCs. There have not been any releases or changes in operation since that time to indicate that they should be considered either a SWMU or AOC.

The crude sampling rack once consisted of a centrifuge and counter used to collect very small quantities of crude oil to support an evaluation of the quality of crude delivered to the crude receiving racks. The sampling rack has not been in-service since 1996. There are no documented releases to indicate environmental impacts at this location.

The LPG loading area, which is currently no longer operations since there is currently no LPG storage at the facility, was used for loading LPG to tanker trucks. The very nature of LPG (low vapor pressure - evaporates at temperatures as low as -33 to -44 degrees Fahrenheit at atmospheric pressure) means that the loading activities would not have the potential to impact soil or groundwater. The diesel (aboveground storage tank located southwest of AOC No. 25), which was owned and operated by the Transportation Department of Giant, not the refinery, has not been in use since January 2009. There have not been any documented releases from this tank. The diesel pumps located west of AOC No. 25 has not been in service since January 2009.

NMED Comment No. 13 (Continued)

NMED agrees that the LPG loading area should not be considered as a potential SWMU or AOC. However, it is possible that contaminant releases occurred at the crude sampling rack, diesel AST, and diesel/gasoline pumps. The July 27, 2007 Order (Order) does not make a distinction regarding the owner or operators for trucking and refining. The crude sampling rack, diesel AST, and diesel/gasoline pumps are located within the refinery boundary and are associated with the facility operations; therefore these sites are subject to corrective action under the Order. In accordance with Section IV.B.8 (Newly Discovered SWMU's and AOC's) of the Order, Western must submit an Assessment Report for the crude sampling rack, diesel AST, and diesel/gasoline pumps. After review of the report, NMED will determine if further investigation is warranted at these locations. If NMED determines additional investigation is necessary, Western will be notified in writing and the Order will be modified to add the sites as AOCs to the list in Section IV.B.3, and the investigation schedule in Section IV.B.5 and Section XI, Table 1.

Additional investigation activities may be required for some of the Group 3 SWMUs. However, these determinations are deferred until after the background study has been completed. Western must evaluate each site to determine if additional corrective action is necessary once *the background study is completed. Western must submit a work plan, if additional work is determined to be necessary. If additional investigation activities are not necessary, Western may submit requests for certificates of completion that include the additional information required by this letter for each site.*

Western must address all comments where a response is required by this Approval with Modifications. A response letter must be submitted to NMED on or before September 12, 2011. Western must submit an AOC Assessment Report for the crude sampling rack, diesel AST, and diesel/gasoline pumps to NMED on or before October 17, 2011. The AOC Assessment Report must be prepared in accordance with Section IV.B.8 of the Order.

Western Response No. 13 (continued): None required.

If you have questions regarding the above responses or the enclosures, please contact me at (505) 632-4171.

Sincerely,

Kelly Robinson

PP James R. Schmaltz
Health, Safety, Environmental, and Regulatory Director
Western Refining Southwest, Inc., Bloomfield Refinery

cc: Dave Cobrain – NMED HWB
Leona Tsinnajinnie – NMED HWB
Carl Chavez - NMOCD
Allen Hains – Western Refining El Paso
Kelly Robinson – Western Refining Bloomfield
Scott Crouch - RPS

Chavez, Carl J, EMNRD

From: Martinez, Cynthia, NMENV
Sent: Tuesday, June 21, 2011 2:46 PM
To: Cobrain, Dave, NMENV; Kieling, John, NMENV
Cc: Chavez, Carl J, EMNRD; Allen.Hains@wnr.com
Subject: FW: Western Refining: Bloomfield, Approval with Modification Letters for Grps 3 & 4
Attachments: WRB 11-002 Invest Rpt Grp 4 Appr w_Mod.pdf; WRB 10-001 Invest Rpt Grp 3 Appr w_Mod.pdf

Please see attachments.

From: Tsinnajinnie, Leona, NMENV
Sent: Tuesday, June 21, 2011 11:36 AM
To: Martinez, Cynthia, NMENV
Subject: Western Refining: Bloomfield, Approval with Modification Letters for Grps 3 & 4

Hi Cynthia-

Attached are the scanned copies of the Approval with Modification letters for Western Refining, Bloomfield Groups 3 & 4. I placed the originals on your desk. Please send out the original today and everyone else (including John) can receive an e-mailed copy of the letter.

Thanks,
Leona

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Leona Tsinnajinnie
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Bldg 1
Santa Fe, NM 87505-6303

Main HWB Phone: (505) 476-6000
Direct Office Phone: (505) 476-6057
Fax: (505) 476-6030 or (505) 476-6060
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

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www.nmenv.state.nm.us

DAVE MARTIN
Secretary

RAJ SOLOMON, P E.
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 21, 2011

Mr. Randy Schmaltz
Environmental Manager
Western Refining, Southwest, Inc.
Bloomfield Refinery
P.O. Box 159
Bloomfield, New Mexico 87413

RE: APPROVAL WITH MODIFICATIONS
INVESTIGATION REPORT GROUP 3
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY
EPA ID# NMD089416416
HWB-WRB-10-001

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) has received Western Refining Southwest, Inc., Bloomfield Refinery's (Western) *Investigation Report Group 3 (SWMU No. 4 Transportation Terminal Sump, SWMU No. 5 Heat Exchanger Bundle Cleaning Area, AOC No. 22 Product Loading Rack and Crude Receiving Loading Racks, AOC No. 23 Southeast Holding Ponds, AOC No. 24 Tank Areas 41 and 43, AOC No. 25 Auxiliary Warehouse and 90-day Storage Area, and AOC No. 26 Tank Area 44 and 45)* (Report) dated December 2009. NMED has reviewed the Report and hereby issues this Approval with the following modifications.

1. Section 2.5 (AOC No. 24 Tank Areas 41 and 43), pages 5-6:

Western's Statement: "Tank 43 is not currently in service. There was a small spill of approximately 100 to 150 gallons of oily water that spilled near Tank 43 in 2006."

NMED's Comment: In future documents, if spills are discussed, provide additional information to describe the cleanup process, management of waste, and the volumes released and recovered.

2. Section 5 (Regulatory Criteria), pages 38 and 40:

Western's Statement: "[t]he ground water 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 maximum contaminant level (MCL), in which case the lower of the two values is selected as the cleanup level. If neither a WQCC standard nor an MCL is available, then the cleanup level is based on an [Environmental Protection Agency (EPA)] Regional Screening Level. Table 8 presents the ground water cleanup levels, with the applicable cleanup level highlighted."

NMED's Comment: The hierarchy for groundwater screening levels is addressed in Comment 5 of NMED's June 6, 2011 Approval with Modifications Group 2 Investigation Report. In the comment, NMED states, "[i]f neither a WQCC standard nor an MCL is available, Western must use the NMED Soil Screening Levels (SSLs) tap water column found in Table A-1 of the August 2009 NM SSLs for comparison. In the absence of a NMED tap water value, the EPA Regional Screening Level for tap water must be used. This must be applied to future documents." In addition, on page 40, Western states that there are several constituents that do not have a soil or groundwater screening level such as phenanthrene. Phenanthrene is listed in Table A-1 of the NM SSLs including a tap water screening level of 1.10 E-03 ug/L. Check all groundwater data tables to ensure all appropriate screening levels (WQCC standards, EPA MCLs, NM or EPA tap water level) have been referenced in the data tables in future documents. No revision is necessary.

3. Section 5 (Regulatory Criteria), page 39:

Western's Statement: "[t]he screening levels that are compared to individual sample results are presented in Table[s] 9, 10, and 11 for soils and Table 14 for ground water."

NMED's Comment: The reference to Table 14 for groundwater is a typographical error. Table 16 (Ground Water Analytical Results Summary) is the correct table to reference in this section. Ensure that future documents contain the correct references to tables; no revision is necessary.

4. Section 5 (Regulatory Criteria), pages 39-40:

Western's Statement: "[a] review of the NMED [Total Petroleum Hydrocarbons (TPH)] Screening Guidelines (dated 2006) indicates that the screening levels were developed based on screening levels and compositional assumptions developed by the Massachusetts Department of Environmental Protection (MADEP)...[t]he TPH screening concentrations were updated using the 2009 MADEP screening levels and the compositional assumptions from the 2006 TPH Screening Guidelines."

NMED's Comment: The use of the 2009 MADEP screening levels is addressed in Comment 6 of NMED's June 6, 2011 Approval with Modifications Group 2 Investigation Report. In the comment, NMED states, "[e]ven though the MADEP TPH screening levels have been updated, NMED has not updated nor adopted these screening levels. Western must continue to apply NMED's October 2006 TPH screening levels with the exception of the value developed by Western." The reference to the 2009 MADEP screening levels must be removed from future documents.

Western does not indicate which TPH screening level tables (Table 2a: TPH Screening Guidelines for Potable Groundwater (GW-1) or Table 2b: TPH Screening Guidelines – Vapor Migration and Inhalation of Groundwater (GW-2)) were used in the Report. Based on the response to Comment 25 from the April 25, 2011 response letter, Table 2a was applied. Future documents must identify the table being referenced in the Regulatory Criteria Section.

5. **Section 6.1.3 (AOC No. 22 – Product Loading Racks and Crude Receiving Loading Racks), pages 46-47:**

Western's Statement: "[t]he following qualitative risk evaluation is only an initial screening not a substitute for a quantitative risk assessment, which would be developed as a separate risk assessment document...[f]our of the constituents are listed as potential carcinogens based on the NMED and EPA sources referenced in Section 5.0. This could result in the cumulative carcinogenic risk level of at least 4.0 E-05, which exceeds the NMED target cumulative risk level of 1.0 E-05 for carcinogens."

NMED's Comment: Western provided a qualitative risk evaluation and a quantitative evaluation of the cumulative carcinogenic risk level of 4.0 E-05 for AOC No. 22. Western did not explain or show calculations of how the cumulative carcinogenic risk level was determined or derived. In addition, Western did not discuss any conclusions derived from the qualitative or quantitative cumulative risk evaluation. Because additional investigation at AOC No. 22 is proposed, no revision is necessary. Future documents must clearly explain all evaluations (e.g., provide calculations and conclusions).

6. **Section 7 (Conclusions and Recommendations), pages 55-62:**

NMED Comment: Western discusses the conclusions and recommendations for each SWMU and AOC in Section 7. Western requests Corrective Action Complete without Controls for AOC No. 23 (Southeast Holding Ponds) and AOC No. 25 (Auxiliary Warehouse and 90-Day Storage Area). This determination will be made upon completion of the background study. In addition, evaluation of cumulative risk/hazard must be completed at each site. The following must be considered when deciding if an AOC or SWMU has achieved corrective action complete status:

a. Soils; compare detections to background concentrations once these are determined.

b. At sites containing concentrations of multiple constituents above background, calculate the cumulative risk/hazard using the maximum detection values for each constituent detected (See Section 5 of the NM SSL guidance). If the risk is greater than 1 E-05 or the hazard index is greater than one, then further site-specific evaluation or a site-specific risk assessment is necessary.

c. Groundwater; New Mexico considers all groundwater to be a resource. Compare detections to background values once these are established.

d. Detections of contaminants in groundwater at concentrations above background levels and the groundwater standards; groundwater must be further evaluated. Determine the sources of contamination.

e. Recommend site attribution analysis for metals (demonstrate if metals are site related contaminants or are present at naturally occurring concentrations) in soil and groundwater.

In each case, Western must be able to support their recommendation for a corrective action complete determination. For example, Western makes varying statements in the Report that indicate soil and groundwater contamination do not "present", "indicate", or "pose" an unacceptable risk to human health and the environment but this conclusion was not substantiated. Any conclusions made by Western must be supported by data or left out of the Report.

Upon completion of the background study, Western must re-evaluate the data collected at each AOC or SWMU to determine if additional corrective action is warranted or if the AOC or SWMU qualifies for a corrective action complete status. Western may be required to submit a work plan, if additional work is necessary, or provide additional information to demonstrate that corrective action is complete.

7. General Comments about all the Tables

NMED's Comment: Many of the tables included Regional Screening Levels (RSLs) rather than NMED SSLs. It is not clear why RSLs were used rather than the NMED SSLs. In addition, the RSLs are based on a carcinogenic risk level of 1.0 E-06. The State of New Mexico applies a carcinogenic risk level of 1.0 E-05. All carcinogenic RSLs must be modified to reflect a 1.0 E-05 risk level. Modifying the RSLs accordingly does not appear to result in any changes to the conclusions of risk. However, for future reports/investigations, ensure that all screening levels applied are consistent with NMED target risk levels.

8. Table 6 (Residential Soil Screening Levels) and Table 7 (Non-Residential Soil Screening Levels):

NMED's Comment: Western applied the chromium III Residential and Industrial value rather than the chromium VI value. Western must apply the chromium VI standard unless an explanation is provided for using the chromium III value. This applies to all future submittals. No revision is necessary.

9. Table 8 (Ground Water Screening Levels):

NMED's Comment: Table 8 contains some incorrect screening levels. For example, Table 8 identifies the EPA screening level for tap water for benzyl alcohol as 18,000 ug/L; the correct screening level is 3,700 ug/L. Review the data table to check for errors.

Table 8 also reports WQCC standards, EPA tap water screening levels, and MCLs. The NM tap water screening levels must also be included in Table 8 (*see* Comment 2). This must be added in future documents; no revision is necessary.

10. Table 9 (Group 3 Soil Analytical Results Summary – SWMUs No. 4 and 5, AOC No. 23 and AOC No. 25), Table 10 (Group 3 Soil Analytical Results Summary – AOC No. 22 (Product Loading Rack) and AOC No.26), and Table 11 (Group 3 Soil Analytical Results Summary – AOC No. 22 (Crude Receiving Rack) and AOC No. 24):

NMED's Comment: Western applies the calculated residential screening level of 1.80 E+03 mg/kg to Tables 9, 10, and 11 of the Report. However, Appendix I (TPH Screening Level Calculations and Laboratory Chromatograms) lists a value of 1.83 E+03 mg/kg for the residential scenario. Address this discrepancy in the response letter; no revision is necessary.

11. Table 16 (Ground Water Analytical Results Summary):

NMED's Comment: Table 16 does not include the NM tap water screening levels. In future reports, the NM tap water screening levels must be included in addition to the WQCC standards, EPA MCLs, and EPA tap water screening levels (*see* Comment 2).

Western also applies the #3 and #6 fuel oil groundwater TPH screening level for Table 16, which is indicated in the footnotes of the table. The application of the #3 and #6 fuel oil groundwater TPH screening level is not discussed in Section 5 (Regulatory Criteria) and Western did not discuss the TPH screening level guidelines for groundwater and how they determined which criteria to use. In future documents provide a discussion explaining the selection of groundwater TPH screening levels. Provide an explanation for using the #3 and #6 fuel oil screening level in the response letter. No revision is necessary.

12. Figures 3 (Cross Section A-A', West to East) and 4 (Cross Section B-B', North to South):

NMED's Comment: Figures 3 and 4 show the cross sections of selected monitoring and recovery wells at the facility, but the figures do not provide all information for all the wells (e.g., screened intervals). Figure 3 does not include the screened intervals for wells MW-40, MW-41, RW-42, and MW-5. Figure 4 does not include the screened intervals for MW-1 and MW-3. Revise the figures and depict the screened intervals for all wells in future reports. No revision is necessary.

13. Comment 37/Response 37 (Response Letter dated April 28, 2011):

NMED's January 24, 2011 NOD Comment 37 states, "[p]rovide more information for the crude sampling rack east of AOC No. 22, the L.P.G. loading area north of SWMU No. 4, the diesel AST southwest of AOC No. 25, and the gasoline pumps west of AOC No. 25 to determine whether they are operational/inactive. Include a discussion of any historical releases, description of the activities conducted at the SWMUs/AOCs, and indicate if these SWMUs/AOCs should be included in the Phase II investigation."

Western's Response: "[t]hese locations were in existence at the time NMED issued the July 27, 2007 Order and were never identified as SWMUs or AOCs. There have not been any releases or changes in operation since that time to indicate that they should be considered either a SWMU or AOC.

The crude sampling rack once consisted of a centrifuge and counter used to collect very small quantities of crude oil to support an evaluation [of] the quality of crude delivered to the crude receiving racks. The sampling rack has not been in-service since 1996. There are no documented releases to indicate environmental impacts at this location.

The LPG loading area, which is operation, is used for loading LPG to tanker trucks. The very nature of LPG (low vapor pressure – evaporates at temperatures as low as -33 to -44 degrees Fahrenheit at atmospheric pressure) means that the loading activities would not have the potential to impact soil or groundwater.

The diesel [aboveground storage tank (AST)] southwest of AOC No. 25, which was owned and operated by the Transportation Department of Giant, not the refinery, has not been in use since

January 2009 and there have not been any documented releases from this tank. The diesel pumps located west of AOC No. 25 have not been in service since January 2009."

NMED's Comment: NMED agrees that the EPG loading area should not be considered as a potential SWMU or AOC. However, it is possible that contaminant releases occurred at the crude sampling rack, diesel AST, and diesel/gasoline pumps. The July 27, 2007 Order (Order) does not make a distinction regarding the owner or operators for trucking and refining. The crude sampling rack, diesel AST, and diesel/gasoline pumps are located within the refinery boundary and are associated with the facility operations; therefore these sites are subject to corrective action under the Order. In accordance with Section IV.B.8 (Newly Discovered SWMU's and AOC's) of the Order, Western must submit an Assessment Report for the crude sampling rack, diesel AST, and diesel/gasoline pumps. After review of the report, NMED will determine if further investigation is warranted at these locations. If NMED determines additional investigation is necessary, Western will be notified in writing and the Order will be modified to add the sites as AOCs to the list in Section IV.B.3, and the investigation schedule in Section IV.B.5 and Section XI, Table 1.

Additional investigation activities may be required for some of the Group 3 SWMUs. However, these determinations are deferred until after the background study has been completed. Western must evaluate each site to determine if additional corrective action is necessary once the background study is completed. Western must submit a work plan, if additional work is determined to be necessary. If additional investigation activities are not necessary, Western may submit requests for certificates of completion that include the additional information required by this letter for each site.

Western must address all comments where a response is required by this Approval with Modifications. A response letter must be submitted to NMED on or before **September 12, 2011**. Western must submit an AOC Assessment Report for the crude sampling rack, diesel AST, and diesel/gasoline pumps to NMED on or before **October 17, 2011**. The AOC Assessment Report must be prepared in accordance with Section IV.B.8 of the Order.

If you have any questions regarding this letter, please contact Leona Tsinnajinnie of my staff at (505) 476-6057.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
L. Tsinnajinnie, NMED HWB
C. Chavez, OCD
A. Hains, Western Refining Company, El Paso, Texas

File: HWB-WRB-10-001 and Reading 2010

Western Refining

WNR LISTED NYSE

RECEIVED OCD

2011 MAY 31 P 12:00

May 26, 2011

Hope Petrie
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Certified Mailer #: 7010 3090 0001 3450 2524 (to NMED)
7010 3090 0001 3450 2517 (to OCD)

Re: Giant Refining Company, Bloomfield Refinery Order No. HWB 07-34 (CO)
Group No. 3 Investigation Report Replacement Disc

Dear Mrs. Petrie:

On May 17, 2011, Western submitted to the New Mexico Environment Department (NMED) via e-mail replacement tables pertaining to the Group No. 3 Investigation Report dated April 2011. The replacement tables were developed to help facilitate NMED's review of this report. The revised tables reflect the following changes/additions:

- Table 6 and 7: Additional columns were added to include the respective values for DAF 11.25 calculated values.
- Table 9 and 10: The screening valve for arsenic was corrected.
- Table 11: The corrected arsenic value was included and revised footnotes were included to better explain the source of the screening level values.

Please find enclosed a replacement disc containing a copy of the Group No. 3 Investigation Report that incorporates the above changes, as requested.

If you have any questions, please feel free to contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Health, Safety, Environmental, and Regulatory Director
Western Refining Southwest, Inc. - Bloomfield Refinery

cc: Dave Cobrain – NMED HWB
Carl Chavez – NMOCD (w/attachment)
Allen Hains - WNR

Western Refining

WNR LISTED NYSE

April 28, 2011

James Bearzi, Bureau Chief
New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

UPS Tracking #: 1Z F9F 647 01 9430 9070

RE: Response to January 24, 2011 NOTICE OF DISAPPROVAL
Investigation Report Group 3
Western Refining Southwest, Inc. – Bloomfield Refinery
EPA ID # NMD089416416
HWB-WRB-10-001

Dear Mr. Bearzi,

Western Refining Southwest, Inc. – Bloomfield Refinery has prepared the following responses to your comments on the above referenced investigation report. The revised Group 3 Investigation Report is enclosed.

Comment 1

In Section 3.3 (Soil Boring Installation, Field Screening, and Soil Sample Collection), under SWMU No.4, page 10, the Respondents state, "[o]ne soil boring (SWMU 4-1) was drilled in a location west of Bullet 23 within the vicinity of the former transportation sump." It is not clear from the statement if "Bullet 23" is referring to bullet tank 23. Soil boring location SWMU 4-1 is provided in Figure 6 (SWMU No.4 Sample Location Map); however, the location of "Bullet 23" was not included. Revise the Report to identify the structure of "Bullet 23" and show it on Figure 6.

> **Response 1:** Bullet tank 23 was labeled as "B-23" on Figures No. 2, 5, 17, 18, 19, 20, and 21 and will also be labeled on revised Figure 6 as directed. The text in Section 3.3 has been revised to refer to "Bullet Tank 23."

Comment 2

The Respondents discuss monitoring well development and groundwater sampling in various sections throughout the Report, including Section 3.4 (Monitoring Well Installation, Completion, and Development), Section 3.6 (Ground Water Sampling and Vadose Zone Vapor Sampling), Section 4.5 (Monitor Well Development), Section 6.4 (Ground Water Sampling) and Appendix F (Field Methods). Each Section must be referenced to know what monitoring well development and groundwater sampling activities occurred during the investigation. Revise the Report to include one section, and subsections as appropriate, that addresses all monitoring well development and groundwater sampling activities (e.g. sampling methods and procedures), or include all details in an Appendix (e.g., Appendix F) and reference the Section or Appendix throughout the Report, where appropriate.

50 County Road 4990, Bloomfield, New Mexico 87413 • 505 632-4101 • www.wnr.com

Response 2: Western agrees that the report format, as prepared pursuant to the NMED July 27, 2007 Order and previous guidance, is redundant and that combining information into one section with reference to Appendices, as necessary, will result in a better deliverable. The report format has been revised, as directed.

Section 3 has been consolidated with the scope of activities for soil sampling, monitoring well installation and sample collection combined into Section 3.3. Section 3.5 (Soil Boring Plugging and Abandonment) has been moved to Section 4.3. Sections 3.7 (Decontamination Procedures) and 3.9 (Field Equipment Calibration) have been relocated to Appendix E Field Methods.

Section 4 has been reordered as follows; 4.1 Surface Conditions remains unchanged, 4.3 Subsurface Conditions has been moved up to Section 4.2, Section 4.2 Exploratory Drilling Investigations has been moved to Section 4.3 and is now titled, Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment. Section 4.6 Ground Water Conditions, now appears as Section 4.5 and similarly, Section 4.7 Surface Water Conditions has been moved up to Section 4.6. A new Section 4.7 has been created to discuss the vadose zone vapor sampling, which was presented in Section 6.7.

As the soil sampling activities are now discussed in Section 4.3 and Appendix E Field Methods, Section 6.1 has been changed from a discussion on soil sampling to a discussion on the soil analytical results. An explanation of the soil chemical analytical methods was previously located in Sections 3.3 and 6.3; it is now consolidated into one location in Section 6.1. The discussion on field screening methods has been moved primarily to Appendix E Field Methods. The discussion on groundwater sampling, which appeared in part in Sections 3.6 and 6.4, has been consolidated to Section 4.4 and Appendix E Field Methods. Section 6.5 General Ground Water Chemistry has been moved to Section 6.3. Section 6.6 Ground Water Chemical Analytical Results has been moved to Section 6.2.

Comment 3

In Section 3.6 (Ground Water Sampling and Vadose Zone Vapor Sampling), pages 14 and 15, the Respondents list the analytes and analytical methods conducted for the groundwater samples. The Investigation Work Plan Group 3, dated June 2008 (Work Plan) required the analysis of manganese as part of the general chemistry parameters. Manganese was not listed in Section 3.6 but was analyzed. Further, the analytical information provided in Section 3.6 does not correspond with the groundwater information provided in Section 6.6 (Groundwater Chemical Analytical Results) (e.g., Section 6.6 includes the analyses of manganese; however, manganese was the only general chemistry parameter not addressed in Section 3.6). Revise the Report to clarify these discrepancies and provide the correct information. The Respondents may choose to cross-reference a section containing the appropriate information, rather than listing the information twice.

Response 3: The description of the chemical analyses performed has been revised and the results have been consolidated into one section, Section 6.2.

Comment 4

In Section 3.6 (Ground Water Sampling and Vadose Zone Vapor Sampling), page 15, bullet 9, the Respondents list analysis for "[d]issolved metals (iron, calcium, magnesium, potassium, and sodium) by USEPA method 6010B." In Section 5.8 (Chemical Analyses), page 14 (Work Plan), *the Respondents state, "[i]n addition, groundwater samples will also be analyzed for the following general chemistry parameters" and then lists bicarbonate, chloride, sulfate, calcium, magnesium, sodium, potassium, manganese, nitrate/nitrite, and ferric/ferrous iron. The Respondents do not include a reference to dissolved metals in the Work Plan, nor indicate that the general chemistry parameters would be collected as dissolved. This also does not correspond with the analytical information provided in Section 6.6 (Ground Water Chemical Analytical Results) of the Report. Revise the Report to clarify this discrepancy. If water samples were collected for dissolved metals analysis in addition to sample collection for total metals analysis, the Report must address the sampling methods associated with collecting dissolved samples (e.g., 0.45 micronfilter use).*

Response 4: Section 6.2 has been revised to accurately list all groundwater analyses conducted. There were some additional analyses performed that were not required in the Work Plan and these are noted. A discussion on sample collection methods for dissolved analyses has been added to Appendix E.

Comment 5

In Section 3.6 (Ground Water Sampling and Vadose Zone Vapor Sampling), page 15, the Respondents state, "[t]he depth to groundwater and depth-to-SPH were measured to the nearest 0.01 ft and recorded relative to the surveyed well casing rim." The Respondents do not identify the instrument used to collect the depth to water and depth to separate phase hydrocarbon (SPH) measurements. Revise the Report to provide the instrument(s) used to collect these measurements, and revise this section to address how the monitoring wells were purged and the amount purged. Alternatively, reference Appendix F (see also Comment 2).

Response 5: The type of instrument used for fluid level measurements and the discussion on well purging is included in Appendix E.

Comment 6

The Respondents discuss quality assurance/quality control measures in Section 3.8 and address the collection of equipment blanks, field duplicates, and field blanks. The Respondents do not discuss the use of trip blanks. Revise the Report to discuss trip blanks, if used. If trip blanks were not used, provide a discussion of why the trip blanks were not included with the sample shipments to and from the laboratory.

Response 6: Trip blanks were collected and analyzed and the discussion is included in Appendix H - Quality Assurance/Quality Control Review.

Comment 7

In Section 3.10 (Collection and Management of Investigation Derived Waste), page 17, the Respondents state, "[a] total of three composite samples were collected from drums containing soil with known constituent concentrations above NMED residential screening levels. A composite sample was collected to characterize soil for waste disposal from AOC No. 24, AOC No. 26, AOC No. 22, and SWMU No. 4. Each composite soil sample was analyzed for the following: [Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX)] and [Methyl tertiary butyl ether (MTBE)] by EPA Method 8021B; Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8310; TCLP RCRA 8 Metals by EPA Method 6010B; and Ignitability, Corrosivity, and Reactivity." Revise the Report to explain how the composite samples were collected so that VOC loss was minimized (e.g., soils were mixed in a steel bowl and placed into a four ounce *glass jar; soil samples were placed directly into a four ounce jar and compacted for zero headspace). Homogenized samples analyzed for BTEX are inappropriate because of the potential loss of volatiles. All future samples analyzed for VOCs must be collected as discrete samples unless the composite sampling method is approved by NMED.*

Response 7: The information in Section 3.10 has been moved to Section 3.4 and was revised to include additional explanation on the collection of IDW samples for analysis of volatile organic constituents. The "composite" samples collected for analysis of volatile constituents were collected as individual aliquots that were placed directly into the sample container and compacted to reduce headspace.

Comment 8

In Section 4.3 (Subsurface Conditions), page 21, the Respondents describe the underground piping associated with AOC No. 22, AOC No. 24, and AOC No. 26. In accordance with the Order, Section X.C.13 Item 2, utilities must be shown on the site plan/figures. Provide and label all utilities on all figures; New Mexico One Call, Inc. color coding may be used.

Response 8: The site base map has been revised to include updated depictions of the underground pipelines and this is reflected in each of the individual figures.

Comment 9

In Section 4.4 (Soil Boring Installation, Monitoring Well Construction, and Boring Abandonment) and Section 6.1 (Soil Sampling), the Respondents provide an adequate detailed discussion of the activities associated with soil sampling. Descriptions of the methods used for groundwater sampling are not as detailed. Revise Section 4 (Field Investigation Results) of the Report to provide more information regarding type and purpose of field investigation activities performed, field screening measurements, and sampling results for groundwater, and expand Section 6.4 (Ground Water Sampling) to, include more information that explains the methods used for sample logging, and field screening, and field screening results (see also Comment 2).

Response 9: Additional discussion has been added regarding the groundwater sampling activities and it appears in Appendix E. The discussion on the type and purpose of field investigation activities has been expanded. The reason that there is not a similar discussion for groundwater as for soils regarding sample logging and field screening is because we do not log groundwater samples or field screen groundwater samples like we do soil samples. If we encounter groundwater in a soil boring, then we collect a sample; we do not attempt to select when to collect a groundwater sample based on any field observations other than the presence of saturation.

Comment 10

In Section 4.4 (Soil Boring Installation, Monitoring Well Construction, and Boring Abandonment), the Respondents describe the methods and details of soil boring installation, monitoring well construction, and soil boring abandonment activities. However, the Respondents do not use the same format when describing the investigation details for each SWMU or AOC. Examples included:

a. The Respondents address the number of surface samples and soil borings installed at SWMU No.5, AOC No. 22, AOC No. 24, AOC No. 25, AOC No. 26, but this information was not included for SWMU No.4.

b. *The Respondents discuss impacts being detected or not detected based on field screening results and visual or olfactory observations for some SWMUs and AOCs, while other descriptions do not include this information. For example, AOC No. 22, page 24, the Respondents state, "[t]here was no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to a depth of 10 feet bgl [below ground level]." This information was not included for AOC 24-5 and AOC 24-6; the Respondents state, on page 28 that "[o]n April 8, 2009 the drilling rig was set up on location AOC 24-5 [and AOC 24-6]. Sample collection was accomplished using the HSA drilling method and split spoon samplers. The sampling terminated at 10 feet bgl. The borehole was grouted to the surface on April 9, 2009." Revise this Section of the Report to provide consistent information when describing investigation details for each SWMU and AOC.*

Response 10: The discussion on the site investigation details has been revised to provide a consistent presentation for each SWMU/AOC.

Comment 11

In Section 4.4 (Soil Boring Installation, Monitoring Well Construction, and Boring Abandonment), under AOC 22-13, the Respondents state, "[g]round water sample AOC 22-13GW was collected using a disposable bailer. The ground water in the augers was not purged [prior] to sampling since saturation had been encountered less than 24 hours earlier and would be representative of the formation's ground water." AOC 22-13 was not designated for a well installation, but because of the field screening measurements and visual observation, the Respondents decided to collect a groundwater sample. However, AOC 22-12/TW-01 was completed as a temporary well; the Respondents do not discuss well purging or if a sample was collected after the well was purged. The Respondents state, "[o]n April 14, 2009 the temporary well was gauged and the depth to ground water was measured at 37.95 feet bgl. The total depth of the well was gauged as 42.51 feet bgl. Ground water sample AOC 22-12-GW was collected using a disposable bailer. It was decided to not plug and abandon the boring but rather to complete the boring as a temporary well TW-01." Revise the Report to indicate if the temporary well was purged prior to sampling (see also Comment 2).

Response 11: The report has been revised to discuss the well purging and groundwater sample collection activities for AOC 22-12/TW-01, as well as, to provide more details for all groundwater sampling. This information is presented in Section 4.4 and Appendix E.

In addition, the discussion in Section 4.4 regarding the collection of groundwater samples at AOC 22-12/TW-01 and AOC 22-13 has been revised to more accurately reflect the requirement to collect groundwater samples at these locations. The initial report text indicated that groundwater samples were collected due to field observations (e.g., elevated PID readings, odors, etc.) indicating potential impacts extending to groundwater. And, while this is indirectly true, the actual reason that groundwater samples were collected at these locations is because groundwater was encountered in the soil borings. Per Section 5.3.2 of the Investigation Work Plan, "Groundwater samples will be collected from borings not intended to be completed as monitoring wells prior to abandonment of the borings, if groundwater is encountered." Because impacts were observed in subsurface soils in borings AOC 22-1 and AOC22-13, the borings were extended deeper than originally proposed and eventually encountered groundwater, whereupon, pursuant to Section 5.1 of the Work Plan, the borings were "drilled five feet below the water table or to refusal." Refusal was reached when each boring was drilled to the Nacimiento Formation.

Comment 12

Section 4.4 (Soil Boring Installation, Monitoring Well Construction, and Boring Abandonment), pages 29 and 30, discusses the drilling of MW-65 and states, "[d]uring the installation of the well the bentonite formed a "bridge" between the ODEX casing and the well casing. When the ODEX casing was being removed from the borehole the well casing moved, which caused the proposed well settings to be adjusted. The ODEX casing and well casing were removed from the borehole and the field activities ceased for the day. On April l7, 2009 the borehole for AOC 26-8/MW-65 was re-entered and reamed out to a depth of 44.5 feet bgl using the HSA drilling method. The rig was sent back to this location on April 20, 2009 to collect and screen the soils from 2 feet to 10 feet bgl. The borehole was grouted to the land surface." It is not clear from the description if a second borehole was drilled to collect soil samples from two to ten feet and then abandoned. Revise the Report to clarify if a second borehole was drilled specifically to collect samples on April 20, 2009.

> **Response 12:** A second borehole was required to screen and collect soil samples from 2 to 10 feet bgl because the first location was hydroexcavated to 10 feet bgl to ensure that utilities were not encountered during the drilling of the boring. The second borehole was placed immediately adjacent to the original borehole. The text has been revised to further explain the field activities.

Comment 13

In Section 5 (Regulatory Criteria), page 34, the Respondents state, "[t]he screening levels in Table 9 are based on residential land use. Since the investigation data for SWMU No.4, SWMU No.5, AOC No. 23, and AOC No. 25 indicate there is no threat to ground water in these areas, the applicable screening levels do not include the soil-to-groundwater leachate pathway." Revise this section to explain how it was determined that there is no threat to groundwater at SWMU No.4, SWMU No.5, AOC No. 23, and AOC No. 25.

> **Response 13:** Pursuant to NMED's direction, the soil analytical data tables (e.g., Table 9) have been revised to include the soil-to-groundwater pathway screening levels.

Comment 14

In Section 5 (Regulatory Criteria), page 34, the Respondents state, "[t]he total petroleum hydrocarbon (TPH) screening levels are taken from NMED's October 2006 TPH Screening Guidelines [NM TPH SSL] ...Where information is available to identify particular product types, the screening level is selected accordingly from either Table 2a or 2b of NMED guidance. If two products have been handled in the same area (e.g., both diesel and gasoline at the product loading rack), then the most conservative (lowest) screening level of the two products is used." It is not clear how the Respondents will apply the lowest screening level of two products (gasoline and diesel) when there is no numeric standard for one of them (gasoline). Revise the Report to clarify this discrepancy.

> **Response 14:** This discussion in Section 5 has been removed. The "unknown" oil fraction has been used for comparison to all TPH results in the initial evaluation included in the revised site investigation report. Western may reevaluate the TPH results that exceed this most conservative screening level in subsequent submittals by further assessing the nature of TPH detected in the individual samples. For example, in areas known to have only handled crude oil (e.g., AOC No. 24), the comparison of the results to "unknown oil", which

assumes 100 % C11-C22 aromatics, would most likely greatly overestimate the risk posed by TPH consisting of weathered crude oil.

Comment 15

In Section 5 (Regulatory Criteria), page 34, the Respondents state, "[t]he total petroleum hydrocarbon (TPH) screening levels are taken from NMED's October 2006 TPH Screening Guidelines... [w]here information is available to identify particular product types, the screening level is selected accordingly from either Table 2a or 2b of NMED guidance... [s]creening values from Table 2b are used only in situations where impacts to shallow soils do not pose a threat to underlying groundwater and there is limited potential for exposure to impacted soil (e.g., elevated concentrations occur mostly at depth and not at the land surface)."

1. *In accordance with the NM TPH SSLs, the values from Table 2b should only be applied to situations where "depth to groundwater is less than 15 feet from the ground surface and within 30 feet of an occupied structure." According to the boring logs, groundwater was encountered from approximately 36 to 55 feet bgs. Values from Table 2b are therefore not appropriate. Revise the Tables to reflect the use of only Table 2a.*

2. *Revise the Report to describe the specific site conditions for applying Table 2a.*

Response 15: Western used the NM TPH SSLs from Table 2b following the direction received from NMED during a meeting held at NMED's office in Santa Fe. The use of screening levels from Table 2b was limited to only locations that met the following conditions:

1. Elevated TPH concentrations were found only in the shallow subsurface;
2. there is a relatively thick vadose zone between the impacted interval and groundwater without any impacts, thus suggesting the TPH is not a threat to the underlying groundwater; and
3. the impacted interval was at sufficient depth to make direct contact exposures to receptors at the land surface unlikely.

Based on the conversation with NMED, it was Western's understanding that the TPH screening levels in Table 2a were developed to be protective of direct contact exposures, which would occur most likely when TPH impacts occur near the land surface, and to protect against TPH leaching from soils to underlying groundwater. NMED suggested that if Western could demonstrate that neither of these exposure routes are a concern, then the Table 2b screening levels (inhalation only) could be applied to ensure any other potential exposure pathways for which NMED has established screening levels would also not be a concern. As noted above by NMED, the depths to groundwater (36 to 55 feet) are greater than the depth of 15 feet specified in the guidance for mandatory use of the Table 2b screening levels, thus making the Table 2b screening levels overly conservative.

Western believes that the information presented in the investigation report for the subject soil samples demonstrates that the detections of TPH at the reported concentrations and depths are not a threat to human health or the environment. However, the report has been revised to remove the Table 2b screening values.

Comment 16

In Section 5 (Regulatory Criteria), pages 34 and 35, the Respondents state, "[s]imilarly, there were detections of constituents in ground water samples that do not have screening levels. This includes the four constituents listed above for soil and magnesium, phenanthrene, bicarbonate, calcium, potassium and sodium. None of these constituents are classified as a carcinogen." The first sentence references detections in groundwater while the second sentence addresses constituents in soil. Revise the Report to correct this discrepancy, or otherwise clarify the meaning.

Response 16: The first sentence of the paragraph (not quoted above) notes that four constituents detected in soil samples did not have screening levels. The second sentence (first sentence quoted above) notes that some constituents detected in groundwater also did not have screening levels. The subsequent sentence simply states that the same four constituents detected in soils without screening levels were also detected in groundwater along with some additional constituents, which are listed. The text has been revised to clarify the meaning.

Comment 17

In Section 6.1.3 (AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks) and Section 6.1.7 (AOC No. 26 - Tank Area 44 and 45), pages 44, 50 and 51, the Respondents describe cumulative risk evaluations for AOC No. 22 and 26. The Respondents indicate the cumulative effects of certain constituents (e.g. cobalt, manganese) are not a concern because they are non-carcinogenic. It is inappropriate to make cumulative risk conclusions solely on whether the constituent is a carcinogen or a non-carcinogen. The Respondents must refer to Section 5 of the Technical Background Document for Development of Soil Screening Levels (Revision 5.0 dated August 2009) to determine cumulative risk. The Respondents must evaluate the data using a conservative approach by applying the maximum concentrations across the entire data set. All calculations and results from the assessments must be included in the revised Report.

Response 17: The report does not state that cumulative effects of constituents are not a concern simply because they are non-carcinogenic. To the contrary, the detected non-carcinogenic constituents are listed along with their target organs so that an initial evaluation can be performed to identify potential "cumulative" impacts for the non-carcinogenic constituents.

The NMED references the "maximum concentrations across the entire data set" but as this report is limited to only a subset of the SWMUs/AOCs, it is not possible to perform a risk assessment across the entire site. Western has revised the report to include a qualification statement at the beginning of the risk evaluation now presented on page 46 to note clearly that the risk evaluation presented in the RI report is only an initial qualitative evaluation of potential cumulative impacts and does not include a calculation of total cumulative risk as specified in the NMED guidance. The revised text states that a quantitative risk assessment will be completed pursuant to applicable guidance, as necessary, in a separate submittal (i.e., a risk assessment report). Additional corrections have been made and some limited calculations of cumulative risks are presented for the limited areas of discussion. It is noted that with the use of a site-specific DAF of 11.25, some constituents (e.g., cobalt, MTBE and methylene chloride) no longer exceed their leachate screening levels in some areas. At AOC No. 26, cobalt is the only remaining constituent above screening levels after the adjustment to a DAF of 11.25 and the qualitative risk discussion for AOC No. 26 has been deleted.

Comment 18

In Section 6.1.3 (AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks), page 45, the Respondents state, "[f]ive of the constituents are listed as potential carcinogens based on the NMED and EPA sources referenced in Section 5.0. This could result in a cumulative carcinogenic risk level of 5.0 E-5." The Respondents must provide all calculations, results, and other supporting information from the risk assessments in the revised Report.

Response 18: Pursuant to the response above for comment No. 17, the text has been revised to clarify this is only an initial qualitative evaluation and that a full quantitative risk evaluation pursuant to the NMED guidance document will be performed, as necessary, after the "entire data set" becomes available.

Comment 19

In Section 6.1.4 (AOC No. 23 - Southeast Holding Ponds) and Section 6.1.6 (AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area), the Respondents reference the DAF of 20. Table 9 applies the DAF of 1. Revise the Report to clarify this discrepancy.

Response 19: The reference to a DAF of 20 in the text in Sections 6.1.4 and 6.1.6 has been removed. The report has been revised to use a site-specific DAF of 11.25.

Comment 20

In Section 6.1.5, (AOC No. 24 - Tank Areas 41 and 43), under AOC 24-6, page 47, the *Respondents state, "[a]ll the analytical results for the samples collected at AOC 24-6 were less than the non-residential screening levels with the exception of DRO in sample AOC 24-6 (1.5-2.0')." According to Table 11 the DRO concentration for AOC 24-6 is 1,400 mg/kg, which is less than the industrial screening level for DRO of 2.00E+03 mg/kg, as indicated in Table 11. Revise the Report to correct this discrepancy.*

Response 20: The TPH screening levels have been revised to be consistent with recent investigation report submittals (e.g., Group No. 2 Investigation Report, revised March 2010 and Group No. 4 Investigation Report dated February 2011). The text in Section 6.1.5 has been revised to accurately reflect the results that exceed the revised screening levels.

Comment 21

In Section 6.1.7 (AOC No. 26 - Tank Area 44 and 45), under AOC 26-9/MW-66, page 50, the *Respondents state, "[t]here are numerous organic constituents, including volatile and semivolatile organics that have concentrations above the non-residential screening levels in soil sample AOC 26-9 (36-38'). The concentration detected in AOC 26-9 at 36-38' are believed to be associated with ground water impacts in the area and not a soil source in the immediate area." Explain why the detections are believed to result from groundwater impacts and not a soil source, and discuss the suspected source of groundwater contamination that is affecting soils at 36-38 ft bgs. Revise the Report accordingly.*

Response 21: The text in Section 6.1.7 has been revised to further explain why the concentrations detected at 36-38' at boring AOC 26-9/MW-66 are believed to be the result of impacted groundwater moving to this location and not from a soil source above. The field screening of soils and the soil analyses did not indicate potential impacts until the zone of saturation was encountered, thus suggesting that the impacts observed in the saturated soils did not migrate vertically from shallower impacted soils at this location. The more likely hypothesis is that impacted groundwater migrated from an up-gradient location and impacted the saturated soils at this location.

Comment 22

In Section 6.1.7, (AOC No. 26 - Tank Areas 44 and 45) under AOC 26-9/MW-66, and Section 7 (Conclusions and Recommendations) under AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks, pages 51, 59, and 60, the Respondents state, "[t]he screening level included in Table 10 for cobalt assumes a DAF of 1 for the soil-to-ground water pathway; however, cobalt is not detected in concentrations above the screening level in any of the ground water samples collected during the site investigation effort. Cobalt does not appear to present a threat to ground water and the soil-to-ground water pathway should not be considered to be complete at AOC No. [22 and 26]." Cobalt can be found in the catalyst used to remove sulfur from crude oil and its presence could be a result of refinery operations and not representative of a background concentration. Provide evidence for the assertion that cobalt is not a threat to groundwater. Concomitantly, re-evaluate the applicability of the DAF of 1 and consider calculating a site-specific DAF to determine if cobalt is a threat to groundwater. If a site-specific DAF is calculated, all calculations and results must be included in the revised Report.

Response 22: Western believes that most likely the concentrations of cobalt observed in the soil analyses performed for the Group No. 3 SWMUs/AOCs are actually representative of background concentrations. Group No. 3 includes only areas within the Refinery terminal area, and thus such potential impacts from refinery catalyst would not be applicable in these areas of the facility. In addition, the concentrations are generally low in all samples and do not have a significant variation. The evidence that cobalt is not a threat to groundwater is the simple fact that it is present in soil across the entire site based on recent sampling at similar concentrations and has not been detected in any groundwater samples collected from monitoring wells at concentrations above the screening level. If in fact the concentrations of cobalt found in soil were a threat to groundwater, then it is reasonable to assume that groundwater concentrations would be elevated above the screening levels in at least one of the many wells from which groundwater samples have been collected. Western proposes to revaluate the detections of cobalt in soil after a site-specific soil background concentration has been determined. The report text has been revised to clarify that the next step will be to compare site concentrations to the site-specific background concentrations once they are determined. In addition, a site-specific DAF has been incorporated and number of the detections of cobalt are now below the applicable screening levels.

Comment 23

In Section 7, (Conclusions and Recommendations) under AOC No. 22 and AOC No. 24, pages 60 and 61, the Respondents state that certain constituents (e.g., lead, arsenic, and manganese) "may not be an indication of actual impacted ground water but rather possible sampling artifacts resulting from the use of a bailer to purge the wells and collect ground water samples." The Respondents do not provide a description of the potential effects of the use of a bailer. In any *event, such a conclusion cannot be made until the background study has been completed. No revision is necessary.*

Response 23: None required.

Comment 24

In Section 7 (Conclusions and Recommendations), pages 58 through 62, the Respondents recommend additional assessment for SWMU No. 4, and SWMU No.5, and additional investigation for AOC No. 22 and AOC No. 26.

a. *Provide the current and future status (operational/active, interim, and inactive) of all the SWMUs and AOCs in the Group 3 Investigation Report. Indicate if the SWMUs/AOCs are operational and how long will they remain active. Indicate if the structures in the SWMUs/AOCs will be completely removed once they are no longer in operation.*

   Response 24a: As discussed in Section 2, use of SWMU No. 4 Transportation Terminal Sump was discontinued in 1986, when the sump was backfilled. SWMU No. 5 (Heat Exchanger Bundle Cleaning Area), AOC No. 22 (Product Loading Rack and Crude Receiving Loading Racks), AOC No. 23 (Southeast Holding Ponds), AOC No. 24 (Tank Areas 41 and 43), AOC No. 25 (Auxiliary Warehouse and 90-Day Storage Area, and AOC No. 26 (Tank Areas 44 and 45) are all still in service and will continue to be operated indefinitely in support of the petroleum terminal operations. It is likely that the structures at AOC No. 23 (Southeast Holding Pond) would be removed when no longer in operation but it is not currently known if the structures at the other SWMUs/AOCs would be removed once they are no longer in operation. The operational status of the SWMUs/AOCs in Group No. 3, which is discussed in Section 2, has not changed since preparation of the Group 3 Investigation Report and no changes have been made to the text.

b. *The Respondents recommend "[a]dditional assessment...to delineate the lateral extent of the impacts in soils near [SWMU 4-1]." Revise the Report to provide more information regarding the sump, including but not limited to dimensions of the sump, history of releases, if sampling was completed over the entire cross-section of the old sump area prior to backfilling, and if the Respondents intend on removing soil from the former sump area.*

   Response 24b: The exact dimensions of the sump are unknown but are estimated to be approximately 10 feet by 10 feet with a depth of approximately four feet. This information has been added to Section 2.1. The known history of the sump, including the history of releases and sampling in the area of the sump is already presented in Section 2.1 of the report and this same information was included in the Group 3 Investigation Work Plan, which was approved by NMED on February 18, 2009. As discussed in Section 2.1, two water samples and one soil sample were collected from the sump in 1984 prior to backfilling in 1986, thus sampling was not completed over the entire cross-section of the old sump area prior to backfilling. Based on the elevated concentrations of TPH found at a depth of 6-8 feet at a single boring location (boring SWMU 4-1), Western does anticipate removing the impacted soil from the former sump location.

c. *The Respondents recommend "[a]dditional assessment... at SWMU No.5 to delineate the lateral impact to surface soils based on the reported concentrations of mercury." Revise the*

Report to include more information describing how cleaning activities were conducted for the heat exchangers and provide information regarding historical uses of the bundle cleaning pad (e.g., documentation of overflows from the concrete pad to the ground surface, and historical management of waste not associated with bundle cleaning).

Response 24c: The discussion on the cleaning activities, waste management, and history of releases is presented in Section 2.2 of the report and this same information was included in the Group 3 Investigation Work Plan, which was approved by NMED on February 18, 2009. As noted in Section 2.2, there are no documented overflows (spills) from the concrete pad to the ground surface. The discussion on the cleaning activities has been revised to note the use of a high-pressure washer using potable water.

d. *The Respondents recommend "[a]dditional investigation ... for the impacted soils within AOC No. 22 for the area near borings AOC 22-4, and AOC 22-13. Some additional delineation of ground water impacts may also be useful and should be completed in consideration of any additional investigation to be completed at other nearby SWMUs/AOCs." Revise the Report to provide more information about the underground piping in relation to groundwater contamination. Indicate if all lines are still active/abandoned, and if any lengths have been replaced because of damage. Also provide information about historical releases that occurred near this area and list possible contaminants of concern.*

Response 24d: Underground piping is addressed under Group 8 (SWMU No. 3 Underground Piping Currently in Use and SWMU No. 6 Abandoned Underground Piping). NMED is referred to the Investigation Work Plan for Group 8 dated December 2010, which provides the requested information for underground piping in relation to groundwater contamination. The information related to whether lines are active or abandoned and any repairs is also presented in the Group 8 Investigation Work Plan.

The product loading racks and crude unloading areas are constructed with concrete curbed containment areas that drain to an automatic sump system; and thus areas within the loading and unloading bays would not be expected to have direct impacts to surrounding soils. However, based on the nature of operations within this area, it can be perceived that small spills of insignificant volume may have occurred in the past. The span of sample locations proposed by Western and approved by NMED was Western's proactive attempt to ensure impacts not visible from surface inspections were identified through investigation activities and thus could be appropriately addressed. The historic operations did not include known spills that would have required agency notification.

e. *The Respondents recommend "[a]dditional soil sampling near AOC 26-5 ...to confirm the limited presence of MTBE that was detected in the 1.5-2.0' sample interval. Additional monitoring wells may be considered to better define the up-gradient extent of ground water impacts." The Respondents must provide more information about the tanks, including but not limited to history of releases, condition of containment structures, valves, fittings, piping, and if tanks 44 and 45 are currently in use.*

Response 24e: As discussed in Section 2.7 of the report, there have not been any documented reportable spills from these tanks. The containment structures are intact and valves, fittings, and piping are routinely checked for leaks. Also as discussed in Section 2.7, these tanks are used to store additives, which have included MTBE, naphtha, and ethanol; MTBE is no longer handled on-site.

Comment 25

In Section 7 (Conclusions and Recommendations), under AOC No. 23, page 61, the Respondents state, "[t]he analyses for the soil samples did not detect the presence of any constituents at concentrations above the residential screening levels and most of the organic results were non-detect, with the exception of a few constituents that were qualified ... due to laboratory contaminants (e.g., methylene chloride and acetone) ... The ground water samples collected from MW-62 identified only manganese at concentrations above the screening levels (Table 16). The presence of only manganese above screening levels and no detections of petroleum constituents in water samples collected from MW-62 indicates that the manganese could be representative of background conditions rather than impacts from site operations; however, no background value has been established for manganese at this time... Corrective

Action Complete without Controls is recommended for AOC No. 23."

a. *Provide additional information for AOC No. 23 to include the current and future status of the AOC. Indicate if the AOC is operational/inactive, if the AOC structures will be completely removed once it becomes inactive, and discuss any history of releases.*

   Response 25a: The operation of the ponds has not changed since submittal of the investigation report. As discussed in Section 2.4, "the ponds are used sporadically to store treated wastewater." All current indications are that the ponds will continue to be used indefinitely. If at some time in the future the ponds are no longer used, then it is likely that the associated structures would be removed. As noted in Section 2.4, there has not been any indication of leaks from the ponds.

b. *Provide additional information to demonstrate that all groundwater and soil detections are below the Residential SSLs in order for AOC No. 23 to be considered for Corrective Action Complete. The Respondents must be able to demonstrate manganese is not a concern, and will not be a concern in the future, through a risk assessment or demonstrate that the detected concentration is within the range of background concentrations.*

   Response 25b: The soils analytical results for AOC No. 23 are presented in Table 9 and as shown, all of the results are less than their respective residential SSLs. Western plans to attempt to collect background groundwater samples in the near future and if successful, the manganese concentrations detected in the groundwater samples collected at MW-62 will be compared to the background concentrations.

Comment 26

In Section 7, (Conclusions and Recommendations) under AOC No. 24 - Tank Areas 41 and 43, page 61-62, the Respondents state, "[O]ther inorganic constituents detected above screening levels include chloride, nitrate, and sulfate. Chloride and sulfate are naturally occurring constituents with wide-spread occurrence in ground water in the San Juan River Basin (Stone, W.J. and others, 1983). The absences of any refinery-related constituents (i.e. petroleum hydrocarbons) in the ground water sample collect[ed] from MW-64 indicates that the inorganic constituents might not be related to site operations." Chloride, sulfate, and high total dissolved solids are commonly found at high concentrations in refinery-produced water and at petroleum contaminated sites. No response required.

Response 26: None required.

Comment 27

In Section 7, (Conclusions and Recommendations) under AOC No. 24 - Tank Areas 41 and 43, page 61-62, the Respondents state, "[a]n assessment to evaluate the risk posed by the limited occurrence of TPH at location AOC 24-6 is recommended instead of any additional assessment and/or remediation." Discuss how the risk will be evaluated without conducting additional investigation activities and revise the Report accordingly.

Response 27: Pursuant to the corrections as discussed above for Comment No. 20, the TPH screening levels have been revised to now use the very conservative "unknown oil" fraction. Additional discussion has been added in Section 7 (Conclusions and Recommendations) to explain the potential for further evaluation of the risk posed by the actual type of TPH found at AOC No. 24. The fact that crude oil is handled in the area of AOC No. 24 but there is not a NMED screening level for crude oil results in a possible over estimation of the risk.

Comment 28

In Section 7 (Conclusions and Recommendations), under AOC No. 25, page 62, the Respondents state, "[t]here were not detections of any constituents at concentrations above the residential screening levels in the soil samples. There were also no constituents detected in the ground water samples above the screening levels, with the single exception of manganese, which was only slightly over the screening level. There was not a sufficient volume of ground water present in MW-60 to collect a ground water sample during the second sampling event conducted in July 2009. Corrective Action Complete without Controls is recommended for AOC No. 25."

a. *Provide additional information to include the current and future status of AOC No. 25. Indicate if AOC No. 25 is operational/inactive, discuss if the AOC No. 25 structures will be completely removed once it becomes inactive, and discuss the history of releases.*

   Response 28a: The status of AOC No. 25 is unchanged since submittal of the report and the discussion in Section 2.6 is still correct. There are no plans to terminate operations at AOC No. 25 and it is doubtful that the warehouse building would be removed if it became "inactive" in the future. As discussed in Section 2.6, there are no documented releases at either the auxiliary warehouse or the 90-day storage area.

b. *There is insufficient historical data for MW-60 to demonstrate that manganese or other constituents are not a concern. All groundwater and soil detections must be below the Residential SSLs in order for Corrective Action Complete to be considered. The Respondents must be able to demonstrate manganese is not a concern, and will not be a concern in the future, through a risk assessment or demonstrate that the detected concentration is within the range of background concentrations.*

   Response 28b: Western plans to attempt to collect background groundwater samples in the near future and if successful, the manganese concentrations detected in the groundwater samples collected at MW-60 will be compared to the background concentrations.

Comment 29

In Section 7 (Conclusions and Recommendations), under SWMU No.4 Transportation Terminal Sump, page 58, the Respondents state, "[a]n additional assessment is recommended to delineate the lateral extent of the impacts in soils near AOC 4-1." The text of the Report references the Transportation Terminal Sump as SWMU No.4 and Figure 6 (SWMUNo.4 Sample Locations Map) which identifies SWMU 4-1/MW-59 as a boring/monitoring well. There is no reference to an AOC 4-1. Revise the Report to correct this discrepancy.

Response 29: The text in Section 7 has been revised to refer to SWMU 4-1 instead of AOC 4-1.

Comment 30

Table 6 (Residential Soil Screening Levels) contains some apparent typographical errors. The residential values presented in the Table for arsenic and ethylbenzene are 3.59E+00 and 6.96E+01, respectively. The residential values listed in the New Mexico Soil Screening Levels (NMSSLs) for these constituents are 3.90E+00 and 6.97E+01, respectively. These errors were also carried over into the other tables within the Report. Revise all tables within the Report to correct these discrepancies.

Response 30: The residential screening levels for arsenic and ethylbenzene have been revised in Table 6 and all other tables where the values appear.

Comment 31

The Respondents titled Table 9 as Group 3 Soil Analytical Results Summary - AOC 23 and AOC 25, which implies the table only presents data collected from AOCs 23 and 25. The table also includes data for SWMU No.4 and SWMU No.5. The Respondents titled Table 11 as Group 3 Soil Analytical Results Summary - SWMUs No.4 and 5, AOC 22 (Crude Receiving Rack) and AOC 24, which implies the data provided in the table is only from these sites. The table does not include data from SWMUs 4 and 5. Ensure table titles correctly reference the data presented.

Response 31: The table titles have been revised to accurately reflect the contents of the table.

Comment 32

The Respondents apply non-residential screening levels in Tables 10 and 11. It is not clear how the Respondents determined which of the seven standards indicated in the footnotes were applied (e.g., Table 10 applied the DAF 1 to acetone for all depths; for bromobenzene the EPA Protection of Groundwater Risk-based SSL was applied for all depths). The data were applied to a mix of screening levels. To alleviate confusion and apply a more systematic approach, revise the tables and text of the Report to apply the data to the most conservative non-residential scenario (e.g., construction worker or industrial) and the residential scenario. Upon determining the most conservative scenario, explain why the selected screening level was chosen. Revise the Report accordingly.

Response 32: The individual screening levels used in the tables are dictated by the July 27, 2007 Order, which first specifies whether to use NMED or EPA screening levels and any adjustments of these values. Then NMED and EPA guidance further directs how and when the individual screening levels are applied (e.g., the applicable depths of exposure for industrial vs. construction workers). This explanation is presented in Section 5 of the report. Western agrees with NMED that the process set forth in the Order and guidance does result in a complex analysis of the data. This is the reason that Tables 6, 7, and 8 were prepared to help clarify the selection of the individual screening levels pursuant to the Order and applicable guidance.

Based on NMED's direction, the data tables have been reformatted to compare the data to "the most conservative non-residential scenario (e.g., construction worker or industrial) and the residential scenario." In addition, we have included a column with the soil value calculated to be protective of groundwater using a site-specific DAF.

Comment 33

In Table 11, column "AOC 22-16 (36-38')" has a superscript "1." This superscript is not defined in the footnotes on page 10 of 15 of Table 11. Revise the Report to define the superscript.

Response 33: The superscript "1" was printed at the end of the sample name "AOC 22-16 (36-38')[1]" in error and has been removed.

Comment 34

In Table 16, columns "MW-61, 05/13/2009," "MW-61, 07/16/2009," and "MW-62, 05/13/2009" the Respondents did not highlight the sample results above the screening level for manganese. Revise Table 16 accordingly.

Response 34: The table has been revised to include bolding of the results for these samples, which do have concentrations of manganese above the screening level.

Comment 35

NMED has the following comments on figures:

a. *Report all sample results, including non-detects, in the figures. If a sample was not collected or the well is dry, this must be noted and indicated on the legend and the figure. For example, Figure 6 (SWMU No.6 Sample Locations Map) reports the sample results for benzene and DRO for all the sampling locations, but Figure 14 (AOC No. 23 Sample Location Map) does not present any results for the sampling location at AOC No. 23.*

Response 35: No concentrations are included on Figure 14 because none of the analytical results for the soil samples indicated concentrations above any of the screening levels. This fact is discussed in the report text and Figure 14 is included only to show the location of the soil boring. The purpose of the soil maps in general is to show locations of potentially impacted areas. Western assumes that NMED is not requesting that <u>all</u> sample results be presented in figures but rather that all available data for a constituent for which a map is presented is included on that figure, including non-detect results. Groundwater results for constituents of potential concern near AOC No. 23 are included on Figures 17 through 35. Figures were originally included for those constituents (e.g., benzene, MTBE, and naphthalene) that were the most widespread and appeared in the highest concentrations. New figures have been added for additional constituents detected in groundwater above screening levels. These additional constituents include 1,2-dichloroethane, ethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, MTBE, phenol, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, DRO, GRO, arsenic, nitrate, sulfate, and total dissolved solids.

a. *Expand the scale of Figures 17 through 20 to include all Group 3 SWMUs and AOCs (i.e. include AOC No. 23) and report all sample results for all new, temporary, and current monitoring wells. If a sample was not collected or the well is dry, indicate this in the legend and note it as such on the figures.*

Response 35a: The May 2009 results from all Group 3 SWMUs and AOCs are included on Figures 17 through 20; however, the figures have been extended further east to include the actual location of the evaporation ponds at AOC No. 23. The results from the July 2009 samples at the new and temporary wells have been added. The available samples results for the "current" monitoring wells (e.g., MW-13, MW-31, MW-30, and MW-44) in the Group 3 area are already included on the figures. A notation has been added that MW-3, MW-5, and MW-6 were dry during the August 2008 site-wide sampling event.

b. *Define all symbols on all figures (e.g., cross hatch shading on Figures 8 through 15).*

Response 35b: All symbols have either been defined or removed if not relevant.

Comment 36

On Figures 2, 5, 8 through 13, and 16 through 20, there are several tanks that are not identified.

a. *Identify the unlabeled tanks west of Tank 44 in Figures 2, 5, 8 through 13 and 16 through 20.*

Response 36a: The additive tanks have been labeled on the figures and descriptions included in the new Tanks Table (Table No. 17).

b. *Identify the unlabeled tanks south of SWMU No.4 and west of Tank 41 in Figures 2, 5, and 17 through 20.*

Response 36b: These tanks are located off-site and are not owned by Western. There is no information on these tanks and based on recent aerial photos, there appears to be some probably empty salvage tanks in this general area. The tanks have been removed from the base map.

c. *Identify the unlabeled tank north of B-12 thru B-21 in Figures 2, 5, and 17 through 20.*

Response 36c: The tank north of the bullets is V-607 that contains ethyl mercaptan, which is an LPG odorant. This is a small elevated tank that would pose no risk to soil or groundwater. The tank number has been added to the maps and it is discussed in new Table 17.

d. *Provide an additional figure that identifies all Group 3 SWMU and AOC locations similar to Figure 17 to include AOC No. 23 and the diesel AST southwest of AOC No. 25.*

Response 36d: Figure No. 2 already includes this information.

e. *Verify that tank 34 holds water and not product (e.g., label contents on the map or provide color symbolizing tank contents).*

Response 36e: Tank 34 is associated with the injection well and holds treated process water, not product.

f. *All tank details addressed in items a through e above must be summarized in a table and included in the revised Report. The table must contain the following headings: Tank ID, status (Active/Inactive), contents (e.g., gas, water, crude), location (e.g., southwest of AOC No. 25), and comments (e.g., release history, if known).*

Response 36f: The requested table has been included as Table 17.

Comment 37

Provide more information for the crude sampling rack east of AOC No. 22, the L.P.G. loading area north of SWMU No.4, the diesel AST southwest of AOC No. 25, and the gasoline pumps west of AOC No. 25 to determine whether they are operational/inactive. Include a discussion of any historical releases, description of the activities conducted at the SWMUs/AOCs, and indicate if these SWMUs/AOCs should be included in the Phase II investigation.

Response 37: These locations were in existence at the time NMED issued the July 27, 2007 Order and were never identified as SWMUs or AOCs. There have not been any releases or changes in operation since that time to indicate that they should be considered either a SWMU or AOC.

The crude sampling rack once consisted of a centrifuge and counter area used to collect very small quantities of crude oil to support an evaluation the quality of crude delivered to the crude receiving racks. The sampling rack has not been in-service since 1996. There are no documented releases to indicate environmental impacts at this location.

The LPG loading area, which is operational, is used for loading LPG to tanker trucks. The very nature of LPG (low vapor pressure – evaporates at temperatures as low as -33 to – 44 degrees Fahrenheit at atmospheric pressure) means that the loading activities would not have the potential to impact soil or groundwater.

The diesel AST southwest of AOC No. 25, which was owned and operated by the Transportation Department of Giant, not the refinery, has not been in use since January 2009 and there have not been any documented releases from this tank. The diesel pumps located west of AOC No. 25 have not been in service since January 2009.

Comment 38

Revise Appendix F to include sections that describe field methods pertaining to the soil investigation and groundwater monitoring activities. The groundwater monitoring section must be expanded to describe how the monitoring wells were sampled (e.g., at each monitoring well the depth to water and depth to product measurements were collected using an oil/water interface probe, monitoring wells were purged and sampled using a dedicated bailer, samples were collected in pre-cleaned laboratory prepared containers). Include description of purging methods and how purge volumes were calculated, and all field equipment used while collecting soil and groundwater samples (see also Comment 2).

Response 38: Appendix E (previously noted as Appendix F in the December 2009 Investigation Report) has been revised to include discussions on all field methods.

If you have questions regarding the above responses or the enclosed Group No. 3 Investigation Report, please contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Health, Safety, Environmental, & Regulatory Director
Western Refining Southwest, Inc. - Bloomfield Refinery

cc: John Kieling – NMED HWB w/o enclosure
Dave Cobrain – NMED HWB w/o enclosure
Hope Monzeglio – NMED HWB w/o enclosure
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INVESTIGATION REPORT
GROUP 3

**(SWMU No. 4 Transportation Terminal Sump,
SWMU No. 5 Heat Exchanger Bundle Cleaning Area,
AOC No. 22 Product Loading Rack and Crude Receiving Loading Racks,
AOC No. 23 Southeast Holding Ponds, AOC No. 24 Tank Areas 41 and 43,
AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area, and
AOC No. 26 Tank Area 44 and 45)**

Bloomfield Refinery
Western Refining Southwest, Inc.
#50 Rd 4990
Bloomfield, New Mexico 87413

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Table of Contents

List of Sections

Table of Contents *(Continued)*

List of Tables

List of Figures

Table of Contents *(Continued)*

List of Appendices

Executive Summary

The Bloomfield Refinery, which is located in the Four Corners Area of New Mexico, has been in operation since the late 1950s. 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 and Giant Industries Arizona, Inc. for the Bloomfield Refinery, this environmental site investigation was completed for the SWMUs and AOCs designated as Group 3. This group includes SWMU No. 4 Transportation Terminal Sump; SWMU No. 5 Heat Exchanger Bundle Cleaning Area; AOC No. 22 Product Loading Rack and Crude Receiving Loading Racks; AOC No. 23 Southeast Holding Ponds; AOC No. 24 Tank Areas 41 and 43; AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area; and AOC No. 26 Tank Areas 44 and 45.

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 and AOCs. 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 investigation activities included collection and analysis of soil and ground water samples for potential site-related constituents beginning on April 6, 2009 and continuing through July 29, 2009. This included the completion of 13 soil borings with two of the borings completed as temporary monitoring wells and eight completed as permanent monitoring wells. In addition, surface soil samples (i.e., 0-0.5' and 1.5-2.0') were collected at 29 locations. A summary of the results of the investigation is provided as follows:

- SWMU No. 4: One soil boring (SWMU 4-1) that was completed as a permanent monitoring well (MW-59) at SWMU No. 4 encountered impacted soils that appear to be associated with the historical transportation terminal sump. Ground water impacts were also observed in MW-59, which is down-gradient of a larger area of impact that extends up-gradient to the product loading rack.
- SWMU No. 5 and AOC No. 25: Six surface sample locations around SWMU No. 5 contained mercury in concentrations above the NMED residential screening level of 7.71

mg/kg. Mercury impacts are limited to within the upper 6-inches of surface soils. An additional surface soil sample and deeper soil boring (AOC 25-2/MW-60) was completed at AOC No. 25, which is adjacent to SWMU No. 5. There were no detections of constituents in soil above the respective residential screening levels. The ground water sample collected from MW-60 did not indicate impacts to ground water from SWMU No. 5 or AOC No. 25.

- AOC No. 22: At the Crude Receiving area, two soil borings (AOC 22-14 and AOC 22-16) were installed, with AOC 22-16 completed as a permanent monitoring well (MW-63). At the Product Loading Rack area, a total of three soil borings (AOC 22-13, AOC 22-12, and AOC 22-15) were installed; soil boring AOC 22-15 was completed as a permanent monitoring well (MW-61), and soil boring AOC 22-12 was completed as a temporary well (TW-01). A total of 40 soil samples were collected within AOC No. 22. Soil impacts are evident near the sump located north of the product loading rack. Ground water impacts, while extending over a larger area, appear to be centered near the product loading sump and product loading rack.

- AOC No. 23: One soil boring/monitoring well (AOC 23-1/MW-62) was installed near and down gradient of AOC No. 23. There were no documented impacts to soil and only manganese was identified in ground water above the screening levels.

- AOC No. 24: Four surface soil sample locations and three soil borings, one of which was converted to a monitoring well (AOC 24-7/MW-64), were completed at AOC No. 24. Limited soil impacts were observed at one sample location. Site-related constituents (e.g., petroleum hydrocarbons) were not detected in ground water, but two metals (arsenic and manganese) and three naturally occurring inorganic constituents (chloride, sulfate, and nitrate) were identified at concentrations above the screening levels.

- AOC No. 26: Seven surface soil sample locations and two soil borings, both of which were completed as permanent monitoring wells (AOC 26-8/MW-65 and AOC 26-9/MW-66), were completed at AOC No. 26. Only cobalt was detected in vadose zone soil samples at low concentrations that exceeded the screening level protective of soil-to-ground water, yet below the EPA Regional screening level for residential soil. Ground water samples collected at MW-65 and MW-66 both indicated the presence of petroleum hydrocarbons and fuel additives.

Conclusions and Recommendations

Based on the investigation results, "Corrective Action Complete without Controls" designation is recommended for AOC No. 23 and AOC No. 25. Additional assessment and delineation of impacted soils is recommended for SWMU No. 4, SWMU No. 5, AOC No. 22-4, and AOC No. 22-13. Additional assessment of risk posed by the limited occurrence of total petroleum hydrocarbons (TPH) at AOC No. 24-6 is recommended instead of additional assessment and/or remediation. After completion of the site-background investigation for soils, the resulting site-specific soil background concentrations should be compared to site concentrations at AOC No. 26 to determine if any additional action is necessary for this AOC.

Ground water impacts documented during the assessment of SWMU No. 4 and AOCs No. 22 and 26 indicate that the primary constituents exceeding the screening levels across these areas are similar and appear to be associated with operations at the product loading rack. Additional delineation of ground water impacts at AOCs No. 22 and 26 is recommended to better define the distribution of constituents within these areas and to distinguish potential sources.

A separate investigation work plan will be prepared to detail proposed additional investigation activities for soil and ground water.

Section 1
Introduction

The Bloomfield Refinery is located immediately south of Bloomfield, New Mexico in San Juan County (Figure 1). The physical address is #50 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 44 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 a crude oil refinery currently owned by San Juan Refining Company, a New Mexico corporation , and it is operated by Western Refining Southwest, Inc., formerly known as Giant Industries Arizona, Inc., an Arizona corporation . The Bloomfield Refinery has an approximate refining capacity of 18,000 barrels per day. Various process units are operated at the facility, including crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization, and diesel hydro treating. Current and past operations have produced gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils, and 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) and Areas of Concern (AOCs) designated as Group 3 in the Order. This includes:

- SWMU No. 4 Transportation Terminal Sump;
- SWMU No. 5 Heat Exchanger Bundle Cleaning Area;
- AOC No. 22 Product Loading Rack and Crude Receiving Loading Racks;
- AOC No. 23 Southeast Holding Ponds;
- AOC No. 24 Tank Areas 41 and 43;
- AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area; and
- AOC No. 26 Tank Areas 44 and 45.

The locations of the individual investigation units are shown on Figure 2 and all of the Group 3 SWMUs/AOCs are located on the southeastern portion of the refinery property, south of Country Road 4990.

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 focused on soils and ground water as those are the environmental media in these areas that may potentially contain contaminants. The investigation was completed pursuant to the Investigation Work Plan dated June 2008 (revised January 2009), which was approved by the NMED on February 18, 2009. Activities conducted that deviate from the approved Investigation Work Plan are discussed in Section 3.3, Section 6.3, and Section 6.6 of this report.

Soil and ground water samples were analyzed for volatile and semi-volatile organic constituents, total petroleum hydrocarbons, and metals. In addition, ground water samples were analyzed for inorganic general chemistry constituents. The results of these analyses are compared to applicable State or federal cleanup and screening levels as specified in Section VII. of the Order.

Section 2
Background

This section presents background information for each of the investigation units, 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 SWMU or AOC;
- Known and possible sources of impacts;
- History of releases; and
- Known extent of impacts prior to the current investigation.

2.1 SWMU No. 4 Transportation Terminal Sump

The Transportation Terminal Sump is located to the northeast of the auxiliary warehouse/90-day storage area and immediately west of bullet tanks B-22 and B-23. The sump was an earthen pit with estimated dimensions of 10 feet by 10 feet with a depth of approximately four feet. The use of the sump was discontinued in 1986 and the sump was backfilled. There are no documented specific instances of releases at the sump but use of the area for truck cleaning may have resulted in small releases over time.

During an inspection conducted by EPA in 1984, two water samples (an aqueous phase and oily phase) and one soil sample were collected from the sump for analysis of cadmium and chromium. The soil sample contained cadmium at a concentration of 2.2 ppm and an oily phase water sample contained 1.3 ppm cadmium and 40 ppm chromium (Giant Industries, 2003). During a subsequent Phase II RCRA Facility Investigation (RFI) conducted in 1994, two soil borings (B-1 and B-2) were installed near the sump (Figure 6). Soils were screened continuously at each boring to a depth of 12 feet (ft) below ground level (bgl). Based on the highest photo ionization detection (PID) readings, one sample was collected from each boring for analysis. The samples were analyzed for volatile organic compounds (VOCs; USEPA method 8240), semi-volatile organic compounds (SVOCs; USEPA method 8270), total petroleum hydrocarbons (TPH; USEPA method 418.1), and metals (USEPA method 6010/7000 series). The results of these soil analyses are summarized in Table 5. Because no organic constituents were detected in either sample and the metal concentrations were reported within background ranges included in the Phase II RFI Report, Giant Refining Company requested no further action for this SWMU in their Solid Waste Management Unit Assessment Report (Giant Industries, 2003).

2.2 SWMU No. 5 Heat Exchanger Bundle Cleaning Area

The Heat Exchanger Bundle Cleaning Area, which has been identified as SWMU No. 5, is located at the east end of the auxiliary warehouse (Figure 2). Heat exchanger bundles are periodically cleaned at this location to remove scale deposits, with a high-pressure washer using potable water. The cleaning usually takes place on a concrete slab at the east end of the auxiliary warehouse, which has concrete curbs, portable side wall curtains, and drains to a sump located inside the warehouse. There are large metal doors that open at the east end of the warehouse and occasionally during the winter, cleaning operations take place inside the warehouse in a fully enclosed room with sheet metal walls, concrete floor, and concrete lined collection sump (i.e., the 90-day storage area). The sump, which is designed to collect all wash water and any waste materials generated during cleaning operations, is approximately four feet wide, four feet deep and 50 feet long. Any sludge that collects in the sump is removed upon completion of cleaning operations, containerized and sent off-site for disposal as hazardous waste in accordance with 90-day on-site storage regulations. There is no indication of documented spills in this area. The likely constituents of concern are organic petroleum constituents and metals.

No soil samples have been collected and analyzed from the Heat Exchanger Bundle Cleaning Area in the past; however, ground water quality has been assessed down-gradient of this area. Figure 5 shows the potentiometric surface of the shallow ground water, which underlies the refinery property. Monitor well MW-13 is located approximately 250 feet down-gradient and ground water samples have been routinely collected from this well and analyzed for potential constituents of concern. Methyl tertiary butyl ether (MTBE) is the only potential refinery-related constituent detected in the ground water samples. The historical ground water analyses are summarized in Tables 1 through 4.

2.3 AOC No. 22 Product Loading Rack And Crude Receiving Loading Racks

The loading racks are used to unload crude oil, which is transported to the refinery via tanker trucks, and to load out refined product onto tanker trucks for distribution at retail gasoline stations (Figure 2). The primary constituents of concern are petroleum constituents and to a lesser extent additives (e.g., MTBE and ethanol), which may be present in the area of the product loading racks. Documented releases of petroleum products and crude oil have occurred at the loading racks.

Two soil borings (B-3 and B-4) were installed at the loading racks during the Phase II RFI in 1994 (Figure 8). Each boring was completed to a depth of 12 ft bgl with soil samples continuously screened with a PID. No indication of impacts was recorded at the B-3 location and a sample was collected from the 6-8' interval based on the depth of underground piping in the area. The 10-12' interval was selected at B-4 based on the highest PID reading. These samples were analyzed for VOCs, SVOCs, TPH, and metals, and the results are presented in Table 5. Only one organic constituent was detected in the sample collected at B-3 (methylene chloride at 0.11 mg/kg). Benzene, toluene, ethylbenzene, and xylene (BTEX) were detected at low concentrations in sample B-4 (10-12'). Metals were detected in both samples but were reported to be within background ranges included in the Phase II RFI Report (Groundwater Technology, Inc., 1994).

2.4 AOC No. 23 Southeast Holding Ponds

The southeast holding ponds are located at the southeastern most corner of the active portion of the refinery property (Figure 2). There are two ponds, which each cover approximately 4.5 acres. The "ponds" were constructed in 1995 as double lined (60-milimeter high density polyethylene) surface impoundments with a leak detection system. Treated process water is routinely pumped directly from the Refinery aeration lagoons to the on-site injection well for disposal. However, as needed during scheduled injection well maintenance events and/or process conditions, the ponds serve as temporary storage for treated process water. Any temporary accumulation of treated process water at the ponds is pumped to the injection well for final disposal.

There has not been any indication of leaks from the ponds. As the pond are used sporadically to store treated wastewater, the potential constituents of concern would be petroleum constituents.

2.5 AOC No. 24 Tank Areas 41 and 43

Tanks 41 and 43 are located at the southern edge of the active portion of the refinery property (Figure 2). These tanks are associated with the crude oil receiving racks and have been used to temporarily store crude oil that contains an unacceptably high fraction of water. Tank 43 is not currently in service. There was a small spill of approximately 100 to 150 gallons of oily water that spilled near Tank 43 in 2006.

No soil investigations were previously conducted in this area but a monitor well (MW-6) was installed immediately to the west during the 1994 RFI. This well was dry when installed and remains dry.

2.6 AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area

The auxiliary warehouse and 90-day storage area are located in the same building, which is approximately 300 feet south of Sullivan Road and 650 feet west of the crude oil loading rack (Figure 2). Photographs of the area are provided in Appendix A. The metal building was originally used as a truck terminal prior to relocation of the terminal to its current location in 1984. The truck terminal was used for general maintenance and repair of tanker trucks and auxiliary equipment. No drains or sumps are located within the portion of the building currently used as the warehouse, but there is a sump in the 90-day storage area that collects water that drains from the Heat Exchanger Bundle Cleaning Pad. The sump, which is designed to collect all wash water and any waste materials generated during cleaning operations, is approximately four feet wide, four feet deep and 50 feet long. Any sludge that collects in the sump is removed upon completion of cleaning operations, containerized and sent off-site for disposal as hazardous waste in accordance with 90-day on-site storage regulations. There are no documented releases associated with the historical truck terminal operations; however, the types of potential constituents of concern associated with these activities include petroleum constituents (e.g., fuels, motor oil, transmission fluids, etc.) and chlorinated solvents (e.g., tetrachloroethylene and trichloroethylene).

The auxiliary warehouse is currently used to store dry materials (e.g., large bags of catalyst beads) and auxiliary equipment (e.g., small pumps and generators). An employee health center is located in the far western end of the warehouse. There have been no documented spills at the warehouse and there are no associated potential types of constituents for assessment beyond those identified above for the historical truck terminal operations. The 90-day storage area is used for temporary storage of wastes that are shipped off-site for disposal at approved disposal facilities. The types of wastes stored primarily include spill cleanup materials (e.g., contaminated soil and absorbent materials), heat exchanger bundle sludge, tank bottoms, etc. that are containerized in steel drums or plastic lined totes. The storage area has a roof to prevent contact with stormwater, a concrete floor and a large concrete lined sump to collect any material that may leak. There have not been any documented releases from the 90-day storage area.

No soil samples were previously collected and analyzed from the area near the auxiliary warehouse or 90-day storage area; however, ground water quality has been assessed down-gradient of this area. Figure 5 shows the potentiometric surface of the shallow ground water, which underlies the refinery property. Monitor well MW-13 is located approximately 250 feet down-gradient and ground water samples have been routinely collected from this well and analyzed for potential constituents of concern. MTBE is the only organic constituent detected in the ground water samples above screening levels. The historical ground water analyses are summarized in Tables 1 through 4.

2.7 AOC No. 26 Tank Areas 44 and 45

Tanks 44 and 45 are located a short distance south of Sullivan Road and immediately northeast of the product loading rack (Figure 2). These tanks are used to store additives, which are blended at the product loading racks. The materials stored in the tanks have included MTBE, naphtha, and ethanol. There are no documented reportable spills from these tanks.

No soil samples or ground water samples were previously collected in the immediate vicinity of Tanks 44 and 45. The types of potential constituents of concern in the area include petroleum constituents, MTBE, and ethanol.

Section 3
Scope of Activities

Pursuant to Section IV of the Order, an investigation of soils and ground water was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants for designated AOC and SWMU areas associated with Group 3. The section provides a brief summary of the activities performed during this investigation event. A more detailed description of each activity is included in Section 4 Field Investigation Results and Section 6 Site Impacts.

3.1 Background Information Research

Documents containing the results of previous investigations and subsequent routine ground water monitoring data from monitoring wells were reviewed to facilitate development of the Investigation Work Plan. The previously collected data provides valuable information on the overall subsurface conditions, including hydrogeology and contaminant distribution within ground water. The data collected under this investigation supplements the historical ground water data and provide SWMU/AOC-specific information regarding contaminant occurrence and distribution within soils and ground water. Section 2 provides a more detailed summary of historic operations and review of historical waste management activities for each Group 3 SWMU and AOC area.

3.2 Utility Clearance

Prior to the start of drilling and field sampling activities, Western initiated the New Mexico One Call System notification to identify existing active utility lines within the vicinity of each proposed soil boring and monitoring well location. Historic and current Refinery process unit and utility site drawings were also reviewed to identify abandoned and/or active Refinery pipelines. The locations of each proposed soil boring and monitoring well were marked in the field prior to drilling, and the locations were reviewed in the field by the Refinery Safety Manager and Terminals Manager to ensure drilling activities would not impact current Site operations, nor cause any additional safety concerns during drilling and sampling activities.

3.3 Soil Boring, Monitoring Well Installation and Sample Collection

In efforts to determine and evaluate the presence, nature, extent, fate, and transport of contaminants pursuant to Section IV of the Order, soil and ground water samples were collected at the following SWMUs/AOCs:

- SWMU No. 4 - Transportation Terminal Sump;
- SWMU No. 5 - Heat Exchanger Bundle Cleaning Area;
- AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks;
- AOC No. 23 - Southeast Holding Ponds;
- AOC No. 24 - Tank Areas 41 and 43;
- AOC No. 25 - Auxiliary Warehouse and 90- Day Storage Area; and
- AOC No. 26 - Tank Areas 44 and 45.

A total of 13 soil borings were drilled using hollow-stem auguring (HSA) method or air rotary-ODEX method to a minimum depth of 10 feet bgl and 29 soil borings were completed with a hand auger to a depth of two feet bgl. Eight of the deeper soil borings were completed as permanent monitoring wells (MW-59 through MW-66) pursuant to the Investigation Work Plan and one soil boring was completed as a temporary monitoring well (AOC 22-12/TW-1), exceeding the requirements of the Investigation Work Plan. Soils were screened continuously using split spoon samplers and logged by a qualified geologist in accordance with USCS nomenclature. Surface soil samples (0 to 2 ft bgl) and subsurface soil samples (deeper than 2 ft bgl) were collected at each soil boring location using split spoon samplers with the exception of the aforementioned samples completed with a hand auger, for which the soil samples were collected directly from the auger bucket.

All soil samples were collected and soil borings installed in locations pursuant to the approved Investigation Work Plan, with the exception of three soil borings, which were moved with NMED concurrence. A request was submitted to the NMED on March 27, 2009 via email to move the locations of two monitoring wells (MW-61 and MW-65) and one soil boring (AOC 24-6) based on the presence of underground utilities. Approval was granted via email on March 27, 2009 and a copy of the correspondence with a map showing the changed locations is included in Appendix B. The number of soil samples collected, soil borings drilled, and monitoring wells installed for each of the SWMUs/AOCs is discussed below.

SWMU No. 4

One soil boring (SWMU 4-1) was drilled in a location west of Bullet Tank 23 within the vicinity of the former transportation sump. The soil boring extended to approximately 44.25 ft bgl and was completed as a permanent monitoring well (MW-59).

A total of 4 soil samples (SWMU 4-1 (0-0.5'), SWMU 4-1 (1.5-2'), SWMU 4-1 (6-8'), and SWMU 4-1 (36-38') were collected at this location for laboratory analysis. Ground water samples were collected from the completed monitoring well (MW-59). Figure 6 shows the sample location for SWMU No.4.

SWMU No. 5

Surface soil samples were collected from six locations (SWMU 5-1, SWMU 5-2, SWMU 5-3, SWMU 5-4, SWMU 5-5, and SWMU 5-6) around the perimeter of SWMU No. 5 on the north, east, and south sides. The sample locations were approximately 3 ft beyond the existing concrete containment curbing and samples were collected from depths of 0-0.5' and 1.5-2' bgl at each location.

A total of 13 soil samples, including one field duplicate, were collected for laboratory analysis. Ground water was not encountered in any of the two foot deep hand augered borings and water samples were not collected. Figure 7 shows the sample locations for SWMU No. 5.

AOC No. 22 - Crude Receiving Rack Area

At the Crude Receiving Rack area, two soil borings (AOC 22-14 and AOC 22-16) were drilled near the Crude Receiving sump area. The soil borings extended to approximately 10 ft bgl and 46 ft bgl, respectively. Soil boring AOC 22-16 was completed as a permanent monitoring well (MW-63). Figure 8 shows the sample locations for AOC No. 22.

A total of 16 soil samples, including one field duplicate sample, were collected from the two soil borings and five additional hand augered surface sample locations (AOC 22-7 through AOC 22-11) within the Crude Receiving Rack area. This included samples at AOC 22-7 (0-0.5' & 1.5-2'), AOC 22-8 (0-0.5' & 1.5-2'), AOC 22-9 (0-0.5' & 1.5-2'), AOC 22-10 (0-0.5' & 1.5-2'), AOC 22-11 (0-0.5' & 1.5-2'), AOC 22-14 (0-0.5'& 1.5-2'), and AOC 22-16 (0-0.5', 1.5-2', & 36-38'). Ground water was only encountered in boring AOC 22-16 (MW-63) and this is the only location from which a water sample was collected. All soil and ground water samples were submitted to the analytical laboratory for analysis.

AOC No. 22 - Product Loading Rack Area

At the Product Loading Rack, a total of three soil boring (AOC 22-13, AOC 22-12, and AOC 22-15) were drilled near the Product Loading Rack sump area and adjacent to the west. The soil borings extended to approximately 42.5 ft bgl, 42 ft bgl, and 40.25 ft bgl, respectively. Soil boring AOC 22-15 was completed as permanent monitoring well (MW-61), and soil boring AOC 22-12 was completed as a temporary well (TW-01). Figure 8 shows the sample locations for AOC No. 22.

A total of 27 soil samples, including two field duplicate samples, were collected from the three soil borings and from six additional hand augered surface sample locations (AOC 22-1 through AOC 22-6) within the Product Loading Rack area. The soil samples collected included AOC 22-1 (0-0.5' & 1.5-2'), AOC 22-2 (0-0.5' & 1.5-2'), AOC 22-3 (0-0.5' & 1.5-2'), AOC 22-4 (0-0.5' & 1.5-2'), AOC 22-5 (0-0.5' & 1.5-2'), AOC 22-6 (0-0.5'& 1.5-2'), AOC 22-12 (0-0.5', 1.5-2', 32-35', & 36-37.75'), AOC 22-13 (0-0.5', 1.5-2', 18-20', 32-34.5', & 37-39') and AOC 22-15 (1-1.5', 1.5-2', & 34-36'). Ground water was encountered in three borings (AOC 22-12 (TW-01), AOC 22-13, and AOC 22-15 (MW-61) and water samples were collected from each. All soil and ground water samples were submitted to the analytical laboratory for analysis.

AOC No. 23

At AOC No. 23, one soil boring (AOC 23-1) was drilled in a location down gradient of the Evaporation Ponds, south of the Truck Shop. The soil boring extended to approximately 58.25 ft bgl and was completed as a permanent monitoring well (MW-62).

A total of 4 soil samples [AOC 23-1 (0-0.5'), AOC 23-1 (1.5-2'), and AOC 23-1 (52-53')], including one field duplicate sample, were collected for laboratory analysis. Ground water samples (MW-62) were collected from the completed monitoring well. Figure 14 shows the sample locations for AOC No. 23.

AOC No. 24

At AOC No. 24, three soil borings (AOC 24-5, AOC 24-6, and AOC 24-7) were drilled in locations north and west of Tank 41 and slightly down gradient of the AOC No. 24 area. The soil borings extended to approximately 10 ft, 10 ft, and 50.25 ft bgl, respectively. Soil boring AOC 24-7 was completed as a permanent monitoring well (MW-64).

A total of 17 soil samples, including two field duplicate samples, were collected from the three soil borings and four additional hand augered surface soil sample locations (AOC 24-1 through AOC 24-4) for laboratory analysis. The soil samples collected included AOC 24-1 (0-0.5' & 1.5-2'), AOC 24-2 (0-0.5' & 1.5-2'), AOC 24-3 (0-0.5' & 1.5-2'), AOC 24-4 (0-0.5' & 1.5-2"), AOC 24-5 (0-0.5' & 1.5-2'), AOC 24-6 (0-0.5'& 1.5-2'), and AOC 24-7 (0-0.5', 1.5-2', & 39-42'). Ground water was only encountered in boring AOC 24-7 and water samples were collected from this location (MW-64). Figure 15 shows the sample locations for AOC No. 24.

AOC No. 25

At AOC No. 25, one soil boring (AOC 25-2) was drilled in a location along the north side of current auxiliary warehouse. The soil boring extended to approximately 45.5 ft bgl and was completed as a permanent monitoring well (MW-60).

A total of 6 soil samples [AOC 25-1 (0-0.5' & 1.5-2') and AOC 25-2 (0-0.5', 1.5-2', & 36-38')], including one field duplicate sample, were collected from the one soil boring and one additional hand augered surface soil sample location (AOC 25-1) for laboratory analysis. In addition, one set of ground water samples were collected from MW-60 following monitoring well completion and development activities in May 2009. A second set of ground water samples were not collected due to the lack of ground water in the well during the July 2009 sampling event. Figure 7 shows the sample locations for AOC No. 25.

AOC No. 26

At AOC No. 26, two soil boring (AOC 26-8 and AOC 26-9) were drilled in a location west of Tank 44 and slightly down gradient of the AOC No. 26 area. The soil borings extended to approximately 44.25 ft and 43.25 ft bgl, respectively. Soil boring AOC 26-8 and AOC 26-9 were completed as permanent monitoring wells (MW-65 and MW-66, respectively).

A total of 22 soil samples, including two field duplicate samples, were collected from the two soil borings and seven additional hand augered surface soil sample locations (AOC 26-1 through AOC 26-7) for laboratory analysis. These samples included AOC 26-1 (0-0.5' & 1.5-2'), AOC 26-2 (0-0.5' & 1.5-2'), AOC 26-3 (0-0.5' & 1.5-2'), AOC 26-4 (0-0.5' & 1.5-2"), AOC 26-5 (0-0.5' & 1.5-2'), AOC 26-6 (0-0.5'& 1.5-2'), AOC 26-7 (0-0.5' & 1.5-2'), AOC 26-8 (0-1', 1.5-2', & 32-

36') and AOC 26-9 (0-0.5', 1.5-2', & 36-38'). Ground water was only encountered in two borings (AOC 26-8 and AOC 26-9) and water samples were collected from only these two locations (i.e., MW-65 and MW-66).

3.4 Collection and Management of Investigation Derived Waste

Drill cuttings, excess sample material and decontamination fluids, and all other investigation derived waste (IDW) associated with soil borings were contained and characterized based on the boring location and type of contaminants suspected or encountered in DOT certified 55-gallon drums.

A total of three composite samples were collected from drums containing soil with known constituent concentrations above NMED residential soil screening levels. Composite samples were not collected for soils cuttings generated from AOC No. 23 and AOC No. 25 because investigation sample results show that the detected concentrations in the soil were below NMED residential screening levels. Composite samples were collected to characterize soil for waste disposal from AOC No. 24, AOC No. 26, AOC No. 22, and SWMU No. 4. One composite sample was collected for soil from AOC No. 24 and another composite sample was collected for soil from AOC No. 26. A single composite sample was collected for soil from AOC No. 22 and SWMU No. 4 since less than one drum of cuttings was generated from investigations at SWMU No. 4, and the investigation results show that only a limited impact of TPH was detected at a concentration higher than NMED residential screening levels, but below NMED industrial screening level for waste oil. The composite samples collected for analysis of VOCs were collected as individual aliquots that were placed directly into the sample container and compacted to reduce headspace. The VOC composite samples were not homogenized to prevent loss of VOCs. Each composite soil sample was analyzed for the following:

- BTEX and MTBE by EPA Method 8021B;
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8310;
- TCLP RCRA 8 Metals by EPA Method 6010B; and
- Ignitability, Corrosivity, and Reactivity.

The associated analytical is included in Appendix C. All analytical results for waste characterization purposes were submitted to Waste Management, Inc. for review and approval of acceptance. Soils were disposal of at the Painted Desert Landfill, In Joseph City, Arizona.

All purged ground water and decontamination water was disposed in the refinery wastewater treatment system upstream of the API Separator. Personal protective equipment (e.g., gloves) was disposed in the refinery's general waste bins.

3.5 Surveys

Known site features and/or site survey grid markers were used as references to locate each boring and surface sample location prior to surveying the locations using a registered professional land surveyor. The boring locations were measured to the nearest foot, and locations were placed on a scaled map. In addition, a hand-held GPS receiver was used to record the coordinates of each soil boring. These coordinates were recorded on the boring logs. The soil boring locations were subsequently surveyed by a registered surveyor.

The horizontal coordinates and elevation of each surface sampling location; the surface coordinates and elevation of each boring, the top of each monitoring well casing, and the ground surface at each monitoring well location; and the locations of all other pertinent structures were 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 D.

Section 4
Field Investigation Results

This section provides a summary of the surface and subsurface conditions at the refinery, including the subject SWMUs/AOCs. A discussion is included on the installation of soil borings, field screening of subsurface soils, and collection of soil samples for analysis. This is followed by a description of the installation of permanent and temporary well completions and the collection of groundwater samples. Groundwater and surface water conditions are described, followed by a discussion on field screening of vadose zone soil vapors.

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 portion of the refinery property, where the process units and storage tanks 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, which collect most of the surface water flows in the area, thus significantly reducing surface water flows across the refinery. 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 local surface water flows and minor ground water discharges.

The refinery complex is bisected by County Rd #4990 (Sullivan Road), which runs east-west. The process units, storage tanks (crude oil and liquid products), and wastewater treatment systems 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 slopes that are not too steep to support 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. Thirteen soil borings, eight of which were completed as permanent monitoring wells, were completed under this scope of work for Group No. 3. One additional temporary well designated as TW-01 was installed in the AOC No. 22 area.

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 40 feet near 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, 1994).

Figures 3 and 4 present cross-sections of the shallow subsurface based on borings logs from on-site monitoring well completions.

Underground piping is present in the area of AOC Nos. 22, 24, and 26 (see Figure No. 2), which includes piping used to transfer crude oil from the loading racks to AOC No. 22, piping for gasoline additives from AOC No. 26 to the product loading rack, crude oil transfer piping to the tank farm north of County Rd. 4990, product transfer piping from the tank farm to product loading rack, and piping used to transfer product and crude oil within the individual loading racks. There was no indication that the underground piping is acting as a preferential pathway for contaminant migration and the generally transmissive nature of the native soils would tend to lesson any affects from the underground utilities.

4.3 Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment

This subsection provides a description of surface and 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 surface and subsurface impacts in soils. Field decontamination, soil screening and sample collection procedures are discussed in Appendix E.

A total of 13 soil borings were drilled as part of Group 3 investigation activities using hollow-stem auguring (HSA) method or air rotary-ODEX method. All soil borings were drilled to a minimum depth of 10 feet with at least one boring at each of the individual potential source areas drilled to the top of saturation, with the exception of SWMU No. 5 where only surface (0-2') soil samples were collected using a hand auger. If there was any indication of impacts based on field screening results at 10 feet or evidence of waste materials or other signs of impacts, then the boring was drilled deeper until reaching a depth of five feet below any observed impacts (e.g., odors or elevated PID readings) or to the top of saturation, whichever was achieved first. If impacted media was detected at the water table, then the boring was drilled five feet below the water table or to refusal (whichever occurred first) to facilitate collection of ground water samples. Total depths of each soil boring completed as a permanent monitoring well ranged between 40.25 ft to 59 ft bgl, with the deepest soil boring/monitoring well being AOC 23-1/MW-62.

At designated locations where only surface soil samples were collected (i.e. sample intervals being (0-0.5') and (1.5-2.0') below ground level only), sampling was accomplished using a hand auger with the soil samples collected from the auger bucket. Soil samples collected from soil borings extending greater than 2 ft below ground level were collected using split spoon samplers.

In general, discrete soil samples were collected from the following depth intervals:

- 0-0.5' bgl;
- 1.5'-2.0' bgl;
- 6-inch interval above the top of saturation (for deeper soil borings only;
- The interval from each boring with the greatest apparent degree of impact based on field observations and field screening; and

- Any additional intervals as determined based on field screening to exhibit potentially significant impacts.

The installation of soil borings, collection of soil samples, and abandonment of borings is discussed below in chronological order within each SWMU/AOC. Copies of the boring and well construction logs are provided in Appendix F. In addition to being included on the soil boring logs, the soil vapor (i.e., headspace) screening results are summarized in Table 12 for shallow soil samples (0-2') and Table 13 for deeper soil borings.

SWMU No. 4 - Transportation Terminal Sump

SWMU 4-1/MW-59

On April 6, 2009 the drilling rig was set up on location SWMU 4-1/MW-59 (Figure 6). Sample collection began with the use of the HSA drilling method and split spoon samplers. The borehole was advanced to a depth of 36 feet bgl. The rig was modified to drill using the ODEX drilling method and sampling continued. The sampling was terminated at 43.5 feet bgl. Soil was continuously logged to a depth of 43.5 feet bgl. Soil samples were collected for analysis from depths of 0-0.5' and 1.5 to 2.0' from within a clayey silt with PID readings of 0.2 ppm. Elevated PID readings were recorded in the interval from 4 to 12 feet bgl. The highest reading was at 6 to 8 feet bgl (214 ppm) and a sample was collected for analysis from this interval. A soft, black, sticky material mixed with clayey silt was encountered from 4 to 8 feet and soil discoloration and odor were observed down to 12 feet. None of the PID readings below 12 feet exceeded 10 ppm nor were there any visual or olfactory evidence of impacts below 12 feet. A fourth sample was collected for analysis from a depth of 36 to 38' based on an increase in soil moisture suggesting the top of the capillary fringe.

The Nacimiento Formation was encountered at 42.5 feet bgl and consisted of dense, damp, yellowish brown sandstone. In order to accommodate the well setting, the borehole was advanced to a depth of 44.25 feet bgl. The well materials were installed into the boring on April 6, 2009, as discussed in Section 4.4.

SWMU No. 5 - Heat Exchanger Bundle Cleaning Area

SWMU 5-1, SWMU 5-2, SWMU 5-3, SWMU 5-4, SWMU 5-5, and SWMU 5-6

Twelve surface soil samples (i.e., 0-0.5' and 1.5–2') were collected in the SWMU No. 5 area (Figure 7) on April 23, 2009 from sample locations SWMU 5-1, SWMU 5-2, SWMU 5-3, SWMU 5-4, SWMU 5-5, and SWMU 5-6. Discrete soil samples, including one field duplicate sample (SWMU 5-5 (1.5-2.0')), were collected from all six surface soil locations for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. The samples were collected using a hand auger and the boreholes were plugged with bentonite chips on the same day.

There were no obvious indications of impacts based on the field screening results (PID results ranging from 7.7 to 17.8 ppm are summarized in Table 12) nor was there any visual or olfactory evidence of impacts in 0 to 2 foot interval in any of the six sample locations. The lithology was similar at all six locations and consisted of gravelly silty sand. No conditions that occurred during the field activities are considered to be capable of influencing the results of the field screening and ground water was not encountered in any of the borings. No deep soil borings or monitor wells were installed at the SWMU; however, a soil boring and permanent monitoring well (AOC 25-2/MW-60) was installed at AOC No. 25, which is adjacent to SWMU No. 5.

AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks

In addition to the five soil borings (AOC 22-12 through AOC 22-16) installed at AOC No. 22, surface soil samples only were collected at eleven additional designated locations (AOC 22-1 through AOC 22-11) as shown on Figure 8.

AOC 22-14

On April 8, 2009 the drilling rig was set up on location AOC 22-14 (Figure 8). Sample collection was accomplished using the HSA drilling method and split spoon samplers. The sampling terminated at 10 feet bgl. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to a depth of 10 feet bgl. Soil samples were collected from a silt interval at depths 0 – 0.5 feet and 1.5 – 2 feet, where PID readings of 2.1 and 3.1 ppm were recorded, respectively. No conditions that occurred during the field activities are considered to be capable of influencing the results of the field screening. Ground water was not encountered and the borehole was grouted to the surface on April 9, 2009.

AOC 22-13

On April 8, 2009 the drilling rig was set up on location AOC 22-13. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Elevated PID readings were recorded from the surface to the depth of saturation (39 feet). The readings ranged from 908 ppm (35 -37 feet) to 1,694 ppm (32 -33 feet). Soil discoloration was apparent from 20 to 39 feet bgl and the soil cores exhibited odor throughout the entire soil boring. Soil samples were collected from a silt deposit at depths of 0–0.5 and 1.5–2 feet. The third soil sample collected was taken from the top of a silty sand horizon at a depth of 18–20 feet, where the second highest PID reading of 1,660 ppm was recorded. The highest PID (1,694 pm) reading occurred at the top of a gravelly sand horizon and a sample of this material was collected at 32–34.5 feet bgl. The deepest sample was collected from just above saturation at a depth of 37-39 feet bgl in the same gravelly sand horizon as the 32-34.5 foot sample. The PID reading was 1,228 ppm.

As shown on the soil boring log for AOC 22-13, the Nacimiento Formation was encountered at 40.5 feet bgl. The sampling was terminated at 42.5 feet bgl. This location was not designated for a well installation. However, due the elevated PID readings, the visual observation of staining, and the presence of odor extending to the depth of saturation, a ground water sample was collected via a temporary well completion as discussed below in Section 4.4. As temporary well supplies were not immediately available for installation, the augers were left in the borehole overnight. After a ground water sample was collected, the augers were removed and the borehole was grouted to the surface on April 9, 2009.

AOC 22-7, AOC 22-8, and AOC 22-9

Soil samples were collected from locations AOC 22-7, AOC 22-8, and AOC 22-9 on April 13, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location from a silt deposit, with a duplicate collected at AOC 22-8 (1.5-2'). There were no field indications of impacts (e.g., stained soil, odors, or elevated PID readings). The PID readings ranged from 0.6 to 2.6 ppm and are summarized in Table 12. Ground water was not encountered and all three boreholes were plugged with bentonite chips on the same day.

AOC 22-12/TW-01

On April 13, 2009 the drilling rig was set up on location AOC 22-12. Sample collection was accomplished using the HSA drilling method and split spoon samplers. Elevated PID readings were recorded from 28 feet to the depth of saturation (36 feet). The readings ranged from 22.7 ppm (28 - 30 feet) to 220 ppm (36 – 37.75 feet). Soil discoloration and an odor were apparent in the soil cores from 26 to 37.75 feet bgl. The soil cores collected from the saturated portion of the boring also exhibited an odor. Soil samples were collected from a silt layer with a PID reading of 0.9 ppm at depths 0–0.5 feet (also duplicated) and 1.5–2 feet. The highest PID reading of 220 ppm was measured near the top of saturation at 36-37.75'. An additional sample was collected from depths of 32–35 feet bgl.

As shown on the soil boring log for AOC 22-12, the Nacimiento Formation was encountered at 41 feet bgl and consisted of clayey/sand-weathered sandstone. The sampling was terminated at 42 feet bgl.

Due the elevated PID readings, the visual observation of soil discoloration, and the presence of odor extending vertically to the depth of saturation, it was determined that a ground water sample would be collected from the boring. It was decided to not plug and abandon the boring after collection of a ground water sample but rather to complete the boring as a temporary well TW-01, as discussed below in Section 4.4.

AOC 22-16/MW-63

On April 13, 2009 the drilling rig was set up on location AOC 22-16. Sample collection was accomplished using the HSA drilling method and split spoon samplers. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to a depth of 34 feet bgl. Samples were collected for analysis from depths of 0-0.5 and 1.5-2 feet from a silt horizon with PID readings of 1.6 and 0.9 ppm, respectively. The drilling and sampling continued to a depth of 34 feet bgl before shutting down for the day.

On April 14, 2009 the drilling and sampling resumed with the ODEX drilling method and split spoon samplers. A soil sample was collected from a gravelly sand horizon in the interval just above saturation (36-38 feet). The PID reading associated with this sample was 12.2 pm. As shown on the well construction log for MW-63, the Nacimiento Formation was encountered at

44 feet bgl and consisted of dense, fine grained, dry, greenish gray weathered sandstone. In order to accommodate the well setting the borehole was advanced to a depth of 46 feet bgl. The well completion activities are discussed below in Section 4.4.

AOC 22-10 and AOC 22-11

Soil samples were collected from locations AOC 22-10 and AOC 22-11 on April 14, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location from predominantly a clayey silt deposit as shown on the borings logs in Appendix F. The PID readings were low and ranged from 3.8 to 7.9 ppm. No odors or other observations of potential impacts were observed. The PID readings are summarized in Table 12. Ground water was not encountered and all four boreholes were plugged with bentonite chips on the same day.

AOC 22-1, AOC 22-2, AOC 22-3, and AOC 22-4

Soil samples were collected from locations AOC 22-1, AOC 22-2, AOC 22-3, and AOC 22-4 on April 15, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location from a silt deposit that graded to a clayey silt or sandy silt at some locations as shown on the borings logs in Appendix F. Most PID readings were low and ranged from 2.1 to 5.1 ppm with the exception of two locations. An elevated PID reading of 16.1 ppm occurred in the 0-0.5 foot interval at AOC 22-2 and the highest reading of 2,429 ppm occurred in the 1.5-2.0 foot sample at AOC 22-4. An odor was observed in boring AOC 22-4 and no staining was observed in any of the borings. The PID readings are summarized in Table 12. Ground water was not encountered and all four boreholes were plugged with bentonite chips on the same day.

AOC 22-15/MW-61

On April 15, 2009 the drilling rig was set up on location AOC 22-15. Sample collection was accomplished using the HSA drilling method and split spoon samplers to a depth of 36 feet. Slightly elevated PID readings were observed from 1.5 feet to 32 feet. The highest readings were found between 1.5 to 4 feet (29.5 ppm and 23.4 ppm). There was no visual or olfactory evidence of impacts from the surface to a depth of 30 feet bgl. Two soil samples were collected from a clayey silt layer in the upper most part of the boring from 1.0–1.5 feet and 1.5–2 feet (duplicated). In the interval from 30 to 32 feet, staining was observed, an odor was evident and the PID reading increased to 22 ppm. A soil sample was collected from 30-32 feet bgl at the contact of a silty sand, which overlies a gravelly sand. A maximum PID reading of 510 ppm was recorded from 34 to 36 feet from within the gravelly sand and near the top of saturation. A soil sample was collected for laboratory analysis from 34-36' bgl.

The rig was modified to drill using the ODEX drilling method and sampling continued below 36 feet. As shown on the well construction log (MW-61) the Nacimiento Formation was encountered at 38 feet bgl and consisted of low plasticity, firm, dry to damp, yellowish brown to greenish gray silty sandy clay. In order to accommodate the well setting the borehole was advanced to a depth of 40.25 feet bgl. The well completion details are presented below in Section 4.4.

AOC 22-5 and AOC 22-6

Soil samples were collected from locations AOC 22-5 and AOC 22-6 on April 23, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location from a sandy silt deposit in the upper one foot and a clayey silt in the lower interval. There were no field indications of impacts (e.g., stained soil, odors, or elevated PID readings). The PID readings ranged from 1.4 to 4.1 ppm and are summarized in Table 12. Ground water was not encountered and both boreholes were plugged with bentonite chips on the same day.

AOC No. 23 - Southeast Holding Ponds

AOC 23-1/MW-62

On April 21, 2009 the drilling rig was set up on location AOC 23-1 (Figure 14). Sample collection was initially accomplished using the HSA drilling method and split spoon samplers. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the upper two feet, where samples were collected from 0–0.5 feet (duplicate) and 1.5–2 feet. PID readings of 3.1 and 3.3 ppm were recorded from the silt interval occurring from 0–2 feet. After encountering gravelly sand at 8 to 10 feet bgl the rig was modified to drill using the ODEX drilling method. Sampling continued to a depth of 31 feet bgl before shutting down for the day.

On April 22, 2009 the drilling and sampling resumed with the ODEX drilling method and split spoon samplers. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts to the termination depth of 58.25 feet. A soil sample was collected from a silty sand at 52-53 feet bgl (interval above saturation). As shown on the well construction log for MW-62, the Nacimiento Formation was encountered at 55.5 feet bgl and consisted of very dense, black, dry, silt/shale. In order to accommodate the well setting, the borehole was advanced to a depth of 58.25 feet bgl. The well construction activities are documented below in Section 4.4.

AOC No. 24 - Tank Areas 41 and 43

In addition to the three soil borings installed at AOC No. 24 as described below, surface samples only were collected at four additional designated locations (AOC 24-1 through AOC 24-4).

AOC 24-7/MW-64

On April 7, 2009 the drilling rig was set up on location AOC 24-7 (Figure 15). Sample collection was initially accomplished using the HSA drilling method and split spoon samplers. Soil samples were collected from a clayey silt layer at 0–0.5 feet and 1.5–2 feet bgl. There were no indications of impacts based on the field screening results (PID reading of 0.4 ppm for the 0-2 foot interval) nor was there any visual or olfactory evidence of impacts from the surface to the termination depth of 50.25 feet. After encountering gravelly sand at 38 feet bgl, the rig was modified to drill using the ODEX drilling method. Sampling continued to a depth of 51 feet bgl before shutting down for the day with a sample collected from a gravelly sand at depths of 39–42 feet bgl (interval above saturation). PID readings of 4.4 and 1.2 ppm were recorded from 38 to 42 feet bgl.

As shown on the well construction log for MW-64, the Nacimiento Formation was encountered at 49 feet bgl and consisted of dense, very stiff, dry to damp, yellowish brown sandy clay. On April 8, 2009, the borehole was reamed to a depth of 50.25 feet bgl in order to accommodate the well setting, which is detailed below in Section 4.4.

AOC 24-5

On April 8, 2009 the drilling rig was set up on location AOC 24-5. Sample collection was accomplished using the HSA drilling method and split spoon samplers. The sampling terminated at 10 feet bgl. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to the termination depth. Soil samples were collected on April 8, 2009 from 0–0.5 feet (duplicate) and 1.5–2 feet. Silt was present from the land surface to two feet and graded to a clayey silt, which extended to 10 feet bgl. PID readings ranged from 1.2 to 7.8 ppm. Ground water was not encountered and the borehole was grouted to the surface on April 9, 2009.

AOC 24-6

On April 8, 2009 the drilling rig was set up on location AOC 24-6. Sample collection was accomplished using the HSA drilling method and split spoon samplers. The sampling terminated at 10 feet bgl and there were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to the termination depth. Soil samples were collected on April 8, 2009 from 0–0.5 feet and 1.5–2 feet, from a silt deposit. The silt graded to a clayey silt below two feet, which continued to the termination depth of 10 feet. PID readings ranged from 0.3 to 5.3 ppm. Ground water was not encountered and the borehole was grouted to the surface on April 9, 2009.

AOC 24-1, AOC 24-2, AOC 24-3, and AOC 24-4

Soil samples were collected from locations AOC 24-1 through AOC 24-4 on April 23, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location with a duplicate collected at AOC 24-4 (1.5-2'). A silt deposit at logged at AOC 24-1, with a clayey silt at AOC 24-2 and a gravelly silty sand present at AOC 24-3 and AOC 24-4. There were no field indications of impacts (e.g., stained soil, odors, or elevated PID readings). The PID readings ranged from 1.7 to 7.7 ppm and are summarized in Table 12. Ground water was not encountered and the boreholes were plugged with bentonite chips on the same day.

AOC No. 25 - Auxiliary Warehouse and 90- Day Storage Area

In addition to the one soil boring installed at AOC No. 25 as described below, surface samples only were collected at one additional designated location (AOC 25-1).

AOC 25-2/MW-60

On April 5, 2009 the drilling rig was set up on location AOC 25-2 (Figure 16). Sample collection was initially accomplished using the HSA drilling method and split spoon samplers. There were no indications of impacts based on the field screening results nor was there any visual or olfactory evidence of impacts from the surface to the termination depth. Soil samples were collected from 0–0.5 feet (duplicate) and 1.5–2 feet from a clayey silt. A third sample was collected from 36–38 feet to represent the interval above saturation. This sample was collected from a gravelly sand with a PID reading of 4.2 pm.

After encountering gravelly sand at 38 feet bgl the rig was modified to drill using the ODEX drilling method. Sampling continued to a depth of 45.5 feet bgl. As shown on the well construction log for MW-60, the Nacimiento Formation was encountered at 43.5 feet bgl and consisted of dense, fine grain, damp, light yellowish brown weathered sandstone. The borehole was advanced to a depth of 45.5 feet bgl in order to accommodate the well setting, which is described in Section 4.4.

AOC 25-1

On April 23, 2009 two discrete soil samples were collected from AOC 25-1 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. The samples, which consisted of a gravelly silty sand, were collected using a hand auger. There were no indications of impacts based on the field screening results (PID reading of 5.5 ppm) nor were there any visual or olfactory evidence of impacts in 0 to 2 foot interval. No conditions that occurred during the field activities are considered to be capable of influencing the results of the field screening and ground water was not encountered. The boring was plugged on the same day with bentonite chips.

AOC No. 26 - Tank Area 44 and 45

In addition to the two soil borings (AOC 26-8 and AOC 26-9) installed at AOC No. 26, surface samples only were collected at seven additional designated sample locations (AOC 26-1 through AOC 26-7).

AOC 26-8/MW-65

On April 16, 2009 the drilling rig was set up on location AOC 26-8 (Figure 16). The boring had been hydroexcavated to 10 feet to clear utilities. Soil sampling with the rig began at 10 feet bgl and was accomplished using the HSA drilling method and split spoon samplers. The rig was modified to the ODEX drilling method after a gravelly sand was encountered at 32 feet bgl. A faint odor was initially detected at 28 feet bgl and became stronger with depth. Elevated PID readings were observed from 29 feet to the depth of saturation at 36 feet. The highest reading was 145 ppm in the core sample from 34 feet to 36 feet bgl. A soil sample was collected from 32-36 feet bgl from a gravely sand.

As shown on the well construction log for MW-65, the Nacimiento Formation was encountered at 41.75 feet bgl and consisted of fine grain, very stiff, damp, yellowish brown sandy clay/clayey sand. In order to accommodate the well setting the borehole was advanced to a depth of 44.25 feet bgl. The well completion details are discussed below in Section 4.4.

The rig was sent back to this location on April 20, 2009 to collect and screen the soils from 0 feet to 10 feet bgl. This was required because the original borehole was hydroexcavated to a depth of 10 feet to ensure that utilities were not present in this area, which precluded the ability to collected soil samples from 0 to 10 feet bgl. Surface soil samples were collected from AOC 26-8 from 0-1.0 feet (duplicate) and 1.5-2 feet. Asphalt was present at the surface and the 0-1 foot sample was collected from beneath the asphalt in a silt/gravel mix with a PID reading of 1.8 ppm. The 1.5-2 foot sample was collected from a clayey silt with a PID reading of 1.0 ppm. The borehole was grouted to the land surface on April 20, 2009.

AOC 26-9/MW-66

On April 20, 2009 the drilling rig was set up on location AOC 26-9. Soil sampling was initially conducted using the HSA drilling method and split spoon samplers. Soil samples were collected from 0 to 0.5 feet and 1.5 to 2 feet from a clayey silt with a PID reading of 8.6, without any odor or other signs of impact. The rig was modified to the ODEX drilling method after reaching 36 feet bgl. Elevated PID readings were observed from 34 feet to 38 feet. The highest reading was 3939 ppm in the core sample from 36 feet to 38 feet bgl. An odor was initially detected at 36 feet bgl and was also evident in the saturated soils. A sample was collected from 36-38 feet from a gravelly sand, which represents both the interval with the greatest apparent degree of impact and the zone above saturation.

As shown on the well construction log for MW-66, the Nacimiento Formation was encountered at 41 feet bgl and consisted of a sandy silty clay that was stiff to very stiff, dry and grayish green. In order to accommodate the well setting, the borehole was advanced to a depth of 43.25 feet bgl, and the field activities ceased for the day. The well installation details are discussed below in Section 4.4.

AOC 26-1, AOC 26-2, AOC 26-3, AOC 26-4, AOC 26-5, AOC 26-6, and AOC 26-7

Surface soil samples were collected from locations AOC 26-1, AOC 26-2, AOC 26-3, AOC 26-4, AOC 26-5, AOC 26-6, and AOC 26-7 on April 20, 2009. The shallow borings were completed using a hand auger and the soil samples were collected directly from the auger bucket. The samples were collected from depths of 0-0.5' and 1.5-2' at each location [duplicate collected at AOC 26-3 (1.5-2')] from a clayey silt deposit as shown on the borings logs in Appendix F. Most PID readings were low and ranged from 3.5 to a high of 15.2 ppm in the 1.5-2.0 foot sample collected at AOC 26-5. There was no odor or staining of soils observed in any of the borings and ground water was not encountered. The PID readings are summarized in Table 12. All boreholes were plugged with bentonite chips on the same day.

4.4 Monitor Well Construction and Ground Water Sampling

This section describes the methods and details of monitoring well construction and the collection of ground water samples. The description includes the dates of well construction. The wells and ground water samples are discussed in chronological order within each SWMU/AOC. Copies of the boring and well construction logs are provided in Appendix F. The well development and purging procedures are discussed in Appendix E.

Soil borings completed as a permanent or temporary monitoring well were drilled to the top of bedrock (Nacimiento Formation). The completion depths ranged between 40 to 59 feet. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 10 to 15 feet to ensure that the entire saturated zone is open to the well. Rigid PVC with threads was utilized for the well casing and no glues/solvents were utilized. Permanent monitoring wells were constructed with 4-inch diameter PVC casing; the temporary wells were constructed using 2-inch diameter PVC casing. A 10/20 sand filter pack was installed to a minimum of two feet over the top of the well screen. A 6-inch sand bed was also installed at the base of the monitor wells. Pursuant to Section IX.C. of the Order, a minimum of two feet of bentonite seal was placed over the filter pack and hydrated. An annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours before surface pad and protective casing were installed.

The surface completions consisted of either flush mount completions or stickup completions. The flush mount completions consisted of an 8-inch well vault centered within a concrete pad measuring 4-feet by 4-feet wide by 6-inches thick. The concrete pad was wire reinforced. The stickup completions consisted of a protective aluminum enclosure with cap that was secured in a concrete pad measuring 4-feet by 4-feet wide by 6-inches thick. The concrete pad was wire reinforced. The aluminum protective casing extended 4 feet above the top surface of the concrete pad.

Four-inch diameter steel bollards were installed 6 inches from each corner of the concrete pad to further protect the monitoring wells constructed with stick-up completions. Bollards were not placed around temporary well TW-01 since its location is not near vehicle access areas. The bollards were installed two feet below grade and extended three feet above grade. The bollards were installed vertically level and extend the same height. 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.

SWMU No. 4 - Transportation Terminal Sump

SWMU 4-1/MW-59

On April 6, 2009 the drilling rig was set up on location SWMU 4-1/MW-59 (Figure 6). Sample collection began with the use of the HSA drilling method and split spoon samplers. The borehole was advanced to a depth of 36 feet bgl, where the rig was modified to drill using the ODEX drilling method and sampling continued. As shown on the well construction log for MW-59, the Nacimiento Formation was encountered at 42.5 feet bgl. In order to accommodate the well setting, the borehole was advanced to a depth of 44.25 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (28 to 43 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the wellbore the ODEX casing was removed. Two feet of bentonite was placed over the filter pack and hydrated. On April 7, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 10, 2009, the surface pad and protective aluminum stick-up cover were installed.

Ground water samples were collected at MW-59 on May 14, 2009 and July 16, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks

AOC 22-13

On April 8, 2009 the drilling rig was set up on location AOC 22-13. As shown on the soil boring log for AOC 22-13, the Nacimiento Formation was encountered at 40.5 feet bgl. The sampling was terminated at 42.5 feet bgl. This location was not designated in the investigation work plan for a well installation. However, because the boring was drilled to the depth of saturation due the elevated PID readings, the visual observation of staining, and the presence of odor extending to the depth of saturation, a ground water sample was collected via a temporary well completion. As temporary well supplies were not immediately available for installation, the augers were left in the borehole overnight.

On April 9, 2009 the borehole was gauged and the depth to ground water was measured at 37.80 feet bgl. The total depth of the borehole was gauged as 38.75 feet bgl. Ground water sample AOC 22-13-GW was collected using a disposable bailer. The ground water in the augers was not purged prior to sampling since saturation had been encountered less than 24 hours earlier and would be representative of the formation's ground water. The augers were removed and the borehole was grouted to the surface.

AOC 22-12/TW-01

On April 13, 2009 the drilling rig was set up on location AOC 22-12. Soil sample collection was accomplished using the HSA drilling method and split spoon samplers. As shown on the soil boring log for AOC 22-12, the Nacimiento Formation was encountered at 41 feet bgl and consisted of clayey/sand-weathered sandstone. The sampling was terminated at 42 feet bgl.

Because the boring was drilled to the depth of saturation due the elevated PID readings, the visual observation of soil discoloration, and the presence of odor extending vertically to the depth of saturation, it was determined that a ground water sample would be collected from the boring. On April 14, 2009 the temporary well was gauged and the depth to ground water was measured at 37.95 feet bgl. The total depth of the well was gauged as 42.51 feet bgl. Ground water sample AOC 22-12-GW was collected using a disposable bailer. The ground water was not purged prior to sampling since saturation had been encountered less than 24 hours earlier and would be representative of the formation's ground water. Ground water was purged from the temporary well prior to collection of the samples on the second sampling event conducted on July 29, 2009.

It was decided to not plug and abandon the boring after collection of a ground water sample but rather to complete the boring as a temporary well TW-01. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom and extended for five feet (36.5 to 41.5 feet). Rigid 2-inch diameter Schedule 40 PVC with threads was utilized for the well casing. A 10/20 sand filter pack was installed to 3.5 feet over the top of the well screen. As the sand was installed in the wellbore the hollow stem augers were removed. Two feet of bentonite was placed over the filter pack and hydrated. On April 17, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. A stickup surface completion was installed at this location.

AOC 22-16/MW-63

On April 13, 2009 the drilling rig was set up on location AOC 22-16. Sample collection was accomplished using the HSA drilling method and split spoon samplers. The drilling and sampling continued to a depth of 34 feet bgl before shutting down for the day. On April 14, 2009 the drilling and sampling resumed with the ODEX drilling method. As shown on the well construction log for MW-63, the Nacimiento Formation was encountered at 44 feet bgl. In order to accommodate the well setting the borehole was advanced to a depth of 46 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (29.75 to 44.75 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to 2.75 feet over the top of the well screen. As the sand was installed in the well bore the ODEX casing was removed.

Two feet of bentonite was placed over the filter pack and hydrated. On April 17, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 23, 2009 the surface pad and protective aluminum cover were installed.

Ground water samples were collected at MW-63 on May 13, 2009 and July 15, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC 22-15/MW-61

On April 15, 2009 the drilling rig was set up on location AOC 22-15. Sample collection was accomplished using the HSA drilling method to a depth of 36 feet. The rig was modified to drill using the ODEX drilling method and sampling continued below 36 feet. As shown on the well construction log for MW-61, the Nacimiento Formation was encountered at 38 feet bgl. In order to accommodate the well setting the borehole was advanced to a depth of 40.25 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (24 to 39 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the well bore the ODEX casing was removed. Two feet of bentonite was placed over the filter pack and hydrated. On April 17, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 23, 2009 the surface pad and a flush mount vault were installed.

Ground water samples were collected at MW-61 on May 13, 2009 and July 16, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC No. 23 - Southeast Holding Ponds

AOC 23-1/MW-62

On April 21, 2009 the drilling rig was set up on location AOC 23-1. Drilling was initially conducted using the HSA drilling method. After encountering gravelly sand at 8 to 10 feet bgl the rig was modified to drill using the ODEX drilling method. Sampling continued to a depth of 31 feet bgl before shutting down for the day. On April 22, 2009 the drilling resumed with the ODEX drilling method. As shown on the well construction log for MW-62, the Nacimiento Formation was encountered at 55.5 feet bgl. In order to accommodate the well setting, the borehole was advanced to a depth of 58.25 feet bgl.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (42 to 57 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the well bore the ODEX casing was removed. Two feet of bentonite was placed over the filter pack and hydrated. On April 23, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 24, 2009 the surface pad and protective aluminum cover were installed.

Ground water samples were collected at MW-62 on May 13, 2009 and July 16, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC No. 24 - Tank Areas 41 and 43

AOC 24-7/MW-64

On April 7, 2009 the drilling rig was set up on location AOC 24-7. Drilling began with the HSA drilling method. After encountering gravelly sand at 38 feet bgl, the rig was modified to drill using the ODEX drilling method. As shown on the well construction log for MW-64, the Nacimiento Formation was encountered at 49 feet bgl. On April 8, 2009, the borehole was reamed to a depth of 50.25 feet bgl in order to accommodate the well setting.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (34 to 49 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to 2.25 feet over the top of the well screen. As the sand was installed in the well bore the ODEX casing was removed. Approximately 3.25 feet of bentonite was placed over the filter pack and hydrated. On April 9, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 23, 2009 the surface pad and protective aluminum cover were installed.

Ground water samples were collected at MW-64 on May 13, 2009 and July 15, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC No. 25 - Auxiliary Warehouse and 90-Day Storage Area

AOC 25-2/MW-60

On April 5, 2009 the drilling rig was set up on location AOC 25-2. The boring was begun using the HSA drilling method. After encountering gravelly sand at 38 feet bgl the rig was modified to drill using the ODEX drilling method. As shown on the well construction log for MW-60, the Nacimiento Formation was encountered at 43.5 feet bgl. The borehole was advanced to a depth of 45.5 feet bgl in order to accommodate the well setting.

Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (28.75 to 43.75 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to 2.25 feet over the top of the well screen. As the sand was installed in the well bore the ODEX casing was removed. Two feet of bentonite was placed over the filter pack and hydrated. On April 9, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 23, 2009 the surface pad and protective aluminum cover were installed.

Ground water samples were collected at MW-60 on May 14, 2009. A second attempt was made to collect ground water samples in July 2009 but sufficient water was not present in the well. The well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC No. 26 - Tank Area 44 and 45

AOC 26-8/MW-65

On April 16, 2009 the drilling rig was set up on location AOC 26-8. The boring had been hydroexcavated to 10 feet to clear utilities and drilling began at that depth using the HSA drilling method. The rig was modified to the ODEX drilling method after a gravelly sand was encountered at 32 feet bgl. As shown on the well construction log for MW-65, the Nacimiento Formation was encountered at 41.75 feet bgl. In order to accommodate the well setting the borehole was advanced to a depth of 44.25 feet bgl.

During installation of the well, the bentonite formed a "bridge" between the ODEX casing and the well casing. When the ODEX casing was being removed from the bore hole the well casing moved, which caused the proposed well settings to be adjusted. The ODEX casing and well casing were removed from the borehole and the field activities ceased for the day.

On April 17, 2009 the borehole was re-entered and reamed out to a depth of 44.25 feet bgl using the HSA drilling method. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (28 to 43 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to two feet over the top of the well screen. As the sand was installed in the well bore the augers were removed. Approximately 2.5 feet of bentonite was placed over the filter pack and hydrated.

On April 23, 2009 an annular grout was pumped by tremie method into the well completion borehole to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 24, 2009 the surface completion and protective cover were installed.

Ground water samples were collected at MW-65 on May 12, 2009 and July 16, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

AOC 26-9/MW-66

On April 20, 2009 the drilling rig was set up on location AOC 26-9. Drilling began using the HSA drilling method and the rig was modified to the ODEX drilling method after reaching 36 feet bgl.

As shown on the well construction log for MW-66, the Nacimiento Formation was encountered at 41 feet bgl. In order to accommodate the well setting, the borehole was advanced to a depth of 43.25 feet bgl and the field activities ceased for the day.

On April 21, 2009 MW-66 was installed. Slotted (0.01 inch) rigid PVC well screen was placed at the bottom of the well and extended for 15 feet (27 to 42 feet) to ensure that the entire saturated zone was open to the well. Rigid Schedule 40 PVC with threads was utilized for the well casing. A 6-inch sand bed was placed at the bottom of the well bore. The 10/20 sand filter pack was installed to 2.25 feet over the top of the well screen. As the sand was installed in the well bore the augers were removed. Approximately 2.25 feet of bentonite was placed over the filter pack and hydrated. On April 23, 2009 an annular grout was pumped by tremie method to within two feet of the ground surface and allowed to cure for a minimum of 24 hours. On April 24, 2009 the surface completion and protective cover were installed.

Ground water samples were collected at MW-66 on May 12, 2009 and July 15, 2009. On both occasions, the well was first purged and the water samples collected following the procedures discussed in Appendix E.

4.5 Ground Water 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 July/August 2009 is presented in Figure 5 and shows the ground water flowing to the northwest, toward the San Juan River. 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 ground water discharge.

The depth to water in the area of the Group No. 3 AOCs/SWMUs varies from approximately 34 feet near AOC No. 26 to 53 feet at AOC No. 23. This is due predominantly due to a difference in land surface elevation instead of a difference in potentiometric head. Approximately 0.5 feet of separate phase hydrocarbon (SPH) was measured in one of the new wells (MW-61) installed during this investigation.

The saturated thickness in the water table aquifer 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. The areas with the greatest saturated thickness are 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).

4.6 Surface Water Conditions

The only local surface water body, excluding on-site surface impoundments 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 or conditions likely to result in the future accumulation of surface water. 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. The active portion of the refinery property, where the process units and storage tanks are located, is generally of low relief with an overall northwest gradient of approximately 0.02 ft/ft. 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, which collect most of the surface water flows in the area. 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 local surface water flows.

The average annual rainfall is only approximately 7.5 inches, thus the threat of surface water transport of contaminants as suspended load or dissolved phase is low. Further, 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 ground water sample at each well, a total well vapor sample was collected and field analyzed for percent carbon dioxide and oxygen as described in Appendix E. Field vapor measurements were collected using a multi-gas meter, and the results recorded on a field sampling log. The measurements and associated PID readings are presented in Table 14.

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 ground water that is discussed below. 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. NMED guidance used to establish cleanup levels includes 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 ground water 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 6. Table 7 provides a list of the available NMED and EPA soil screening levels for non-residential properties.

The ground water cleanup levels are based on New Mexico WQCC standards (20.6.2.7 WW NMAC, 20.6.2.3103, and 20.6.2.4103) unless there is a federal maximum contaminant level (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 an EPA Regional Screening Level. Table 8 presents the ground water cleanup levels, with the applicable cleanup level highlighted.

The aforementioned Tables 6 and 7 have soil screening levels for the soil-to-groundwater pathway that are based on a dilution/attenuation factor (DAF) of 1.0. 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 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 this location has the shallowest depth to groundwater. A DAF value of 11.25 was calculated for SWMU No. 2 in the Group No. 2 Investigation Report (dated May 2009, revised March 2010) and although it is overly conservative for the SWMUs investigated under Group 3, the same DAF value of 11.25 is applied at all locations presented in this Investigation Report with the exception of soil boring AOC 22-13. The documentation of the calculation of the site-specific DAF value is provided in Appendix G.

The screening levels that are compared to individual sample results are presented in Tables 9, 10, and 11 for soils and Table 14 for ground water. Table 9 includes soil samples results for SWMUs No. 4 and 5, and AOCs No. 23 and 25. The screening levels in Table 9 are based on residential land use and the soil-to-ground water ("leachate") pathway incorporating a DAF of 11.25. Table 10 includes soil sample results for samples collected near the product loading rack portion of AOC No. 22 and AOC No. 26. The screening levels included in Table 10 are based on residential land use, non-residential land use and include the potential for constituents to migrate to ground water using a site-specific dilution attenuation factor (DAF) of 11.25. The soil analytical results for AOC No. 22 (crude receiving rack) and AOC No. 24 are presented in Table 11. The screening levels in Table 11 include residential land use, non-residential land use, and a site-specific DAF of 11.25. For the non-residential screening levels, the lower of the construction worker scenario and commercial/industrial scenario screening levels for each constituent is included in the data tables. In Tables 9-11, the screening levels have not been segregated based on depth of the sample.

A review of the NMED TPH Screening Guidelines (dated 2006) 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 used by the NMED in 2006 were developed by the MADEP in 2002 and 2003. A review of current MADEP soil standards from their website (http://www.mass.gov/dep/cleanup/laws/0975_6a.htm) indicates that screening levels have been updated for two of the TPH carbon ranges. The screening level for C11-C22 aromatic hydrocarbons has changed from 200 mg/kg to 1,000 mg/kg and C19-C36 aliphatics has changed from 2,500 mg/kg to 3,000 mg/kg.

The TPH screening concentrations were updated using the 2009 MADEP screening levels and the compositional assumptions from the NMED 2006 TPH Screening Guidelines. The updated soil screening level for "unknown oil" (i.e., 100 % C11-C22 aromatics) is 1,000 mg/kg and this value was developed by MADEP to be protective of the soil-to-ground water pathway, as well as direct contact pathways. This value is used in Tables 9, 10, and 11 for the leachate or DAF screening level and is unadjusted for a site-specific DAF (i.e., DAF = 1.0).

To evaluate the potential for "direct contact" type exposures (e.g., dermal contact, ingestion, and inhalation of particulates and volatiles) to TPH in surface soils, a screening level was developed for the "direct contact" pathways. This screening level was developed for C11-C22 aromatics as it has one of the highest toxicities of any of the TPH fractions used by NMED to calculate screening levels and is used to compare to "unknown oil." The calculation of the screening level for C11-C22 aromatics is documented in Appendix I. The calculations use Equation 1 (Combined Exposures to Noncarcinogenic Contaminants in Soil; Residential Scenario), Equation 9 (Combined Exposures to Noncarcinogenic Contaminants in Soil; Non-Residential Scenario – Commercial/Industrial Scenario), Equation 11 (Combined Exposures to Noncarcinogenic Contaminants in Soil; Non-Residential Scenario – Construction Worker Scenario), and all provided default exposure values from NMED's August 2009 *Technical Background Document for Development of Soil Screening Levels, Revision 5.0.* The toxicity values are taken from MADEP's Massachusetts Contingency Plan Standards spreadsheets, 2009 (http://www.mass.gov/dep/cleanup/laws/standard.htm). These soil TPH screening levels for "unknown oil" have conservatively been applied to all soil analytical results for all SWMUs and AOCs even though the hydrocarbon source at some locations (e.g., the crude oil loading rack and AOC No. 24) appears to be weathered crude oil, which would be anticipated to have a lower toxicity than the C11-C22 aromatic fraction.

Some of the individual constituents reported by the laboratory did not have screening levels but were all non-detect with respect to soil, except 4-isopropyltoluene, n-butylbenzene, n-propylbenzene, and sec-butylbenzene. With respect to ground water, there were also detections of constituents that do not have screening levels. The constituents detected in ground water that do not have screening levels include the four constituents listed above for soil plus magnesium, phenanthrene, bicarbonate, calcium, potassium, and sodium. None of these 10 constituents are classified as a carcinogen.

Section 6
Site Impacts

This section discusses the analyses performed and presents the analytical results that were obtained through the analysis of soil and ground water samples, which were collected at the Group 3 SWMUs/AOCs. The results for soils and ground water are discussed separately for each individual SWMU.

6.1 Soil Sampling Chemical Analytical Results

Soil samples were sent to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico for analysis 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.

In addition, 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
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.3/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471
Nickel	SW-846 method 6010/6020
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 soil analytical results are presented in Tables 9, 10, and 11. There were no conditions observed during the sample collection efforts that are thought to have had any impact on the analytical results. The site screening levels, as described in Section 5, are included in each table to facilitate a comparison between the reported concentrations and the applicable screening levels. Concentrations that exceed the applicable screening levels are bolded. Some of the samples have two analyses reported for VOCs. All data is reported to the lowest achievable limits expressed in units of ug/kg where possible. A second set of data has a higher reporting limit expressed in units of mg/kg due to higher concentrations being present in the samples.

The soils analyses were completed as provided in the site investigation work plan with only two exceptions. Soil sample AOC 22-12 (36-37.75') was inadvertently not analyzed for cyanide due to laboratory mis-communication; however, analysis was completed for all other requested constituents for sample AOC 22-12 (36-37.75'). Due to limited sample recovery, sample AOC 22-13 (37-39') was not analyzed for metals and SVOCs; all other required analyses were completed. The data exceptions to the approved work plan are also discussed in the Data Validation Report in Appendix H. Also, additional analyses for ethanol were conducted for some soil samples at AOC No. 26, beyond those required in the NMED letter of February 18, 2009, which approved the investigation work plan. The laboratory analytical reports are included in Appendix C.

6.1.1 SWMU No. 4 - Transportation Terminal Sump

One soil boring (SWMU 4-1) was advanced in the area of SWMU No. 4 (Figure 6) on April 6, 2009. No constituents were detected at concentrations above the residential screening levels in either of the two surface soil samples (i.e., 0-0.5' and 1.5-2') or the deepest sample (36-38') collected just above the depth of saturation. TPH as diesel range organics (DRO) and MRO was detected at concentrations exceeding the residential screening levels (Table 9) in the sample with the highest PID reading in the 6-8' interval. There are a number of constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, and xylenes) that are detected in the SWMU 4-1 (6-8') sample at concentrations above the soil-to-ground water ("leachate") pathway screening level but are all below their respective residential screening levels.

Because only TPH was detected at concentrations above the residential screening levels, no cumulative risk evaluation was performed. The TPH screening levels were conservatively based on "unknown oil" for the DRO fraction and the MRO fraction.

6.1.2 SWMU No. 5 - Heat Exchanger Bundle Cleaning Area

On April 23, 2009 discrete soil samples, including one field duplicate sample, were collected from all six surface soil locations (SWMU 5-1, SWMU 5-2, SWMU 5-3, SWMU 5-4, SWMU 5-5, and SWMU 5-6) at SWMU No. 5 for laboratory analyses from 0 to 0.5 and 1.5 to 2 feet bgl intervals.

No organic constituents were detected at concentrations exceeding the residential screening levels; however, mercury and arsenic were detected in surface soil samples (0-0.5' interval) at concentrations above the residential screening levels. Mercury exceeded the residential screening levels at sample locations SWMU 5-1, SWMU 5-2, SWMU 5-3, SWMU 5-4, SWMU 5-5, and SWMU 5-6, while arsenic was exceeded only at SWMU 5-3. The leachate pathway screening levels for arsenic were exceeded in samples SWMU 5-1 (0-0.5'), SWMU 5-3 (0-0.5'), and SWMU 5-5 (0-0.5'). The leachate pathway screening levels for mercury were exceeded in samples SWMU 5-1 (0-0.5'), SWMU 5-2 (0-0.5'), SWMU 5-3 (0-0.5'), SWMU 5-4 (0-0.5'), SWMU 5-4 (1.5-2.0'), SWMU 5-5 (0-0.5'), and SWMU 5-6 (0-0.5'). The analytical results are summarized in Table 9.

6.1.3 AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks

Soil sampling was conducted at the following locations at eleven surface soil sample locations (AOC 22-1 thru AOC 22-11) and five soil borings (AOC 22-12/TW-01, AOC 22-13, AOC 22-14, AOC 22-15/MW-61 and AOC 22-16/MW-63). The following text summarizes the resulting soil analyses. The analytical results for AOC No. 22 are separated into two summary tables. The samples collected near the product loading rack are presented in Table 10 and the samples collected near the crude receiving rack are included in Table 11. The residential, non-residential and leachate (DAF = 11.25) screening levels are presented in both tables. In Table 10, a **bold** font is used to identify concentrations exceeding the non-residential screening level and yellow highlighting is used to note concentrations above the leachate screening levels. In Table 11, a **bold** font is used to identify concentrations exceeding the non-residential screening level. As discussed in Section 7, concentrations above the leachate screening levels are not flagged in Table 11 because the field screening results and analyses indicate that constituents have not migrated vertically in these locations such that there appears to be a threat to ground water.

The TPH screening criteria used in the data tables are the same across all of AOC No. 22; however, potentially different screening levels could be developed for the areas near the crude rack vs. the product loading rack. The product type at the crude receiving rack is a weathered crude oil based on operations information and a review of chromatograms of samples collected in this area. Chromatograms for several soil samples characteristic of the crude receiving area are included in Appendix I. For comparison, chromatograms are also included for three fresh crude oils. No NMED screening level is provided for crude oil, weathered or otherwise, therefore "unknown oil" is utilized.

The TPH at the product loading racks is a mix of gasoline and diesel based on operations information. The most conservative screening level for "unknown oil" is also used at the product loading rack for this initial evaluation of the site investigation results.

AOC 22-14

Soil boring AOC 22-14 was extended to a depth of 10 feet on April 8, 2009. The analytical results for samples AOC 22-14 (0-0.5') and (1.5-2.0') are presented in Table 11. As shown, none of the concentrations exceed their respective screening levels.

AOC 22-13

Soil boring AOC 22-13 was drilled to a depth of 39 feet on April 8, 2009. The analytical results for samples 0-0.5', 1.5-2', 18-20', 32-34.5', and 37-39', which are summarized in Table 10, indicate the presence of multiple volatile and semi-volatile organic constituents (e.g., 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, toluene, and xylenes), and DRO at concentrations above the respective screening levels protective of migration to ground water; however, detected concentrations of all VOCs except 1,2,4-trimethlybenzene and all SVOCs were below the respective non-residential screening levels for direct contact.

AOC 22-12/TW-01

Soil boring AOC 22-12 was extended to a depth of 37.75 feet on April 13, 2009. As summarized in Table 10, none of the constituents were identified at concentrations above the residential, non-residential or the leachate screening levels.

AOC 22-16/MW-63

Soil boring AOC 22-16 was drilled to a depth of 46 feet bgl on April 13 and 14, 2009. All analytical results for the AOC 22-16 soil samples (0-0.5'; 1.5-2.0'; and 36-38') were below the residential, non-residential, and leachate screening levels (Table 11).

AOC 22-7 through AOC 22-9

On April 13, 2009 discrete soil samples were collected from three surface soil locations at AOC No. 22 (AOC 22-7, AOC 22-8, and AOC 22-9) for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. The analytical results (Table 11) for samples collected at locations AOC 22-7 through AOC 22-9 did not indicate the presence of constituents above the respective non-residential screening levels listed in Table 11. In addition, all detected concentrations were below respective residential soil screening levels for direct contact and leachate screening levels.

AOC 22-10 and AOC 22-11

On April 14, 2009 discrete soil samples were collected from two surface soil locations at AOC No. 22 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. The analytical results (Table 11) for soil samples collected at locations AOC 22-10 and AOC 22-11 do not indicate the presence of constituents above the screening levels.

AOC 22-15/MW-61

Soil boring AOC 22-15 was extended to a depth of 40.25 feet on April 15, 2009. No constituents had concentrations above the screening levels in samples 1.0-1.5', 1.5-2.0', and 30-32'. 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were detected at concentrations above the leachate screening levels in the sample collected at 34-36 feet bgl. The results are presented in Table 10.

AOC 22-1 through AOC 22-4

On April 15, 2009 discrete soil samples were collected from four surface soil locations at AOC No. 22 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. AOC 22-4 (1.5 – 2.0') was the only sample at locations AOC 22-1 through AOC 22-4 with detections of organic constituents above the respective screening levels protective of migration to ground water, which is consistent with the field screening results. There were multiple organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, xylenes, and DRO) with concentrations above the leachate screening levels listed in Table 10. The detected concentrations of 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene are above the residential screening levels but below the non-residential screening levels for direct contact.

AOC 22-5 and AOC 22-6

On April 23, 2009 discrete soil samples were collected from two surface soil locations (AOC 22-5 and AOC 22-6) at AOC No. 22 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. No constituents were detected at concentrations above the respective screening levels in any of the soil samples collected from locations AOC 22-5 or 22-6. The analytical results are summarized in Table 10.

AOC No. 22 Cumulative Risk Evaluation

As multiple constituents were detected at concentrations above the screening levels in soil samples collected at AOC No. 22, a qualitative cumulative risk evaluation was conducted. The following qualitative risk evaluation is only an initial screening not a substitute for a quantitative risk assessment, which would be developed as a separate risk assessment document. Also, this evaluation only considers AOC No. 22 and does not include detections from other nearby SWMUs/AOCs at which a potential receptor could also be exposed. The constituents with concentrations above the screening level are listed below with a notation if they are considered to be carcinogenic or non-carcinogenic. For non-carcinogens, the target organ is listed.

Constituent	Carcinogenic vs. Non-Carcinogenic	Non-Carcinogenic Target Organ
1,2,4-Trimethylbenzene	Non-Carcinogenic	Eyes, skin, respiratory, central nervous system (NIOSH, 2004)
1,3,5-Trimethylbenzene	Non-Carcinogenic	Liver, neurotoxicity (NIOSH, 2002),
1-Methylnaphthalene	Carcinogenic	Not applicable
2-Methynaphthalene	Non-Carcinogenic	Lungs (IRIS, 2009a)
Benzene	Carcinogenic	Not applicable
Ethylbenzene	Carcinogenic	Not applicable
Naphthalene	Carcinogenic	Not applicable
Xylenes	Non-Carcinogenic	neurological effects (IRIS, 2009c)
DRO	Not specified in NMED guidance	NA

Four of the constituents are listed as potential carcinogens based on the NMED and EPA sources referenced in Section 5.0. This could result in a cumulative carcinogenic risk level of at least 4.0 E-5, which exceeds the NMED target cumulative risk level of 1.0 E-5 for carcinogens.

6.1.4 AOC No. 23 - Southeast Holding Ponds

One soil boring was advanced in the area of AOC No. 23 (Figure 14) on April 13, 2009 to a depth of 58.25 feet bgl. None of the analytical results for the soil samples collected at AOC 23-1 indicate concentrations of constituents above the residential or leachate screening levels and the results are summarized in Table 9.

6.1.5 AOC No. 24 - Tank Areas 41 and 43

AOC 24-7/MW-64

Soil boring AOC 24-7 was extended a depth of 51 feet bgl on April 7, 2009. There are no analytical results for the three samples (0-0.5'; 1.5-2'; and 39-42') collected at AOC 24-7 that exceed the screening levels. The analyses are summarized in Table 11.

AOC 24-5

Soil Boring AOC 24-5 extended to a depth of 10 feet bgl. All of the analytical results for the samples (0.05' and 1.5-2') collected at AOC 24-5 were less than the screening levels. All of the results are summarized in Table 11.

AOC 24-6

Soil boring AOC 24-6 extended to a depth of 10 feet bgl. All of the analytical results for the samples (0-0.5' and 1.5-2') collected at AOC 24-6 were less than the screening levels with the exception of DRO and MRO in sample AOC 24-6 (1.5-2.0'). DRO exceeds the DAF screening level and MRO exceeds the DAF and residential screening levels. All of the results are summarized in Table 11.

AOC 24-1 through AOC 24-4

On April 23, 2009 discrete soil samples were collected from four surface soil locations at AOC No. 24 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. All of the analytical results for the samples collected at AOC 24-1 through 24-4 are less than the screening levels. The analytical results are summarized in Table 11.

6.1.6 AOC No. 25 - Auxiliary Warehouse and 90-Day Storage Area

AOC 25-2/MW-60

Soil boring AOC 25-2 extended to a depth of 45.5 feet bgl. All of the analytical results for the samples (0-0.5', 1.5-2' and 36-38') collected at AOC 25-2 were less than the screening levels. All of the results are summarized in Table 9.

AOC 25-1

On April 23, 2009 two discrete soil samples were collected from AOC 25-1 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. All of the analytical results for the samples collected at AOC 25-1 were less than the screening levels. The results are summarized in Table 9.

6.1.7 AOC No. 26 - Tank Area 44 and 45

AOC 26-8/MW-65

Soil boring AOC 26-8 was drilled to a depth of 44.25 feet on April 16, 2009. All of the analytical results for the samples (0.0-1.0'; 1.5-2.0', and 32-36') collected at AOC 26-8 were less than the screening levels. All of the results are summarized in Table 10.

AOC 26-9/MW-66

On April 20, 2009, soil boring AOC 26-9 was drilled to a total depth of 43.25 feet. All of the analytical results for the surface soil samples (0-0.5' and 1.5-2.0') collected at AOC 26-9 are less than the screening levels with the exception of cobalt in sample AOC 26-9 (1.5-2'), which has a concentration of 5.6 mg/kg vs. the leachate screening level of 5.51 mg/kg. The detected cobalt concentrations were below the EPA Regional screening level for residential soils via direct contact. There are numerous organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, naphthalene, toluene, and xylenes) that have concentrations above the leachate screening levels in soil sample AOC 26-9 (36-38'). Only 1,2,4-trimethylbenzene is present at a concentration above the residential screening level but below the non-residential screening level. The concentrations detected in AOC 26-9 at 36-38' are believed to be associated with ground water impacts in the area and not a soil source in the immediate area. This is because none of the organic constituents detected in soils in boring AOC 26-9 at 36-38' are detected in the shallower soil samples collected from the same boring and field screening of soil samples in boring AOC 26-9 did not reveal any indication of impacts until saturation was encountered. All of the soil analytical results are summarized in Table 10.

AOC 26-1 through AOC 26-7

On April 20, 2009 discrete soil samples were collected from seven surface soil locations at AOC No. 26 for laboratory analyses from 0 to 0.5 feet bgl and 1.5 to 2 feet bgl. All of the analytical results for the soil samples collected at AOC 26-1 through 26-7 are less than the screening levels on Table 10 with the exception of cobalt, which exceeds the leachate screening level in samples AOC 26-1 (1.5-2'), AOC 26-2 (0-0.5'), AOC 26-2 (1.5-2'), AOC 26-4 (0-0.5'), AOC 26-4 (1.5-2'), AOC 26-5 (0-0.5'), AOC 26-5 (1.5-2'), AOC 26-6 (0-0.5'), AOC 26-6 (1.5-2'), and AOC 26-7 (0-0.5').

A qualitative risk evaluation was not completed for SWMU No. 26, as cobalt was the only constituent detected at a concentration above the screening level, with the exception of the constituents detected in sample AOC 26-9 (36-38'), which are associated with ground water impacts and not a soil source. Cobalt should be revaluated after site-specific background concentrations are developed for soils.

Summary of Detections above Screening Levels

Three metals (arsenic, cobalt, and mercury) were detected at concentrations above the screening levels. Ten organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, Isopropylbenzene, naphthalene, toluene, and xylenes), and diesel and motor oil range hydrocarbons were also identified in concentrations exceeding the screening levels in soils. The constituents that exceed screening levels were identified in one or more samples collected from SWMU No. 4, SWMU No. 5, AOC No. 22, and AOC No. 26. Maps showing the distribution of detected constituents with concentrations exceeding the applicable cleanup levels that are the most widespread or representative are included as Figures 6 - 16. For soil and ground water quality assurance/quality control sampling and analysis information is discussed in Appendix H and laboratory data reports are included in Appendix C.

6.2 Ground Water Sampling Chemical Analytical Results

Ground water samples were collected from two temporary wells and eight permanent wells installed throughout the area south of County Road 4990 (Figure 17). The temporary wells were installed in soil borings AOC 22-12 and AOC 22-13, as discussed above in Section 4.4. The permanent wells installed for the Group No. 3 SWMUs include MW-59 (SWMU 4-1), MW-60 (AOC 25-2), MW-61 (AOC 22-15), MW-62 (AOC 23-1), MW-63 (AOC 22-16), MW-64 (AOC 24-7), MW-65 (AOC 26-8), and MW-66 (AOC 26-6). Two ground water sampling events were completed at the permanent monitoring wells. Water samples were collected from the temporary and permanent wells using disposable bailers. The samples from temporary wells were collected within 24 hours of well installation.

The first sampling event was conducted at the end of the initial well installation field effort on May 12 through May 14, 2009 and the second (confirmation) sampling event was completed on July 15, 16, and 29, 2009.

The ground water 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;
- SW-846 Method 8015B gasoline, diesel, and motor oil range organics; and
- SW-846 Method 8015 ethanol (for AOC 26 samples only).

Ground water 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
Cobalt	SW-846 method 6010/6020
Cyanide	SW-846 method 335.3/335.2 mod
Lead	SW-846 method 6010/6020
Mercury	SW-846 method 7470/7471

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

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

Analyte	Analytical Method
Bicarbonate/Carbonate/Alkalinity	SM-2320B
Chloride	EPA method 300.0
Sulfate	EPA method 300.0
Calcium[2]	EPA method 6010B
Magnesium [2]	EPA method 6010B
Sodium [2]	EPA method 6010B
Potassium [2]	EPA method 6010B
Manganese [2]	SW-846 method 6010/6020
Nitrate/nitrite	EPA method 300.0
Ferric/ferrous Iron [2]	EPA method 6010B
Fluoride [1]	EPA method 300.0
Phosphorus [1]	EPA method 300.0
Total Dissolved Solids	SM-2540C
Specific Conductance	EPA 120.1

[1]*Additional constituent not required per the January 2009 Investigation Work Plan*

[2]*Constituent reported as both total and dissolved, although Investigation Work Plan only specified total analyses*

The ground water analyses were completed as approved in the site investigation work plan with the exceptions noted in the following discussion. During the initial sampling event, separate analyses of nitrate and nitrite were completed for water samples collected from MW-61, MW-62, AOC 22-12/TW-01, and AOC 22-13, and total results for nitrate plus nitrite was reported for MW-59, MW-60, MW-63, MW-64, MW-65, and MW-66. For the second or confirmation sampling event, a separate analysis for nitrate and nitrite was reported for MW-63, MW-64, MW-66 and TW-01, and total results for nitrate plus nitrite was reported for MW-59, MW-61, MW-62, and MW-65. Samples must be analyzed within the 48-hour hold time to report nitrate and nitrite separately.

The work plan listed analyses for ferric/ferrous iron. The laboratory reported iron by method 6010B Total Recoverable Metals, which represents the sum of both ferric and ferrous iron. In addition, the analyses include iron by method 6010B dissolved metals, which represents ferrous iron. Ferric iron can be calculated by subtracting the dissolved analytical result from the total recoverable result.

There were no field conditions observed during sample collection that should have affected the analytical results. The analytical results and the applicable cleanup levels are presented in Table 16. The individual results that exceed the applicable cleanup levels are bolded. The results for the associated QA/QC samples are provided in Appendix H. Thirteen organic constituents (1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, bis(2-ethylhexyl)phthalate, ethylbenzene, MTBE, naphthalene, phenol, toluene, and xylenes), and gasoline and diesel range hydrocarbons were detected in concentrations exceeding the screening levels. Four metals (arsenic, iron, manganese, and lead) were detected at concentrations that exceed the screening levels. The distribution of manganese concentrations in ground water is presented in Figure 21. A discussion on the constituents detected at concentrations above the screening levels is presented below for each of the individual SWMUs/AOCs.

SWMU No. 4

MW-59 (boring SWMU 4-1) was drilled at SWMU No. 4 and appears to be located directly beneath the former location of the sump (Figure 6). This is the only well drilled in the immediate vicinity of SWMU No. 4. Arsenic, manganese, 1,2,4-trimethylbenzene, 1,2-dichloroethane,1-methylnaphthalene, benzene, MTBE, naphthalene, DRO, GRO, and TDS were reported at concentrations above their respective screening levels, as presented in Table 16.

SWMU No. 5

No monitoring wells were installed within SWMU No. 5; however, MW-60 was installed at AOC No. 25 and it is immediately adjacent to and down-gradient of SWMU No. 5 (Figure 7). See the discussion below for AOC No. 25 for an assessment of ground water in this area.

AOC No. 22

Three permanent monitoring wells (MW-61, MW-63, and MW-65) and one temporary well (AOC 22-1/TW-1) were completed near AOC No. 22. In addition, a ground water sample was collected from soil boring AOC 22-13. Arsenic and iron were detected above the screening level in ground water samples collected from MW-61, MW-65, AOC 22-12/TW-1, and AOC 22-13. Lead was detected above the screening level in ground water samples collected from MW-61, AOC 22-12/TW-1, and AOC 22-13. Manganese reported as a dissolved analysis was detected above the screening level in ground water samples collected from MW-61, MW-63, MW-65, AOC 22-12/TW-1, and AOC 22-13. 1,2,4-trimethlybenzene and 1,3,5-trimethlybenzene were reported at concentrations above the screening levels at MW-61, MW-65, AOC 22-12/TW-1, and AOC 22-13. 1,2-dichloroethane was present at concentrations above the screening level at MW-65, AOC 22-12/TW-1, and AOC 22-13. 1-Methlynaphthalene was reported at concentrations above the screening level in water samples collected at MW-61 and MW-65. 2-Methlynaphthalene was reported at concentrations above the screening level in water samples collected at MW-61, MW-65, and AOC 22-13. Ground water samples collected from MW-61, MW-65, AOC 22-12/TW-1, and AOC 22-13 contained benzene, ethylbenzene, and naphthalene at concentrations above the screening levels. MTBE was detected above the screening levels in water samples collected from MW-61, MW-63, MW-65, AOC 22-12/TW-1, and AOC 22-13. Toluene was detected above the screening levels in water samples collected from MW-65, AOC 22-12/TW-1, and AOC 22-13. Ground water samples collected from MW-61, MW-65, AOC 22-12/TW-1, and AOC 22-13 contained xylenes at concentrations above the screening level. Bis(2-ethylhexyl)phthalate was detected above the screening level in the water sample collected from MW-61. Phenol was detected above the screening level in water samples collected from MW-65, AOC 22-12/TW-1, and AOC 22-13. Ground water samples collected from MW-61, MW-65, AOC 22-12/TW-1, and AOC 22-13 contained DRO and GRO at concentrations above the screening levels. Nitrate was detected above the screening level at MW-63. Sulfate was reported above the screening level in water samples collected from MW-63 and MW-65. Ground water samples collected from MW-63, MW-65, AOC 22-12/TW-1, and AOC 22-13 contained total dissolved solids at concentrations above the screening level.

AOC No. 23

MW-62 was installed down-gradient of the evaporation ponds at AOC No. 23. Only manganese, sulfate, and total dissolved solids were reported at concentrations above the screening levels.

AOC No. 24

MW-64 was installed at AOC No. 24. Arsenic, manganese, chloride, nitrate, sulfate, and total dissolved solids were detected at concentrations above the screening levels in water samples collected from MW-64.

AOC No. 25

MW-60 was installed at AOC No. 25, down-gradient of the 90-day storage area. While two water samples were collected from the other permanent and the one temporary well, only one water sample was collected from MW-60 in May 2009. There was not a sufficient volume of water present in the well casing to support collection of the second water sample in July 2009. Manganese was the only constituent detected at a concentration above the screening level.

AOC No. 26

MW-66 was installed in the middle of the area covered by AOC No. 26 (midway between Tank 44 and Tank 45) and MW-65 is on the down-gradient side of AOC No. 26. MW-65 is also discussed above with AOC No. 22 because of its close proximity to AOC No. 22. A number of constituents were detected at concentration above the screening levels, including; arsenic, iron, lead (MW-66 only), manganese, 1,2,4-trimethlybenzene, 1,2-dichloroethane, 1,3,5-trimethlybenzene, 1-methlynaphthalene, 2-methlynaphthalene, benzene, ethylbenzene, MTBE, naphthalene, toluene, xylenes, phenol, DRO, GRO, sulfate, and total dissolved solids.

6.3 General Ground Water Chemistry

The measurement of field purging parameters, which included measurements of pH, specific conductance, total dissolved solids, dissolved oxygen concentrations, oxidation-reduction potential, and temperature, was conducted as discussed in Appendix E. The measurements are included in Table 14. The fluid levels are presented in Table 15 and the depths to water are essentially the same as the collection depth because there is only a few feet or less of water in each well.

Section 7
Conclusions and Recommendations

This section summarizes and provides an evaluation of the impacts as shown in field screening data and analytical data. An investigation of soil and ground water was conducted at the Group 3 SWMUs and AOCs to assess and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil samples and/or ground water samples were collected at each of the SWMUs/AOCs and analyzed for potential site-related contaminants.

SWMU No. 4 Transportation Terminal Sump

At SWMU No. 4, a black material was observed in soils at boring SWMU 4-1 from four to eight feet bgl. It appears that this boring may have penetrated the actual location of the former sump. Field screening results using a PID identified elevated readings from four feet to 10 feet bgl (with significantly lower PID readings below 10 feet) indicate that soil impacts related to the sump are limited in vertical extent. In addition, analytical results from the deeper sample (SWMU 4-1 (36-38'), which detected only one organic constituent (methylene chloride) at very low concentrations, indicate that the materials encountered at four to 10 feet do not pose a threat to ground water. The screening levels included in Table 9 are based on residential land use and the cross-media soil-to-ground water ("leachate") screening level. Only the concentrations for motor oil and diesel range organics exceeds the NMED residential soil screening level in the sample from the 6-8' interval.

Boring SWMU 4-1 was extended to the top of the Nacimiento and completed as MW-59. Ground water samples collected from the well indicate the presence of 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1-methylnaphthalene, benzene, MTBE, naphthalene, gasoline range organics, diesel range organics, arsenic, manganese, and TDS in ground water at concentrations above the respective screening levels listed in Table 16. The presence of 1,2-dichloroethane and MTBE in ground water samples and not in the overlying soil samples suggests that ground water is impacted from an up-gradient source. The distribution of 1,2-dichloroethane and MTBE is presented in Figures 18 and 22, respectively, and higher concentrations of both are shown to be present up-gradient in the area of the product loading rack. Subsurface vapor samples did not indicate significant concentrations of organic constituents with PID readings ranging from 37.5 to 41.1 ppm. Measurements of oxygen and carbon dioxide in subsurface vapor samples did not indicate significant biological activity with oxygen levels at approximately 19% by volume and carbon dioxide measured at approximately 0.5 % (Table 14). Additional assessment is recommended to delineate the lateral extent of the impacts in soils near SWMU 4-1.

SWMU No. 5 Heat Exchanger Bundle Cleaning Area

Surface soil samples were collected from depths of 0-0.5 feet and 1.5-2.0 feet at 6 locations (SWMU 5-1 through SWMU 5-6) around the northern, eastern, and southern sides of the bundle cleaning pad to locate any evidence of impacts from historical site operations. The western side of the cleaning area abuts the eastern wall of AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area. The majority of the organic analyses are non-detect, with none of the results exceeding the residential screening levels. The metals are concentrated in the upper 6 inches, with the deeper samples (collected in the 1.5 – 2.0 foot interval) having significantly lower concentrations below applicable screening levels. The significant reduction in concentrations of metals over one foot of vertical interval indicates that metals are not migrating into deeper soils and do not pose a threat to the underlying ground water, which occurs at a depth of approximately 42 feet. The soil-to-ground water exposure pathway is not considered to be complete at SWMU No. 5. The soil analytical results for metals indicate that arsenic and mercury are present in surface soils (0-0.5') at concentrations above the residential screening level in the immediate vicinity of the pad (Figure 7). The analytical results are summarized in Table 9.

The bundle cleaning pad drains to a concrete sump located inside the eastern end of AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area. To assess the potential for ground water impacts, a monitoring well (MW-60) was installed down-gradient of the sump, on the north side of AOC No. 25 (Figure 17). The analyses of the ground water samples collected from MW-60 did not indicate any impacts to ground water from activities at either SWMU No. 5 or AOC 25. Subsurface vapor samples collected from MW-60 did not indicate the presence of organic impacts (Table 14). All concentrations of reported constituents are below their respective screening levels with the single exception of manganese, which is barely over the screening level (Table 16).

Additional assessment may be necessary at SWMU No. 5 to delineate the lateral impact to surface soils based on the reported concentrations of mercury. The analytical data indicate that the impacts are limited to the surface soils and do not pose of threat to underlying ground water.

AOC No. 22 - Product Loading Racks and Crude Receiving Loading Racks

Samples were collected from 11 surface soil sample locations and five soil borings at the product loading and crude receiving racks. The sample locations were placed in areas most likely to be impacted from historical and current operations and included sumps, overflow areas and locations down-gradient of the racks, where surface spills could flow beyond the concrete covered surfaces.

The analytical results for soil samples collected at AOC No. 22 are presented in Tables 10 and 11. Figures 8 through 13 show the distribution of individual constituents detected in soils within AOC No. 22. The analyses indicate that the primary area with impacted soils is near the sump located north of the product loading rack. Sample locations AOC 22-4 and AOC 22-13 both have soil samples with concentrations of multiple organic constituents (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, toluene, xylenes, and diesel range organics) that exceed the leachate screening levels listed in Table 10.

At AOC 22-15 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene are detected at concentrations above the leachate screening level in the deepest soil sample near the depth of saturation but are not present in concentrations above the screening level in shallower samples. 1,2,4-Trimethylbenzene and 1,3,5-trimethylbenzene are also present in ground water in this area and it is likely their detection in the sample collected at 34-36 feet is a capillary fringe impact from the underlying ground water rather than the result of an overlying soil source.

Ground water samples were collected from four locations within AOC No. 22 (AOC 22-12/TW-01, AOC 22-13, AOC 22-15/MW-61, and AOC 22-16/MW-63). The sample results identified multiple constituents at concentrations exceeding the screening levels, including 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, benzene, ethylbenzene, toluene, xylenes, MTBE, bis(2-ethylhexyl)phthalate, phenol, gasoline range organics, diesel range organics, arsenic, iron, lead, nitrate, sulfate, manganese, and total dissolved solids. The arsenic and lead concentrations were only slightly above the screening level and one of the three detections in the first monitoring event was from a sample collected from a temporary monitoring well at soil boring AOC 22-13. The arsenic and lead detections may not be an indication of actual impacted ground water but rather possible sampling artifacts resulting from the use of a bailer to purge the wells and collect ground water samples. Many of the organics detected above screening levels were also detected in soils above screening levels and are most likely associated with historical site operations with the possible exception of bis(2-ethylhexyl) phthalate, which is a common laboratory contaminant (EPA, 1992). Laboratory quality control data is discussed in Appendix H.

Subsurface vapor samples collected from MW-61, MW-63, and TW-1 have reduced oxygen concentrations and elevated concentrations of carbon dioxide and elevated PID readings. The vapor results are consistent with the presence of organic constituents detected in both soil and ground water, and provide evidence of biological degradation of the organic constituents.

The analytical data indicate that impacts to ground water are elevated in the northern portion of AOC No. 22, which appear to be concentrated near the sump located north of the product loading rack. Figures 18 through 35 show the distribution of representative constituents that are detected in ground water.

Additional investigation is recommended for the impacted soils within AOC No. 22 for the area near borings AOC 22-4 and AOC 22-13. Some additional delineation of ground water impacts may also be useful and should be completed in consideration of any additional investigation to be completed at other nearby SWMUs/AOCs.

AOC No. 23 - Southeast Holding Ponds

To assess the potential for releases from the holding/evaporation ponds, a soil boring/monitoring well (AOC 23-1/MW-62) was installed down-gradient of the ponds. The analyses for the soil samples did not detect the presence of any constituents at concentrations above the residential screening levels and most of the organic results were non-detect, with the exception of a few constituents that were qualified bias due to laboratory contaminants (e.g., methylene chloride and acetone) (EPA, 1992). The soil analyses are summarized in Table 9 and the laboratory quality control information is discussed in Appendix H.

The ground water samples collected from MW-62 identified only manganese at concentrations above the screening levels (Table 16). The presence of only manganese above screening levels and no detections of petroleum constituents in water samples collected from MW-62 indicates that the manganese could be representative of background conditions rather than impacts from site operations; however, no background value has been established for manganese at this time. Subsurface vapor samples screened for oxygen and carbon dioxide did not indicate the presence of biological degradation of organic constituents (Table 14). Corrective Action Complete without Controls is recommended for AOC No. 23.

AOC No. 24 - Tank Areas 41 and 43

Soil samples were collected from four surface sample locations and three soil borings, one of which was completed as a permanent monitoring well (AOC 24-7/MW-64). All analytes were below the respective soil screening levels with the exception of TPH at AOC 24-6 (Figure 15).

The analyses of the ground water samples collected from MW-64 identified low concentrations of arsenic and manganese. The analytical results for the first samples collected in May 2009 did not show concentrations of arsenic or manganese above the screening level; however, the results for the July 2009 samples identified low concentrations that exceeded the screening levels. The low concentrations may have been an artifact of sample collection using a bailer rather than a release at the site. Other inorganic constituents detected above screening levels include chloride, nitrate, and sulfate. Chloride and sulfate are naturally occurring constituents with wide-spread occurrence in ground water in the San Juan Basin (Stone, W. J. and others, 1983). The absence of any refinery-related constituents (i.e., petroleum hydrocarbons) in the ground water samples collect from MW-64 indicates that the inorganic constituents might not be related to site operations. The screening results of subsurface vapor samples for the presence of oxygen and carbon dioxide, as well as, organic vapors with a PID did not indicate the presence of organic constituents in the subsurface (Table 14).

An assessment to evaluate the risk posed by the limited occurrence of TPH at location AOC 24-6 is recommended instead of any additional assessment and/or remediation. This risk assessment would include an evaluation of the nature of the TPH found at AOC 24-6. Crude oil is handled in this area and the comparison of the TPH analyses to "unknown oil" as presented in Table 11 is most likely overly conservative.

AOC No. 25 - Auxiliary Warehouse and 90-Day Storage Area

Samples were collected from one surface location and one soil boring, which was completed as a permanent monitoring well (AOC 25-2/MW-60) (Figure 7). There were no detections of any constituents at concentrations above the residential screening levels in the soil samples. There were also no constituents detected in the ground water samples above the screening levels, with the single exception of manganese, which was only slightly over the screening level. There was not a sufficient volume of ground water present in MW-60 to collect a ground water sample during the second sampling event conducted in July 2009. Corrective Action Complete without Controls is recommended for AOC No. 25.

AOC No. 26 - Tank Area 44 and 45

Soil samples were collected from seven surface sample locations and two soil borings, both of which were completed as permanent monitoring wells (Figure 16). Cobalt was detected at concentrations above the EPA risk-based screening level protective of soil-to-groundwater in some of the soil samples (Table 10); however, all detected concentrations were below the EPA Regional screening level (23 mg/kg) for residential soils via direct contact.

Since cobalt was not detected in ground water at concentrations above the screening level, the soil-to-ground water exposure pathway should not be complete for this constituent. Detected concentration of cobalt below the residential screening levels indicates that the constituent does not cause an unacceptable risk of exposure.

Additional constituents were detected at concentrations above the screening level in a 36-38' soil sample collected from boring AOC 26-9. This sample was collected just above the depth of saturation, and the detected constituents are most likely the result of capillary fringe impacts from impacted ground water that has migrated to this location since there is no analytical or field screening evidence (i.e., PID readings of individual soil samples) of overlying soil sources in this area.

Two permanent monitoring wells (MW-65 and MW-66) were completed in the immediate area of AOC No. 26. Monitoring well MW-65 is located down-gradient of Tank 44 and MW-66 is located down-gradient of Tank 45 and the underground pipeline that connects Tank 45 to the product loading rack. The analyses of the ground water samples collected from these two wells indicate impacts from the storage and handling of petroleum products and additives (e.g., MTBE and 1,2-dichloroethane).

Subsurface vapor samples collected at MW-65 and MW-66 have reduced oxygen levels and elevated carbon dioxide levels. PID readings are also elevated in vapor samples collected from both wells (Table 14). This information is consistent with the presence of and biological degradation of organic constituents, which were detected in ground water and capillary fringe soil samples.

Ground Water General Chemistry

All of the nitrite results are non-detect and the concentrations of nitrate in samples where both species were reported are very low (Table 16). The data does not indicate potential reducing conditions but is not definitive. Most of the nitrate + nitrite concentrations are also low, with the highest concentrations identified in up-gradient wells (MW-63 and MW-64). Similarly, the highest concentrations of sulfate and total dissolved solids were identified at up-gradient wells MW-62, MW-63, and MW-64. The only chloride concentration above the screening level was identified at MW-64, which is an up-gradient well that did not show any indication of hydrocarbon impacts.

The analyses for iron were reported as dissolved metals and as total recoverable metals. The dissolved metals analyses represent ferrous iron concentrations and analyses of total recoverable metals include concentrations of both ferrous and ferric iron. The ferric iron concentrations can be derived by subtracting the dissolved iron concentrations from the total iron concentrations. In unaffected areas of the site where the aerobic ground water conditions should exist, iron is expected to be present as ferric (Fe^{+3}) iron. In impacted areas, as petroleum hydrocarbons in ground water are degraded, reducing conditions may develop with ferric iron being reduced to ferrous (Fe^{+2}) iron. The percentage of iron present in the ferrous state was elevated in ground water samples collected at AOC 22-13, MW-61, MW-65, and MW-66. Ground water samples collected from these same locations also demonstrates significant hydrocarbon impacts. Ground water samples collected from temporary wells TW-01 (AOC 22-12) and AOC 22-13, and MW-61, MW-65, and MW-66 contained concentrations of dissolved iron above the screening level.

Manganese was detected in ground water samples at concentrations above the screening level of 0.2 mg/l at all locations. The results at MW-60 were barely over the screening level and one of the two samples collected at MW-64 did not exceed the screening level. A review of the facility-wide ground water sampling information reveals that manganese is widespread across the refinery property (Figure 21). There is no direct evidence (e.g., a soil source area) to associate manganese's presence in shallow ground water beneath Group 3 SWMUs or AOCs with site operations or waste management activities. However, there does appear to be a correlation between the dissolved oxygen concentrations in ground water and the dissolved manganese concentrations. This relationship is discussed in detail in the Site Investigation Report for SWMU Group No. 2 (RPS JDC, 2009). Elevated dissolved manganese concentrations may be the result of natural degradation of petroleum hydrocarbons causing reducing conditions, which in turn could mobilize manganese that was previously adsorbed to the aquifer matrix (Western Refining Southwest, Inc., 2009).

Summary and Recommendations

Soils

Based on the results of the investigation of the Group 3 SWMUs/AOCs, additional assessment of impacted soils is to be considered for SWMU 4-1, SWMU No. 5, AOC 22-4, and AOC 22-13.

Ground Water

Ground water impacts documented during the assessment of SWMU No. 4 and AOCs No. 22 and 26 indicate that the primary constituents exceeding the screening levels across these areas are very similar and appear to be associated with operations at the product loading rack. Additional ground water investigation at AOCs No. 22 and 26 is recommended to better define the distribution of constituents within these areas and to distinguish potential sources. A separate investigation work plan will be prepared to detail proposed additional investigation activities for soil and ground water.

Section 8
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Tables

Table 1
Historical Volatile Organic Ground Water Analytical Results Summary
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters				
		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	MTBE (mg/L)
	Screening Level (mg/L):	0.005 (2)	0.75 (1)	0.7 (2)	0.62 (1)	0.012 (3)
Well ID:	Date Sampled:					
MW #3	4/5/2006	<0.001	<0.001	<0.001	<0.003	<0.0025
	8/5/2005	<0.001	<0.001	<0.001	<0.001	<0.001
	4/11/2005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	8/21/2003	<0.001	<0.001	<0.001	<0.001	<0.001
MW-5	Dry	--	--	--	--	--
MW-6	Dry	--	--	--	--	--
MW #13	4/1/2007	<0.001	<0.001	<0.001	<0.002	0.0048
	8/15/2006	<0.001	<0.001	<0.001	<0.003	0.007
	4/5/2006	<0.001	<0.001	<0.001	<0.003	0.01
	8/5/2005	<0.001	<0.001	<0.001	<0.001	0.015
	4/11/2005	<0.0005	<0.0005	<0.0005	<0.0005	0.014
	8/23/2004	<0.0005	<0.0005	<0.0005	<0.0005	0.027
	3/3/2004	<0.0005	<0.0005	<0.0005	<0.0005	0.02
	8/21/2003	<0.001	<0.001	<0.001	<0.001	0.061
	3/3/2003	<0.0005	<0.0005	<0.0005	0.0012	0.049
MW #30	4/1/2007	5.7	3.3	5.4	21	<0.620
	4/5/2006	3.5	1.4	2.6	6.8	<0.620
	4/11/2005	5.7	3.7	4.4	12	<0.10
	8/23/2004	1.7	0.37	1.9	2.5	<0.10
MW #31	4/1/2007	4.3	<0.100	1.4	4.7	<0.250
	4/5/2006	6.1	1.5	0.94	4.5	<0.120
	4/11/2005	2.6	0.062	0.45	1.2	<0.250
	8/23/2004	3.7	0.4	0.32	1.2	<0.250
MW #44	4/1/2007	<0.001	0.0058	0.0026	0.034	<0.0025
	4/5/2006	<0.001	<0.001	<0.001	<0.003	0.0028
	4/11/2005	<0.0005	<0.0005	<0.0005	<0.0005	0.0041

Notes:

mg/L = milligram per liter

MW = monitoring well

MTBE = methyl tertiary butyl ether

MW-5 and MW-6 have been dry since at least 2003.

1 - WQCC 20 NMAC 6.2.3101 = New Mexico Standard for Ground Water of 10,000 ug/L TDS or less.

2 - EPA Maximum Contaminant Level

3 - EPA - Regional Screening Levels (April 2009)

Table 2
Historical Total Metals Ground Water Analytical Results Summary
Group 3 Investigation
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 (1)**	**2.0 (1)**	**0.005 (1)**	**NE (2)**	**0.015 (1)**	**0.05 (1)**	**NE (2)**	**0.002 (1)**
Well ID:	**Date Sampled:**								
MW #3	8/5/2005	NA	NA	NA	0.016	<0.005	NA	NA	NA
	8/21/2003	NA	NA	NA	0.029	**0.022**	NA	NA	<0.0002
MW-5	Dry	--	--	--	--	--	--	--	--
MW-6	Dry	--	--	--	--	--	--	--	--
MW #13	8/15/2006	<0.02	0.025	<0.002	<0.006	0.0078	<0.05	<0.005	<0.0002
	8/5/2005	NA	NA	NA	0.012	<0.005	NA	NA	NA
	8/23/2004	<0.02	0.028	<0.002	0.085	<0.005	<0.05	<0.005	<0.0002
	8/21/2003	NA	NA	NA	0.45	<0.005	NA	NA	<0.0002
MW #30	8/23/2004	<0.02	0.24	<0.002	0.0073	0.011	<0.05	<0.005	0.00023
MW #31	8/23/2004	<0.02	0.35	<0.002	0.0088	<0.005	<0.05	<0.005	0.00022
MW #44	8/23/2004	<0.02	0.084	<0.002	0.1	0.036	<0.05	<0.005	0.00033

Notes:
mg/L = milligram per liter
MW = monitoring well
NA= not analyzed
MW-5 and MW-6 have been dry since at least 2003.
1- 40 CFR 141.62 MCL = National Primar Drinking Water Regulations: Maxiumum Contaminant Levels
2 - NE = No applicable screening level established for total analysis.

Table 3
Historical Dissolved Metals Ground Water Analytical Results Summary
Group 3 Investigation
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 (1)	1 (2)	0.005 (1)	NE	0.05 (2)	1 (2)	1 (2)	0.015 (1)	NE	0.2 (2)	NE	0.05 (2)	0.05 (2)	NE	0.11 (2)	10 (2)
Well ID:	Date Sampled:																
MW #3	8/5/2005	<0.02	0.018	<0.002	480	<0.006	<0.006	0.047	<0.005	130	0.43	7.6	<0.05	<0.005	1300	<0.1	0.018
	8/21/2003	<0.02	0.3	<0.002	490	<0.006	<0.006	0.27	<0.005	140	0.58	10	0.024	<0.005	1100	<0.1	0.094
MW-5	Dry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	Dry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW #13	8/15/2006	<0.02	0.025	<0.002	250	<0.006	0.0063	<0.02	0.0078	82	1.1	3.6	<0.05	<0.005	620	<0.10	0.061
	8/5/2005	<0.02	0.028	<0.002	240	<0.006	<0.006	<0.02	<0.005	85	1.1	3.8	<0.05	<0.005	570	<0.1	0.0088
	8/23/2004	<0.02	0.022	<0.002	210	<0.006	<0.006	0.046	<0.005	80	0.58	3.6	<0.05	<0.005	610	<0.1	0.021
	8/21/2003	<0.02	0.33	<0.002	270	<0.006	0.0096	0.04	<0.005	110	1.1	5.3	0.16	<0.005	680	<0.1	0.09
MW #30	8/23/2004	<0.02	0.13	<0.002	350	<0.006	0.0061	4.7	0.0051	88	2.1	<10.0	<0.05	<0.005	750	<0.1	0.046
MW #31	8/23/2004	<0.02	0.35	<0.002	220	<0.006	<0.006	0.46	<0.005	67	0.58	4.8	<0.05	<0.005	640	<0.1	0.019
MW #44	8/23/2004	<0.02	0.046	<0.002	520	0.034	0.027	76	0.015	87	1.7	44	<0.05	<0.005	970	<0.10	0.084

Notes:
mg/L = milligram per liter
MW = monitoring well
NE = not established
MW-5 and MW-6 have been dry since at least 2003.
1- 40 CFR 141.62 MCL = National Primar Drinking Water Regulations: Maxiumum Contaminant Levels
2 - WQCC 20 NMAC 6.2.3101 = New Mexico Standard for Ground Water of 10,000 ug/L or less

Table 4
Historical General Chemistry Ground Water Analytical Results Summary
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

		Parameters										
		Fluoride (mg/L)	Chloride (mg/L)	Bromide (mg/L)	Nitrite (mg/L)	Nitrogen (mg/L)	Phosphorus (mg/L)	Sulfate (mg/L)	TDS (mg/L)	E.C. (umhos/cm)	CO_2 (mg/L)	Alk (mg/L)
	Screening Level (mg/L):	1.6 (1)	250 (1)	NE	1 (2)	10 (1)	NE	600 (1)	1000 (1)	NE	NE	NE
Well ID:	Date Sampled:											
MW #3	8/5/2005	0.33	1200	4.5	<0.50	42	<0.50	2300	6200	8300	680	680
	8/21/2003	0.17	1400	22	NA	41	<0.50	1900	5700	8500	NA	NA
MW-5	Dry	--	--	--	--	--	--	--	--	--	--	--
MW-6	Dry	--	--	--	--	--	--	--	--	--	--	--
MW #13	8/15/2006	0.12	310	3.7	8.3	NA	<0.50	1100	3000	4300	910	960
	8/5/2005	0.15	320	4.6	0.23	6.1	<0.50	1000	3000	4600	1000	1000
	8/23/2004	0.2	330	4.3	1.6	6.6	<0.50	950	2800	3400	860	950
	8/21/2003	0.19	510	13	<0.10	12	<0.50	840	3100	5000	1000	917
MW #30	8/23/2004	0.18	360	5.6	<0.10	<0.10	<0.10	720	3100	3900	1200	1400
MW #31	8/23/2004	0.19	370	7.2	<0.10	0.14	<0.50	750	2800	3700	980	1100
MW #44	8/23/2004	0.3	210	0.79	<0.10	<0.10	<0.50	2800	4800	5200	400	450

Notes:
Alk = alkalinity, total
CO_2 = Carbon Dioxide
E.C. = electrical conductivity
TDS = total dissolved solids
umhos/cm = micro-mhos per centimeter
mg/L = milligram per liter
NE = not established
NA = not analyzed
MW = monitoring well
MW-5 and MW-6 have been dry since at least 2003.
1 - WQCC 20 NMAC 6.2.3101 = New Mexico Standard for Ground Water of 10,000 ug/L or less
2 - 40 CFR 141.62 MCL = National Primar Drinking Water Regulations: Maxiumum Contaminant Levels

Table 5
Historical Soil Analytical Results Summary
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

			Parameters																
			Acetone (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	m.p-Xylene (mg/kg)	o-Xylene (mg/kg)	Methylene chloride (mg/kg)	Semi-Volatile Organics	Total Petroleum Hydrocarbons	Beryllium (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
SWMU 4 & AOC 22 (Crude Loading Rack) Soil Screening Levels (mg/kg):			263000 (1)	471 (2)	21100 (1)	6630 (2)	3130 (1)	3130 (1)	10600 (2)	NA	NA	144 (1)	309 (1)	447,000 (1)	12400 (1)	800 (1)	6190 (1)	20.4 (1)	92900 (1)
Sample No.	Sample Location	Date Sampled																	
B-1 (2.5-4.5')	at SWMU No. 4	2/22/1994	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	4.5	9.7	12	ND	9.8	25	46
B-2 (10-12')	at SWMU No. 4	2/22/1994	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.53	3	8.5	8.9	ND	7	15	34
B-3 (6-8')	at AOC No. 22	2/22/1994	ND	ND	ND	ND	ND	ND	0.11	ND	ND	0.54	3.2	8	8.8	ND	7.4	15	35
AOC 22 (Product Loading Rack) Soil Screening Levels (mg/kg):			3.84 (3)	0.00185 (3)	1.38 (3)	0.0146 (3)	0.176 (1)	0.176 (1)	0.0107 (3)	NA	NA	57.7 (3)	1.37 (3)	447,000 (1)	12400 (1)	800 (1)	47.7 (3)	0.172 (3)	682 (3)
B-4 (10-12')	at AOC No. 22	2/22/1994	ND	0.012	0.023	0.004J	0.031	0.022	ND	ND	ND	0.53	3.1	9.9	8.2	ND	7.2	19	32

Notes:
mg/kg = milligram per kilogram
ND - not detected, quantitation limit not provided in 1994 RFI Investigation Report
NA = not available
J = estimated concentration
NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)
(1) NMED - Construction Worker (0-10')
(2) NMED - Industrial (0-2') and Construction Worker (2-10')
(3) NMED DAF=1 SoilGW (All depths)

TABLE 6
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED		EPA		Cross Media Soil-to-Ground Water 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)	Constituent Detected
Applicable depth interval	0-10'		0-2'		All depths			
Acenaphthene	3.44E+03	ns	3.40E+03	n	2.05E+01	2.70E+01	-	N
Acenaphthylene	-	-	-	-	-	-	-	N
Acetone	6.75E+04	n	6.10E+04	n	3.84E+00	4.40E+00	-	Y
Aniline	-	-	8.50E+01	c**	-	3.40E-03	-	N
Anthracene	1.72E+04	ns	1.70E+04	n	3.37E+02	4.50E+02	-	N
Antimony	3.13E+01	n	3.10E+01	n	6.61E-01	6.60E-01	2.70E-01	N
Arsenic	3.90E+00	c	3.90E-01	c*	1.31E-02	1.30E-03	2.90E-01	Y
Azobenzene	-	-	4.90E+00	c	-	5.10E-04	-	N
Barium	1.56E+04	n	1.50E+04	n	3.01E+02	3.00E+02	8.20E+01	Y
Benz(a)anthracene	4.81E+00	c	1.50E-01	c	3.20E-01	1.40E-02	-	Y
Benzene	1.55E+01	c	1.10E+00	c*	1.85E-03	2.30E-04	2.80E-03	Y
Benzo(a)pyrene	4.81E-01	c	1.50E-02	c	1.09E-01	4.60E-03	3.10E-01	Y
Benzo(b)fluoranthene	4.81E+00	c	1.50E-01	c	1.11E+00	4.70E-02	-	N
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	N
Benzo(k)fluoranthene	4.81E+01	c	1.50E+00	c	1.09E+01	4.60E-01	-	N
Benzoic acid	-	-	2.40E+05	nm	-	3.30E+01	-	N
Benzyl alcohol	-	-	3.10E+04	n	-	4.20E+00	-	Y
Beryllium	1.56E+02	n	1.60E+02	n	5.77E+01	5.80E+01	3.20E+00	Y
Bis(2-chloroethoxy)methane	-	-	1.80E+02	n	-	2.30E-02	-	N
Bis(2-chloroethyl)ether	2.56E+00	c	1.90E-01	c	2.33E-05	2.70E-06	-	N
Bis(2-chloroisopropyl)ether	9.15E+01	c	-	-	2.56E-03	-	-	N
Bis(2-ethylhexyl)phthalate	2.80E+02	c	3.50E+01	c*	1.19E+01	1.60E+00	2.00E+00	N
Bromobenzene	-	-	9.40E+01	n	-	1.50E-02	-	N
Bromodichloromethane	5.25E+00	c	2.80E-01	c	2.76E-04	3.30E-05	-	N
Bromoform	-	-	6.10E+01	c*	-	2.30E-03	-	N
Bromomethane	2.23E+01	n	7.90E+00	n	1.94E-03	2.20E-03	-	N
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	N
2-Butanone (MEK)	3.96E+04	n	2.80E+04	ns	1.27E+00	1.50E+00	-	Y
Butyl benzyl phthalate	-	-	2.60E+02	c*	-	6.70E-01	-	N
Cadmium	7.79E+01	n	7.00E+01	n	1.37E+00	1.40E+00	3.80E-01	Y
Carbazole	-	-	-	-	-	-	-	N
Carbon disulfide	1.94E+03	ns	6.70E+02	ns	2.52E-01	2.70E-01	-	N
Carbon tetrachloride	4.38E+00	c	2.50E-01	c	7.39E-04	7.90E-05	2.00E-03	N
Chlorobenzene	5.08E+02	ns	3.10E+02	n	5.38E-02	6.80E-02	7.50E-02	N
Chloroethane	-	-	-	-	-	-	-	N
Chloroform	5.72E+00	c	3.00E-01	c	4.68E-04	5.50E-05	-	N
Chloromethane	3.56E+01	c	1.20E+02	n	4.18E-03	4.90E-02	-	N
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	N
4-Chloroaniline	-	-	2.40E+00	c	-	1.20E-04	-	N
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	N
4-Chlorotoluene	-	-	5.50E+03	ns	-	2.80E+00	-	N
2-Chloronaphthalene	6.26E+03	ns	6.30E+03	ns	1.35E+01	1.80E+01	-	N
2-Chlorophenol	3.91E+02	n	3.90E+02	n	1.53E-01	2.00E-01	-	N
2-Chlorotoluene	1.56E+03	ns	1.60E+03	ns	6.24E-01	8.00E-01	-	N
Chromium	1.13E+05	nl	1.20E+05	nm	9.86E+07	9.90E+07	-	Y
Chrysene	4.81E+02	c	1.50E+01	c	3.26E+01	1.40E+00	-	N
cis-1,2-DCE	7.82E+02	n	7.80E+02	n	9.43E-02	1.10E-01	2.10E-02	N
cis-1,3-Dichloropropene	2.35E+01	c	1.70E+00	c*	1.35E-03	1.60E-04	-	N
Cobalt	-	-	2.30E+01	n	-	4.90E-01	-	Y
Cyanide	1.56E+03	n	1.60E+03	n	7.44E+00	7.40E+00	2.00E+00	N
1,1-Dichloroethane	6.29E+01	c	3.40E+00	c	6.09E-03	7.00E-04	-	N
1,1-Dichloroethene	6.18E+02	n	2.50E+02	n	1.19E-01	1.20E-01	2.60E-03	N

TABLE 6
***Residential* Soil Screening Levels**
Bloomfield Refinery - Bloomfield, New Mexico

Analyte	NMED Residential Soil (mg/kg)	NMED Endpoint	EPA Residential Soil (mg/kg)	EPA ResSoil key	Cross Media Soil-to-Ground Water: NMED DAF1 (mg/kg)	Cross Media Soil-to-Ground Water: EPA GW_Risk-based SSL (mgkg)	Cross Media Soil-to-Ground Water: EPA GW_MCL-based SSL (mg/kg)	Constituent Detected
Applicable depth interval	0-10'		0-2'		All depths			
1,1-Dichloropropene	-	-	-	-	-	-	-	N
1,2-Dibromo-3-chloropropane	1.94E-01	c	5.60E-03	c	2.97E-06	1.50E-07	9.20E-05	N
1,2-Dibromoethane (EDB)	5.74E-01	c	3.40E-02	c	1.58E-05	1.90E-06	1.50E-05	N
1,2-Dichlorobenzene	3.01E+03	ns	2.00E+03	ns	3.13E-01	4.00E-01	6.60E-01	N
3,3´-Dichlorobenzidine	8.71E+00	c	1.10E+00	c	1.70E-02	2.30E-03	-	N
1,2-Dichloroethane (EDC)	7.74E+00	c	4.50E-01	c	3.65E-04	4.40E-05	1.50E-03	N
1,2-Dichloropropane	1.47E+01	c	9.30E-01	c*	1.11E-03	1.30E-04	1.70E-03	N
1,3-Dichlorobenzene	-	-	-	-	-	-	-	N
1,3-Dichloropropane	-	-	1.60E+03	n	-	2.70E-01	-	N
1,4-Dichlorobenzene	3.21E+01	c	2.60E+00	c	3.57E-03	4.60E-04	8.10E-02	N
2,2-Dichloropropane	-	-	-	-	-	-	-	N
2,4-Dichlorophenol	1.83E+02	n	1.80E+02	n	1.37E-01	1.80E-01	-	N
2,4-Dimethylphenol	1.22E+03	n	1.20E+03	n	9.12E-01	1.20E+00	-	N
4,6-Dinitro-2-methylphenol	-	-	-	-	-	-	-	N
2,4-Dinitrophenol	1.22E+02	n	1.20E+02	n	5.25E-02	6.80E-02	-	N
2,4-Dinitrotoluene	1.26E+01	c	1.60E+00	c*	1.56E-03	2.00E-04	-	N
2,6-Dinitrotoluene	6.12E+01	n	6.10E+01	n	2.67E-02	3.40E-02	-	N
Dibenz(a,h)anthracene	4.81E-01	c	1.50E-02	c	3.62E-01	1.50E-02	-	N
Dibenzofuran	-	-	-	-	-	-	-	N
Dibromochloromethane	1.13E+01	c	7.00E-01	c	3.38E-04	4.00E-05	-	N
Dibromomethane	-	-	7.80E+02	n	-	9.10E-02	-	N
Dichlorodifluoromethane	4.81E+02	n	1.90E+02	n	7.23E-01	6.10E-01	-	N
Diethyl phthalate	4.89E+04	n	4.90E+04	n	1.06E+01	1.30E+01	-	N
Dimethyl phthalate	6.11E+05	nl	-	-	8.36E+01	-	-	N
Di-n-butyl phthalate	6.11E+03	n	-	-	8.63E+00	-	-	N
Di-n-octyl phthalate	-	-	-	-	-	-	-	N
Ethylbenzene	6.97E+01	c	5.70E+00	c	1.46E-02	1.90E-03	8.90E-01	Y
Fluoranthene	2.29E+03	n	2.30E+03	n	1.55E+02	2.10E+02	-	N
Fluorene	2.29E+03	ns	2.30E+03	n	2.50E+01	3.30E+01	-	N
Hexachlorobenzene	2.45E+00	c	3.00E-01	c	2.21E-03	2.90E-04	7.00E-03	N
Hexachlorobutadiene	-	-	6.20E+00	c**	-	1.90E-03	-	N
Hexachlorocyclopentadiene	3.67E+02	n	3.70E+02	n	6.13E-01	8.00E-01	1.80E-01	N
Hexachloroethane	6.11E+01	n	3.50E+01	c**	1.93E-02	3.20E-03	-	N
2-Hexanone	-	-	-	-	-	-	-	N
Indeno(1,2,3-cd)pyrene	4.81E+00	c	1.50E-01	c	3.70E+00	1.60E-01	-	N
Isophorone	4.13E+03	c	5.10E+02	c*	1.85E-01	2.20E-02	-	N
Isopropylbenzene (cumene)	3.21E+03	ns	2.20E+03	ns	9.86E-01	1.30E+00	-	Y
4-Isopropyltoluene	-	-	-	-	-	-	-	Y
Lead	4.00E+02	IEUBK	4.00E+02	nL	-	-	-	Y
Mercury	7.71E+00	ns	4.30E+00	ns	2.93E-02	3.00E-02	1.00E-01	Y
Methyl tert-butyl ether (MTBE)	8.62E+02	c	3.90E+01	c	2.29E-02	2.70E-03	-	Y
Methylene chloride	1.99E+02	c	1.10E+01	c	1.07E-02	1.20E-03	1.30E-03	Y
1-Methylnaphthalene	-	-	2.20E+01	c	-	1.50E-02	-	Y
2-Methylnaphthalene	-	-	3.10E+02	n	-	9.00E-01	-	Y
2-Methylphenol	-	-	3.10E+03	n	-	2.00E+00	-	N
3+4-Methylphenol	-	-	3.10E+02	n	-	1.90E-01	-	Y
4-Methyl-2-pentanone	-	-	-	-	-	-	-	N
2-Nitroaniline	-	-	1.80E+02	n	-	3.30E-02	-	N
3-Nitroaniline	-	-	-	-	-	-	-	N
4-Nitroaniline	-	-	2.40E+01	c*	-	1.00E-03	-	N
2-Nitrophenol	-	-	-	-	-	-	-	N
4-Nitrophenol	-	-	-	-	-	-	-	N

TABLE 6
Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

					Cross Media Soil-to-Ground Water			
	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)	Constituent Detected
Applicable depth interval	0-10'		0-2'		All depths			
Naphthalene	4.50E+01	c	3.90E+00	c*	4.19E-03	5.50E-04	-	Y
n-Butylbenzene	-	-	-	-	-	-	-	Y
Nickel	1.56E+03	n	1.40E+04	c	4.77E+01	4.80E+01	-	Y
Nitrobenzene	4.94E+01	c	4.40E+00	c*	6.86E-03	7.10E-05	-	**N**
N-Nitrosodi-n-propylamine	-	-	6.90E-02	c	-	1.10E-05	-	**N**
N-Nitrosodiphenylamine	8.00E+02	c	9.90E+01	c	1.29E+00	1.70E-01	-	**N**
n-Propylbenzene	-	-	-	-	-	-	-	Y
Pentachlorophenol	2.07E+01	c	3.00E+00	c	2.94E-02	3.90E-03	7.00E-03	**N**
Phenanthrene	1.83E+03	ns	-	-	8.34E+01	-	-	Y
Phenol	1.83E+04	n	1.80E+04	n	6.30E+00	8.10E+00	-	**N**
Pyrene	1.72E+03	ns	1.70E+03	n	1.12E+02	1.50E+02	-	Y
Pyridine	-	-	7.80E+01	n	-	9.70E-03	-	**N**
sec-Butylbenzene	-	-	-	-	-	-	-	Y
Selenium	3.91E+02	n	3.90E+02	n	9.65E-01	9.50E-01	2.60E-01	**N**
Silver	3.91E+02	n	3.90E+02	n	1.57E+00	1.60E+00	-	**N**
Styrene	8.97E+03	ns	6.50E+03	ns	1.56E+00	2.00E+00	1.20E-01	**N**
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	**N**
1,1,1,2-Tetrachloroethane	2.92E+01	c	2.00E+00	c	1.73E-03	2.10E-04	-	**N**
1,1,1-Trichloroethane	2.18E+04	ns	9.00E+03	ns	2.98E+00	3.30E+00	7.20E-02	**N**
1,1,2,2-Tetrachloroethane	7.97E+00	c	5.90E-01	c	2.25E-04	2.80E-05	-	**N**
1,1,2-Trichloroethane	1.72E+01	c	1.10E+00	c	6.74E-04	8.20E-05	1.70E-03	**N**
2,4,5-Trichlorophenol	6.11E+03	n	6.10E+03	n	7.13E+00	9.40E+00	-	**N**
2,4,6-Trichlorophenol	6.11E+01	n	4.40E+01	c**	7.13E-02	1.60E-02	-	**N**
1,2,3-Trichloropropane	9.15E-01	c	9.10E-02	c	3.56E-05	4.40E-06	-	**N**
1,2,4-Trichlorobenzene	1.43E+02	ns	8.70E+01	n	1.02E-02	1.30E-02	1.10E-01	**N**
1,2,4-Trimethylbenzene	-	-	6.70E+01	n	-	2.40E-02	-	Y
1,3,5-Trimethylbenzene	-	-	4.70E+01	n	-	2.00E-02	-	Y
tert-Butylbenzene	-	-	-	-	-	-	-	Y
Tetrachloroethene (PCE)	6.99E+00	c	5.70E-01	c	4.49E-04	5.20E-05	2.40E-03	**N**
Toluene	5.57E+03	ns	5.00E+03	ns	1.38E+00	1.70E+00	7.60E-01	Y
trans-1,2-DCE	2.73E+02	n	1.10E+02	n	3.01E-02	3.40E-02	3.20E-02	**N**
trans-1,3-Dichloropropene	2.35E+01	c	1.70E+00	c*	1.35E-03	1.60E-04	-	**N**
Trichloroethene (TCE)	4.57E+01	c	2.80E+00	c	5.30E-03	6.10E-04	1.90E-03	**N**
Trichlorofluoromethane	2.01E+03	ns	8.00E+02	n	9.01E-01	8.40E-01	-	**N**
Vanadium	3.91E+02	n	5.50E+02	n	1.83E+02	2.60E+02	-	Y
Vinyl chloride	8.65E-01	c	6.00E-02	c	2.88E-04	5.60E-06	7.00E-04	**N**
Xylenes, Total	1.09E+03	ns	6.00E+02	ns	1.76E-01	2.30E-01	1.10E+01	Y
Zinc	2.35E+04	n	2.30E+04	n	6.82E+02	6.80E+02	-	Y

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 - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)
EPA - Regional Screening Levels (April 2009)

TABLE 7
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

							Cross Media Soil-to-Ground Water			
	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)	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
Acenaphthene	3.67E+04	ns	1.86E+04	n	3.30E+04	n	2.05E+01	2.70E+01	-	**N**
Acenaphthylene	-	-	-	-	-	-	-	-	-	**N**
Acetone	8.51E+05	nls	2.63E+05	nls	6.10E+05	nms	3.84E+00	4.40E+00	-	Y
Aniline	-	-	-	-	3.00E+02	c*	-	3.40E-03	-	**N**
Anthracene	1.83E+05	nl	6.68E+04	ns	1.70E+05	nm	3.37E+02	4.50E+02	-	**N**
Antimony	4.54E+02	n	1.24E+02	n	4.10E+02	n	6.61E-01	6.60E-01	2.70E-01	**N**
Arsenic	1.77E+01	c	6.54E+01	n	1.60E+00	c	1.31E-02	1.30E-03	2.90E-01	Y
Azobenzene	-	-	-	-	2.20E+01	c	-	5.10E-04	-	**N**
Barium	2.24E+05	nl	4.35E+03	n	1.90E+05	nm	3.01E+02	3.00E+02	8.20E+01	Y
Beryllium	2.26E+03	n	1.44E+02	n	2.00E+03	n	5.77E+01	5.80E+01	3.20E+00	Y
Benz(a)anthracene	2.34E+01	c	2.13E+02	c	2.10E+00	c	3.20E-01	1.40E-02	-	Y
Benzene	8.54E+01	c	4.71E+02	n	5.60E+00	c*	1.85E-03	2.30E-04	2.80E-03	Y
Benzo(a)pyrene	2.34E+00	c	2.13E+01	c	2.10E-01	c	1.09E-01	4.60E-03	3.10E-01	**N**
Benzo(b)fluoranthene	2.34E+01	c	2.13E+02	c	2.10E+00	c	1.11E+00	4.70E-02	-	**N**
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	**N**
Benzo(k)fluoranthene	2.34E+02	c	2.06E+03	c	2.10E+01	c	1.09E+01	4.60E-01	-	**N**
Benzoic acid	-	-	-	-	2.50E+06	nm	-	3.30E+01	-	Y
Benzyl alcohol	-	-	-	-	3.10E+05	nm	-	4.20E+00	-	Y
Bis(2-chloroethoxy)methane	-	-	-	-	1.80E+03	n	-	2.30E-02	-	**N**
Bis(2-chloroethyl)ether	1.36E+01	c	1.47E+02	c	9.00E-01	c	2.33E-05	2.70E-06	-	**N**
Bis(2-chloroisopropyl)ether	4.54E+02	c	3.10E+03	cs	-	-	2.56E-03	-	-	**N**
Bis(2-ethylhexyl)phthalate	1.37E+03	c	4.76E+03	n	1.20E+02	c	1.19E+01	1.60E+00	2.00E+00	**N**
Bromobenzene	-	-	-	-	4.10E+02	n	-	1.50E-02	-	**N**
Bromodichloromethane	2.92E+01	c	3.50E+03	cs	1.40E+00	c	2.76E-04	3.30E-05	-	**N**
Bromoform	-	-	-	-	2.20E+02	c*	-	2.30E-03	-	**N**
Bromomethane	8.36E+01	n	6.71E+01	n	3.50E+01	n	1.94E-03	2.20E-03	-	**N**
4-Bromophenyl phenyl ether	-	-	-	-	-	-	-	-	-	**N**
2-Butanone (MEK)	3.69E+05	nl	1.48E+05	nls	1.90E+05	nms	1.27E+00	1.50E+00	-	Y
Butyl benzyl phthalate	-	-	-	-	9.10E+02	c	-	6.70E-01	-	**N**
Cadmium	1.12E+03	n	3.09E+02	n	8.00E+02	n	1.37E+00	1.40E+00	3.80E-01	Y
Carbazole	-	-	-	-	-	-	-	-	-	**N**
Carbon disulfide	7.54E+03	ns	5.89E+03	ns	3.00E+03	ns	2.52E-01	2.70E-01	-	**N**
Carbon tetrachloride	2.43E+01	c	1.99E+02	n	1.30E+00	c	7.39E-04	7.90E-05	2.00E-03	**N**
Chlorobenzene	2.14E+03	n	1.58E+03	ns	1.50E+03	ns	5.38E-02	6.80E-02	7.50E-02	**N**
Chloroethane	-	-	-	-	-	-	-	-	-	**N**
Chloroform	3.19E+01	c	6.71E+02	c	1.50E+00	c	4.68E-04	5.50E-05	-	**N**
Chloromethane	1.98E+02	c	1.13E+03	n	5.10E+02	n	4.18E-03	4.90E-02	-	**N**
4-Chloro-3-methylphenol	-	-	-	-	-	-	-	-	-	**N**
4-Chloroaniline	-	-	-	-	8.60E+00	c	-	1.20E-04	-	**N**
4-Chlorophenyl phenyl ether	-	-	-	-	-	-	-	-	-	**N**
4-Chlorotoluene	-	-	-	-	7.20E+04	ns	-	2.80E+00	-	**N**
2-Chloronaphthalene	9.08E+04	ns	2.48E+04	ns	8.20E+04	ns	1.35E+01	1.80E+01	-	**N**
2-Chlorophenol	5.68E+03	n	1.55E+03	n	5.10E+03	n	1.53E-01	2.00E-01	-	**N**
2-Chlorotoluene	2.27E+04	ns	6.19E+03	ns	2.00E+04	ns	6.24E-01	8.00E-01	-	**N**
Chromium	1.57E+06	nl	4.47E+05	nl	1.50E+06	nm	9.86E+07	9.90E+07	-	Y
Chrysene	2.34E+03	c	2.06E+04	c	2.10E+02	c	3.26E+01	1.40E+00	-	**N**
cis-1,2-DCE	1.14E+04	ns	3.10E+03	cs	1.00E+04	ns	9.43E-02	1.10E-01	2.10E-02	**N**
cis-1,3-Dichloropropene	1.26E+02	c	5.10E+02	n	8.40E+00	c*	1.35E-03	1.60E-04	-	**N**
Cobalt	-	-	-	-	3.00E+02	n	-	4.90E-01	-	Y
Cyanide	2.27E+04	n	6.19E+03	n	2.00E+04	n	7.44E+00	7.40E+00	2.00E+00	**N**
1,1-Dichloroethane	3.50E+02	c	6.88E+03	cs	1.70E+01	c	6.09E-03	7.00E-04	-	**N**
1,1-Dichloroethene	2.22E+03	ns	1.83E+03	ns	1.10E+03	n	1.19E-01	1.20E-01	2.60E-03	**N**
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	**N**
1,2-Dibromo-3-chloropropane	1.09E+00	c	2.30E+01	c	7.30E-02	c	2.97E-06	1.50E-07	9.20E-05	**N**
1,2-Dibromoethane (EDB)	3.14E+00	c	4.86E+01	c	1.70E-01	c	1.58E-05	1.90E-06	1.50E-05	**N**
1,2-Dichlorobenzene	1.43E+04	ns	9.71E+03	ns	1.00E+04	ns	3.13E-01	4.00E-01	6.60E-01	**N**
3,3´-Dichlorobenzidine	4.26E+01	c	3.71E+02	c	3.80E+00	c	1.70E-02	2.30E-03	-	**N**
1,2-Dichloroethane (EDC)	4.28E+01	c	7.51E+02	c	2.20E+00	c	3.65E-04	4.40E-05	1.50E-03	**N**
1,2-Dichloropropane	8.17E+01	c	1.17E+02	n	4.70E+00	c*	1.11E-03	1.30E-04	1.70E-03	**N**
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	**N**
1,3-Dichloropropane	-	-	-	-	2.00E+04	ns	-	2.70E-01	-	**N**
1,4-Dichlorobenzene	1.80E+02	c	3.78E+03	cs	1.30E+01	c	3.57E-03	4.60E-04	8.10E-02	**N**
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	**N**
2,4-Dichlorophenol	2.05E+03	n	7.15E+02	n	1.80E+03	n	1.37E-01	1.80E-01	-	**N**
2,4-Dimethylphenol	1.37E+04	n	4.76E+03	n	1.20E+04	n	9.12E-01	1.20E+00	-	**N**
4,6-Dinitro-2-methylphenol	-	-	-	-	-	-	-	-	-	**N**
2,4-Dinitrophenol	1.37E+03	n	4.76E+02	n	1.20E+03	n	5.25E-02	6.80E-02	-	**N**

TABLE 7
Non- Residential Soil Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

							Cross Media Soil-to-Ground Water			
	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)	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
2,4-Dinitrotoluene	1.03E+02	c	4.76E+02	n	5.50E+00	c	1.56E-03	2.00E-04	-	**N**
2,6-Dinitrotoluene	6.87E+02	n	2.39E+02	n	6.20E+02	n	2.67E-02	3.40E-02	-	**N**
Dibenz(a,h)anthracene	2.34E+00	c	2.13E+01	c	2.10E-01	c	3.62E-01	1.50E-02	-	**N**
Dibenzofuran	-	-	-	-	-	-	-	-	-	**N**
Dibromochloromethane	6.13E+01	c	1.99E+03	c	3.40E+00	c	3.38E-04	4.00E-05	-	**N**
Dibromomethane	-	-	-	-	1.00E+04	ns	-	9.10E-02	-	**N**
Dichlorodifluoromethane	1.55E+03	ns	1.37E+03	ns	7.80E+02	n	7.23E-01	6.10E-01	-	**N**
Diethyl phthalate	5.47E+05	nl	1.91E+05	nl	4.90E+05	nm	1.06E+01	1.30E+01	-	**N**
Dimethyl phthalate	6.84E+06	nl	2.38E+06	nl	-	-	8.36E+01	-	-	**N**
Di-n-butyl phthalate	6.84E+04	n	2.38E+04	n	-	-	8.63E+00	-	-	**N**
Di-n-octyl phthalate	-	-	-	-	-	-	-	-	-	**N**
Ethylbenzene	3.85E+02	c	6.63E+03	cs	2.90E+01	c	1.46E-02	1.90E-03	8.90E-01	Y
Fluoranthene	2.44E+04	n	8.91E+03	n	2.20E+04	n	1.55E+02	2.10E+02	-	**N**
Fluorene	2.44E+04	ns	8.91E+03	ns	2.20E+04	n	2.50E+01	3.30E+01	-	**N**
Hexachlorobenzene	1.20E+01	c	1.03E+02	c	1.10E+00	c	2.21E-03	2.90E-04	7.00E-03	**N**
Hexachlorobutadiene	-	-	-	-	2.20E+01	c*	-	1.90E-03	-	**N**
Hexachlorocyclopentadiene	4.10E+03	n	8.11E+02	n	3.70E+03	n	6.13E-01	8.00E-01	1.80E-01	**N**
Hexachloroethane	6.84E+02	n	2.38E+02	n	1.20E+02	c**	1.93E-02	3.20E-03	-	**N**
2-Hexanone	-	-	-	-	-	-	-	-	-	**N**
Indeno(1,2,3-cd)pyrene	2.34E+01	c	2.13E+02	c	2.10E+00	c	3.70E+00	1.60E-01	-	**N**
Isophorone	2.02E+04	c	4.75E+04	n	1.80E+03	c*	1.85E-01	2.20E-02	-	**N**
Isopropylbenzene (cumene)	1.49E+04	ns	1.03E+04	ns	1.10E+04	ns	9.86E-01	1.30E+00	-	Y
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	Y
Lead	8.00E+02	IEUBK	8.00E+02	IEUBK	8.00E+02	nL	-	-	-	Y
Mercury	4.99E+01	n	6.36E+01	ns	2.40E+01	ns	2.93E-02	3.00E-02	1.00E-01	Y
Methyl tert-butyl ether (MTBE)	4.69E+03	c	6.55E+04	cs	1.90E+02	c	2.29E-02	2.70E-03	-	Y
Methylene chloride	1.09E+03	c	1.06E+04	ns	5.40E+01	c	1.07E-02	1.20E-03	1.30E-03	Y
1-Methylnaphthalene	-	-	-	-	9.90E+01	c	-	1.50E-02	-	Y
2-Methylnaphthalene	-	-	-	-	4.10E+03	ns	-	9.00E-01	-	Y
2-Methylphenol	-	-	-	-	3.10E+04	n	-	2.00E+00	-	**N**
3+4-Methylphenol	-	-	-	-	3.10E+03	n	-	1.90E-01	-	Y
4-Methyl-2-pentanone	-	-	-	-	-	-	-	-	-	**N**
2-Nitroaniline	-	-	-	-	1.80E+03	n	-	3.30E-02	-	**N**
3-Nitroaniline	-	-	-	-	-	-	-	-	-	**N**
4-Nitroaniline	-	-	-	-	8.60E+01	c*	-	1.00E-03	-	**N**
2-Nitrophenol	-	-	-	-	-	-	-	-	-	**N**
4-Nitrophenol	-	-	-	-	-	-	-	-	-	**N**
Naphthalene	2.52E+02	cs	7.02E+02	ns	2.00E+01	c*	4.19E-03	5.50E-04	-	Y
n-Butylbenzene	-	-	-	-	-	-	-	-	-	Y
Nickel	2.27E+04	n	6.19E+03	n	6.90E+04	c	4.77E+01	4.80E+01	-	Y
Nitrobenzene	2.77E+02	c	5.20E+02	n	2.20E+01	c*	6.86E-03	7.10E-05	-	**N**
N-Nitrosodi-n-propylamine	-	-	-	-	2.50E-01	c	-	1.10E-05	-	**N**
N-Nitrosodiphenylamine	3.91E+03	c	3.40E+04	c	3.50E+02	c	1.29E+00	1.70E-01	-	**N**
n-Propylbenzene	-	-	-	-	-	-	-	-	-	Y
Pentachlorophenol	1.00E+02	c	1.03E+03	c	9.00E+00	c	2.94E-02	3.90E-03	7.00E-03	**N**
Phenanthrene	2.05E+04	ns	7.15E+03	ns	-	-	8.34E+01	-	-	Y
Phenol	2.05E+05	nl	6.88E+04	n	1.80E+05	nm	6.30E+00	8.10E+00	-	**N**
Pyrene	1.83E+04	ns	6.68E+03	ns	1.70E+04	n	1.12E+02	1.50E+02	-	Y
Pyridine	-	-	-	-	1.00E+03	n	-	9.70E-03	-	**N**
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	Y
Selenium	5.68E+03	n	1.55E+03	n	5.10E+03	n	9.65E-01	9.50E-01	2.60E-01	**N**
Silver	5.68E+03	n	1.55E+03	n	5.10E+03	n	1.57E+00	1.60E+00	-	**N**
Styrene	5.12E+04	ns	3.03E+04	ns	3.80E+04	ns	1.56E+00	2.00E+00	1.20E-01	**N**
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	**N**
1,1,1,2-Tetrachloroethane	1.61E+02	c	2.78E+03	cs	9.80E+00	c	1.73E-03	2.10E-04	-	**N**
1,1,1-Trichloroethane	7.71E+04	ns	6.43E+04	ns	3.90E+04	ns	2.98E+00	3.30E+00	7.20E-02	**N**
1,1,2,2-Tetrachloroethane	4.33E+01	c	5.99E+02	c	2.90E+00	c	2.25E-04	2.80E-05	-	**N**
1,1,2-Trichloroethane	9.43E+01	c	1.24E+03	ns	5.50E+00	c	6.74E-04	8.20E-05	1.70E-03	**N**
2,4,5-Trichlorophenol	6.84E+04	n	2.38E+04	n	6.20E+04	n	7.13E+00	9.40E+00	-	**N**
2,4,6-Trichlorophenol	6.84E+02	n	2.38E+02	n	1.60E+02	c**	7.13E-02	1.60E-02	-	**N**
1,2,3-Trichloropropane	4.54E+00	c	3.10E+01	c	4.10E-01	c	3.56E-05	4.40E-06	-	**N**
1,2,4-Trichlorobenzene	5.25E+02	ns	4.27E+02	ns	4.00E+02	ns	1.02E-02	1.30E-02	1.10E-01	**N**
1,2,4-Trimethylbenzene	-	-	-	-	2.80E+02	ns	-	2.40E-02	-	Y
1,3,5-Trimethylbenzene	-	-	-	-	2.00E+02	n	-	2.00E-02	-	Y
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	Y
Tetrachloroethene (PCE)	3.64E+01	c	3.38E+02	cs	2.70E+00	c	4.49E-04	5.20E-05	2.40E-03	**N**
Toluene	5.79E+04	ns	2.11E+04	ns	4.60E+04	ns	1.38E+00	1.70E+00	7.60E-01	Y

TABLE 7
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		
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)	Constituent Detected
Applicable depth interval	0-2'		0-10'		0-2'		All depths			
trans-1,2-DCE	9.95E+02	n	8.14E+02	n	5.00E+02	n	3.01E-02	3.40E-02	3.20E-02	**N**
trans-1,3-Dichloropropene	1.26E+02	c	5.10E+02	n	8.40E+00	c*	1.35E-03	1.60E-04	-	**N**
Trichloroethene (TCE)	2.53E+02	c	4.60E+03	cs	1.40E+01	c	5.30E-03	6.10E-04	1.90E-03	**N**
Trichlorofluoromethane	6.76E+03	ns	5.82E+03	ns	3.40E+03	ns	9.01E-01	8.40E-01	-	**N**
Vanadium	5.68E+03	n	1.55E+03	n	7.20E+03	n	1.83E+02	2.60E+02	-	Y
Vinyl chloride	2.59E+01	c	2.48E+02	c	1.70E+00	c	2.88E-04	5.60E-06	7.00E-04	**N**
Xylenes, Total	3.61E+03	ns	3.13E+03	ns	2.60E+03	ns	1.76E-01	2.30E-01	1.10E+01	Y
Zinc	3.41E+05	nl	9.29E+04	n	3.10E+05	nm	6.82E+02	6.80E+02	-	Y

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 - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)
EPA - Regional Screening Levels (April 2009)

TABLE 8
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA			
Analyte	New Mexico WQCC Standards (ug/L)	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)	Constituent Detected
Acenaphthene	-	**2200**	n	-	Y
Acenaphthylene	-	-	-	-	**N**
Acetone	-	**22000**	n	-	Y
Aniline	-	**12**	c*	-	**N**
Anthracene	-	**11000**	n	-	**N**
Antimony	-	15	n	**6**	Y
Arsenic	100	0.045	c	**10**	Y
Azobenzene	-	**0.12**	c	-	**N**
Barium	**1000**	7300	n	2000	Y
Benz(a)anthracene	-	**0.029**	c	-	**N**
Benzene	10	0.41	c	**5**	Y
Benzo(a)pyrene	0.7	0.0029	c	**0.2**	**N**
Benzo(b)fluoranthene	-	**0.029**	c	-	**N**
Benzo(g,h,i)perylene	-	-	-	-	**N**
Benzo(k)fluoranthene	-	**0.29**	c	-	**N**
Benzoic acid	-	**150000**	n	-	**N**
Benzyl alcohol	-	**18000**	n	-	**N**
Beryllium	-	73	n	**4**	**N**
Bis(2-chloroethoxy)methane	-	**110**	n	-	**N**
Bis(2-chloroethyl)ether	-	**0.012**	c	-	**N**
Bis(2-chloroisopropyl)ether	-	-	-	-	**N**
Bis(2-ethylhexyl)phthalate	-	4.8	c	**6**	Y
Bromobenzene	-	**20**	n	-	**N**
Bromodichloromethane	-	**0.12**	c	-	**N**
Bromoform	-	**8.5**	c*	-	**N**
Bromomethane	-	**8.7**	n	-	**N**
4-Bromophenyl phenyl ether	-	-	-	-	**N**
Butyl benzyl phthalate	-	**35**	c	-	**N**
2-Butanone (MEK)	-	**7100**	n	-	**N**
Cadmium	10	18	n	**5**	**N**
Carbazole	-	-	-	-	**N**
Carbon disulfide	-	**1000**	n	-	**N**
Carbon tetrachloride	10	0.2	c	**5**	**N**
Chlorobenzene	-	91	n	**100**	**N**
Chloroethane	-	-	-	-	**N**
Chloroform	**100**	0.19	c	-	Y
Chloromethane	-	**190**	c	-	**N**
4-Chloro-3-methylphenol	-	-	-	-	**N**
4-Chloroaniline	-	**0.34**	c	-	**N**
4-Chlorophenyl phenyl ether	-	-	-	-	**N**
4-Chlorotoluene	-	**2600**	n	-	**N**
2-Chloronaphthalene	-	**2900**	n	-	**N**
2-Chlorophenol	-	**180**	n	-	**N**
2-Chlorotoluene	-	**730**	n	-	**N**
Chromium	**50**	55000	n	-	Y
Chrysene	-	**2.9**	c	-	**N**

TABLE 8
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA			
Analyte	New Mexico WQCC Standards (ug/L)	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)	Constituent Detected
Cobalt	**50**	11	n	-	Y
Cyanide	**200**	730	n	200	Y
Dibenz(a,h)anthracene	-	**0.0029**	c	-	**N**
Dibenzofuran	-	-	-	-	**N**
Dibromochloromethane	-	**0.15**	c	-	**N**
cis-1,2-DCE	-	370	n	**70**	**N**
trans-1,2-DCE	-	110	n	**100**	**N**
cis-1,3-Dichloropropene	-	-	-	-	**N**
trans-1,3-Dichloropropene	-	**0.43**	c	-	**N**
Dibromomethane	-	**370**	n	-	**N**
1,2-Dibromo-3-chloropropane	-	0.00032	c	**0.2**	**N**
1,2-Dibromoethane (EDB)	0.1	0.0065	c	**0.05**	**N**
1,2-Dichlorobenzene	-	370	n	**600**	**N**
1,3-Dichlorobenzene	-	-	-	-	**N**
1,4-Dichlorobenzene	-	0.43	c	**75**	**N**
3,3′-Dichlorobenzidine	-	**0.15**	c	-	**N**
Dichlorodifluoromethane	-	**390**	n	-	**N**
1,1-Dichloroethane	**25**	2.4	c	-	**N**
1,2-Dichloroethane (EDC)	10	0.15	c	**5**	Y
1,1-Dichloroethene	**5**	340	n	7	**N**
2,4-Dichlorophenol	-	**110**	n	-	**N**
1,2-Dichloropropane	-	0.39	c*	**5**	**N**
2,2-Dichloropropane	-	-	-	-	**N**
1,3-Dichloropropane	-	**730**	n	-	**N**
1,1-Dichloropropene	-	-	-	-	**N**
Diethyl phthalate	-	**29000**	n	-	**N**
Dimethyl phthalate	-	-	-	-	**N**
2,4-Dimethylphenol	-	**730**	n	-	Y
4,6-Dinitro-2-methylphenol	-	-	-	-	**N**
2,4-Dinitrophenol	-	**73**	n	-	**N**
2,4-Dinitrotoluene	-	**0.22**	n	-	**N**
2,6-Dinitrotoluene	-	**37**	n	-	**N**
Di-n-butyl phthalate	-	-	-	-	**N**
Di-n-octyl phthalate	-	-	-	-	**N**
Ethylbenzene	750	1.5	c	**700**	Y
Fluoranthene	-	**1500**	n	-	**N**
Fluorene	-	**1500**	n	-	Y
Hexachlorobenzene	-	0.042	c	**1**	**N**
Hexachlorobutadiene	-	**0.86**	c*	-	**N**
Hexachlorocyclopentadiene	-	220	n	**50**	**N**
Hexachloroethane	-	**4.8**	c**	-	**N**
2-Hexanone	-	-	-	-	**N**
Indeno(1,2,3-cd)pyrene	-	**0.029**	c	-	**N**
Isophorone	-	**71**	c	-	**N**
Isopropylbenzene (Cumene)	-	**680**	n	-	Y
4-Isopropyltoluene	-	-	-	-	Y

TABLE 8
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA			
Analyte	New Mexico WQCC Standards (ug/L)	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)	Constituent Detected
Lead	50	-	-	**15**	Y
Magnesium	-	-	-	-	Y
Manganese	**200**	880	n		Y
Mercury	**2**	0.57	n	2	Y
Methyl tert-butyl ether (MTBE)	-	**12**	c	-	Y
Methylene chloride	100	4.8	c	**5**	**N**
1-Methylnaphthalene	-	**2.3**	c	-	Y
2-Methylnaphthalene	-	**150**	n	-	Y
2-Methylphenol	-	**1800**	n	-	Y
3+4-Methylphenol	-	**180**	n	-	Y
4-Methyl-2-pentanone	-	-	-	-	**N**
Naphthalene	-	**0.14**	c*	-	Y
n-Butylbenzene	-	-	-	-	Y
Nickel	**200**	730	n	-	Y
2-Nitroaniline	-	**110**	n	-	**N**
3-Nitroaniline	-	-	-	-	**N**
4-Nitroaniline	-	**3.4**	c*	-	**N**
2-Nitrophenol	-	-	-	-	**N**
4-Nitrophenol	-	-	-	-	**N**
Nitrobenzene	-	**0.12**	c	-	**N**
N-Nitrosodimethylamine	-	**0.00042**	c		**N**
N-Nitrosodi-n-propylamine	-	**0.0096**	c	-	**N**
N-Nitrosodiphenylamine	-	**14**	c	-	**N**
n-Propylbenzene	-	-	-	-	Y
Pentachlorophenol	-	0.56	c	**1**	**N**
Phenanthrene	-	-	-	-	Y
Phenol	**5**	11000	n	-	Y
Pyrene	-	**1100**	n	-	Y
Pyridine	-	**37**	n	-	**N**
sec-Butylbenzene	-	-	-	-	Y
Selenium	**50**	180	n	50	Y
Silver	**50**	180	n	-	**N**
Styrene	-	1600	n	**100**	**N**
tert-Butylbenzene	-	-	-	-	**N**
Tetrachloroethene (PCE)	20	0.11	c	**5**	**N**
1,1,1,2-Tetrachloroethane	-	**0.52**	c	-	**N**
Toluene	**750**	2300	n	1000	Y
1,2,3-Trichlorobenzene	-	-	-	-	**N**
1,2,4-Trichlorobenzene	-	8.2	n	**70**	**N**
2,4,5-Trichlorophenol	-	**3700**	n	-	**N**
2,4,6-Trichlorophenol	-	**6.1**	c**	-	**N**
1,2,3-Trichloropropane	-	**0.0096**	c	-	**N**
1,2,4-Trichlorobenzene	-	8.2	n	**70**	**N**
1,2,4-Trimethylbenzene	-	**15**	n	-	Y
1,1,1-Trichloroethane	**60**	9100	n	200	**N**
1,1,2,2-Tetrachloroethane	**10**	0.067	c	-	**N**

TABLE 8
Ground Water Screening Levels
Bloomfield Refinery - Bloomfield, New Mexico

	NMED	EPA			
Analyte	New Mexico WQCC Standards (ug/L)	EPA Screening Levels.Tap Water (ug/L)	TapW_key	MCL (ug/L)	Constituent Detected
1,1,2-Trichloroethane	10	0.24	c	**5**	**N**
Trichloroethene (TCE)	100	1.7	c	**5**	**N**
Trichlorofluoromethane	-	**1300**	n	-	**N**
1,3,5-Trimethylbenzene	-	**12**	n	-	Y
Vanadium	-	**260**	*n*	-	**N**
Vinyl chloride	**1**	0.016	c	2	**N**
Xylenes, Total	**620**	200	n	10000	Y
Zinc	**10000**	11000	n	-	Y
General Chemistry					
Alkalinity	-	-	-	-	Y
Bicarbonate	-	-	-	-	Y
Carbonate	-	-	-	-	**N**
Calcium	-	-	-	-	Y
Chloride	**250000**				Y
Fluoride	**1600**				Y
Iron	**1000**	26000	n	-	Y
Nitrite	-	3700	n	**1000**	Y
Nitrate (NO3 as N)	10000	58000	n	**10000**	Y
Potassium	-	-	-	-	Y
Sodium	-	-	-	-	Y
Sulfate	**600000**	-	-	-	Y
Total Dissolved Solids	**1000000**				Y
Motor Oil Range Organics (MRO)	-	-	-	-	**N**
Diesel Range Organics (DRO)	-	-	-	-	Y
Gasoline Range Organics (GRO)	-	-	-	-	Y

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

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 4-1 (0-0.5')	SWMU 4-1 (1.5-2.0')	SWMU 4-1 (6-8')	SWMU 4-1 (36-38')	SWMU 5-1 (0-0.5')	SWMU 5-1 (1.5-2.0')	SWMU 5-2 (0-0.5')	SWMU 5-2 (1.5-2.0')	SWMU 5-3 (0-0.5')	SWMU 5-3 (1.5-2.0')	SWMU 5-4 (0-0.5')	SWMU 5-4 (1.5-2.0')	SWMU 5-5 (0-0.5')	SWMU 5-5 (1.5-2.0')	SWMU 5-5 (1.5-2.0') DUP	SWMU 5-6 (0-0.5')	SWMU 5-6 (1.5-2.0')	AOC 23-1 (0-0.5')	AOC 23-1 (0-0.5') DUP
Sample Date					4/6/2009	4/6/2009	4/6/2009	4/6/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/21/2009	4/21/2009
Metals (mg/kg)																							
Antimony	3.13E+01	(1)	7.44E+00	(6)	<2.5	<2.5	<13	<2.5	<2.5	<13	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<2.5	<2.5	<2.5	<2.5	<2.5
Arsenic	3.90E+00	(2)	1.48E-01	(6)	<2.5	<2.5	<13	<2.5	3.2	<13	<2.5	<2.5	**4.3**	<2.5	<2.5	<2.5	2.6	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	1.56E+04	(1)	3.39E+03	(6)	120	160	270	140	300	110	220	100	210	100	200	140	210	160	140	200	140	120	140
Beryllium	1.56E+02	(1)	6.49E+02	(6)	0.3	0.31	<0.75	<0.15	0.23	<0.75	0.18	0.26	0.23	0.3	0.32	0.3	0.22	0.32	0.34	0.29	0.27	0.28	0.28
Cadmium	7.79E+01	(1)	1.55E+01	(6)	<0.10	<0.10	3.1	<0.10	0.18	<0.50	0.13	<0.10	0.26	<0.10	0.14	<0.10	0.12	<0.10	<0.10	0.14	<0.10	<0.10	<0.10
Chromium	1.13E+05	(1)	1.11E+09	(6)	4.4	4.4	14	1.4	13	4.5	99	3.6	12	3.9	8.3	4.3	9.6	4.2	4.3	20	3.9	3.2	3.4
Cobalt	2.30E+01	(2)	5.51E+00	(7)	3	3	5.4	1.4	3.9	3.2	2.9	2.5	3.9	2.6	4	2.8	3.7	4.2	4.5	3.1	2.5	2.9	3
Cyanide	1.56E+03	(1)	8.37E+01	(6)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	-		3.4	3.6	57	1	9.8	5.6	8.8	3.4	14	3	12	4.3	8.1	3.9	3.2	11	3.9	4.7	4.9
Mercury	7.71E+00	(1)	3.30E-01	(6)	<0.033	<0.033	0.09	<0.033	**75**	0.04	**15**	0.057	**22**	<0.033	**12**	4.1	**55**	<0.033	0.27	**390**	0.07	<0.032	<0.033
Nickel	1.56E+03	(1)	5.36E+02	(6)	4.2	4.4	10	1.3	26	5.5	10	3.8	11	4.4	6.4	6.2	30	6.5	4.8	11	4.3	4.6	4.7
Selenium	3.91E+02	(1)	1.09E+01	(6)	<2.5	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13
Silver	3.91E+02	(1)	1.76E+01	(6)	<0.25	<0.25	<1.3	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vanadium	3.91E+02	(1)	2.05E+03	(6)	12	11	19	7	11	14	12	9.3	13	9.8	12	12	14	14	14	13	11	9.4	11
Zinc	2.35E+04	(1)	7.67E+03	(6)	20	19	110	7.4	230	23	87	16	270	17	290	25	140	19	19	120	20	15	17
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																							
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.94E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,1,1-Trichloroethane	2.18E+04	(1)	3.35E+01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	2.53E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,1,2-Trichloroethane	1.72E+01	(1)	7.58E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,1-Dichloroethane	6.29E+01	(1)	6.85E-02	(6)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
1,1-Dichloroethene	6.18E+02	(1)	1.34E+00	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,1-Dichloropropene	-		-		<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
1,2,3-Trichlorobenzene	-		-		<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
1,2,3-Trichloropropane	9.15E-01	(1)	4.01E-04	(6)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.70E-01	(7)	<0.050	<0.050	8.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	3.35E-05	(6)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
1,2-Dibromoethane (EDB)	5.74E-01	(1)	1.78E-04	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.11E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,2-Dichloropropane	1.47E+01	(1)	1.25E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.25E-01	(7)	<0.050	<0.050	3.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,3-Dichlorobenzene	-		-		<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,3-Dichloropropane	1.60E+03	(2)	3.04E+00	(7)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
1-Methylnaphthalene	2.20E+02	(3)	1.69E-01	(7)	<0.20	<0.20	<20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.20	<0.20
2,2-Dichloropropane	-		-		<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
2-Butanone (MEK)	3.96E+04	(1)	1.43E+01	(6)	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	<0.50
2-Chlorotoluene	1.56E+03	(1)	7.02E+00	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
2-Hexanone	-		-		<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	<0.50
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(7)	<0.20	<0.20	29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.20	<0.20
4-Chlorotoluene	5.50E+03	(2)	3.15E+01	(7)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
4-Isopropyltoluene	-		-		<0.050	<0.050	0.82	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
4-Methyl-2-pentanone	-		-		<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	<0.50
Acetone	6.75E+04	(1)	4.32E+01	(6)	<0.75	<0.75	<1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.75	<0.75
Benzene	1.55E+01	(1)	2.08E-02	(6)	<0.050	<0.050	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Bromobenzene	9.40E+01	(2)	1.69E-01	(7)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Bromodichloromethane	5.25E+00	(1)	3.11E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 4-1 (0-0.5')	SWMU 4-1 (1.5-2.0')	SWMU 4-1 (6-8')	SWMU 4-1 (36-38')	SWMU 5-1 (0-0.5')	SWMU 5-1 (1.5-2.0')	SWMU 5-2 (0-0.5')	SWMU 5-2 (1.5-2.0')	SWMU 5-3 (0-0.5')	SWMU 5-3 (1.5-2.0')	SWMU 5-4 (0-0.5')	SWMU 5-4 (1.5-2.0')	SWMU 5-5 (0-0.5')	SWMU 5-5 (1.5-2.0')	SWMU 5-5 (1.5-2.0') DUP	SWMU 5-6 (0-0.5')	SWMU 5-6 (1.5-2.0')	AOC 23-1 (0-0.5')	AOC 23-1 (0-0.5') DUP
Bromoform	6.10E+02	(3)	2.59E-02	(7)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Bromomethane	2.23E+01	(1)	2.18E-02	(6)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Carbon disulfide	1.94E+03	(1)	2.84E+00	(6)	<0.50	<0.50	<1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	<0.50
Carbon tetrachloride	4.38E+00	(1)	8.32E-03	(6)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Chlorobenzene	5.08E+02	(1)	6.06E-01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Chloroethane	-		-		<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Chloroform	5.72E+00	(1)	5.27E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Chloromethane	3.56E+01	(1)	4.70E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
cis-1,2-DCE	7.82E+02	(1)	1.06E+00	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
cis-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Dibromochloromethane	1.13E+01	(1)	3.80E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Dibromomethane	7.80E+02	(2)	1.02E+00	(7)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Dichlorodifluoromethane	4.81E+02	(1)	8.14E+00	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Ethylbenzene	6.97E+01	(2)	1.64E-01	(6)	<0.050	<0.050	5.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(7)	<0.10	<0.10	<0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Isopropylbenzene	3.21E+03	(1)	1.11E+01	(6)	<0.050	<0.050	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	2.58E-01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Methylene chloride	1.99E+02	(1)	1.21E-01	(6)	<0.15	<0.15	<0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.15	<0.15
Naphthalene	4.50E+01	(1)	4.72E-02	(6)	<0.10	<0.10	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
n-Butylbenzene	-		-		<0.050	<0.050	1.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
n-Propylbenzene	-		-		<0.050	<0.050	3.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
sec-Butylbenzene	-		-		<0.050	<0.050	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Styrene	8.97E+03	(1)	1.76E+01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
tert-Butylbenzene	-		-		<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Tetrachloroethene (PCE)	6.99E+00	(1)	5.05E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Toluene	5.57E+03	(1)	1.56E+01	(6)	<0.050	<0.050	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
trans-1,2-DCE	2.73E+02	(1)	3.39E-01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
trans-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Trichloroethene (TCE)	4.57E+01	(1)	5.96E-02	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Trichlorofluoromethane	2.01E+03	(1)	1.01E+01	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Vinyl chloride	8.65E-01	(1)	3.24E-03	(6)	<0.050	<0.050	<0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.050	<0.050
Xylenes, Total	1.09E+03	(1)	1.98E+00	(6)	<0.10	<0.10	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg-dry																							
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.94E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1,1-Trichloroethane	2.18E+07	(1)	3.35E+04	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	2.53E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1,2-Trichloroethane	1.72E+04	(1)	7.58E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1-Dichloroethane	6.29E+04	(1)	6.85E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1-Dichloroethene	6.18E+05	(1)	1.34E+03	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,1-Dichloropropene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2,3-Trichlorobenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2,3-Trichloropropane	9.15E+02	(1)	4.01E-01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2,4-Trichlorobenzene	1.43E+05	(1)	1.15E+02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2,4-Trimethylbenzene	6.70E+04	(2)	2.70E+02	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	3.35E-02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2-Dibromoethane (EDB)	5.74E+02	(1)	1.78E-01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2-Dichlorobenzene	3.01E+06	(1)	3.53E+03	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.11E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,2-Dichloropropane	1.47E+04	(1)	1.25E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,3,5-Trimethylbenzene	4.70E+04	(2)	2.25E+02	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,3-Dichlorobenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 4-1 (0-0.5')	SWMU 4-1 (1.5-2.0')	SWMU 4-1 (6-8')	SWMU 4-1 (36-38')	SWMU 5-1 (0-0.5')	SWMU 5-1 (1.5-2.0')	SWMU 5-2 (0-0.5')	SWMU 5-2 (1.5-2.0')	SWMU 5-3 (0-0.5')	SWMU 5-3 (1.5-2.0')	SWMU 5-4 (0-0.5')	SWMU 5-4 (1.5-2.0')	SWMU 5-5 (0-0.5')	SWMU 5-5 (1.5-2.0')	SWMU 5-5 (1.5-2.0') DUP	SWMU 5-6 (0-0.5')	SWMU 5-6 (1.5-2.0')	AOC 23-1 (0-0.5')	AOC 23-1 (0-0.5') DUP
1,3-Dichloropropane	1.60E+06	(2)	3.04E+03	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
1,4-Dichlorobenzene	3.21E+04	(1)	4.02E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
2,2-Dichloropropane	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
2-Butanone	3.96E+07	(1)	1.43E+04	(6)	<3.73	<3.96	--	<4.07	<3.72	<4.00	<3.85	<3.74	<3.57	<3.96	<3.66	<3.67	<3.57	<3.80	<3.87	<3.69	<3.49	<3.91	<3.96
2-Chlorotoluene	1.56E+06	(1)	7.02E+03	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
2-Hexanone	-		-		<3.73	<3.96	--	<4.07	<3.72	<4.00	<3.85	<3.74	<3.57	<3.96	<3.66	<3.67	<3.57	<3.80	<3.87	<3.69	<3.49	<3.91	<3.96
4-Chlorotoluene	5.50E+06	(2)	3.15E+04	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
4-Isopropyltoluene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
4-Methyl-2-pentanone	-		-		<3.73	<3.96	--	<4.07	<3.72	<4.00	<3.85	<3.74	<3.57	<3.96	<3.66	<3.67	<3.57	<3.80	<3.87	<3.69	<3.49	<3.91	<3.96
Acetone	6.75E+07	(1)	4.32E+04	(6)	<3.73	<3.96	--	<4.07	8.35	5.74	7.89	6.05	8.43	7.89	11.1	19.6	20.7	<3.80	<3.87	<3.69	<3.49	13.6	25.4
Benzene	1.55E+04	(1)	2.08E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Bromobenzene	9.40E+04	(2)	1.69E+02	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Bromodichloromethane	5.25E+03	(1)	3.11E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Bromoform	6.10E+05	(3)	2.59E+01	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Bromomethane	2.23E+04	(1)	2.18E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Carbon disulfide	1.94E+06	(1)	2.84E+03	(6)	<3.73	<3.96	--	<4.07	<3.72	<4.00	<3.85	<3.74	<3.57	<3.96	<3.66	<3.67	<3.57	<3.80	<3.87	<3.69	<3.49	<3.91	<3.96
Carbon tetrachloride	4.38E+03	(1)	8.32E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Chlorobenzene	5.08E+05	(1)	6.06E+02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Chloroethane	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Chloroform	5.72E+03	(1)	5.27E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Chloromethane	3.56E+04	(1)	4.70E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
cis-1,2-DCE	7.82E+05	(1)	1.06E+03	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
cis-1,3-Dichloropropene	2.35E+04	(1)	1.52E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Dibromochloromethane	1.13E+04	(1)	3.80E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Dibromomethane	7.80E+05	(2)	1.02E+03	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Dichlorodifluoromethane	4.81E+05	(1)	8.14E+03	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Ethylbenzene	6.97E+04	(2)	1.64E+02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	1.42	<0.951	<0.966	1.12	<0.874	<0.978	<0.991
Hexachlorobutadiene	6.20E+04	(3)	2.14E+01	(7)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Isopropylbenzene	3.21E+06	(1)	1.11E+04	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	2.58E+02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Methylene chloride	1.99E+05	(1)	1.21E+02	(6)	<1.87	2.29	--	3.0	4.05	2.49	14.3	3.28	20.1	2.98	10.9	7.32	5.72	6.7	4.67	5.68	2.52	8.75	8.12
Naphthalene	4.50E+04	(1)	4.72E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
n-Butylbenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
n-Propylbenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
sec-Butylbenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Styrene	8.97E+06	(1)	1.76E+04	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
tert-Butylbenzene	-		-		<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Tetrachloroethene (PCE)	6.99E+03	(1)	5.05E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Toluene	5.57E+06	(1)	1.56E+04	(6)	<0.933	<0.991	--	<1.02	1.02	<0.999	<0.962	<0.935	<0.893	<0.989	2.75	<0.918	<0.892	1.94	1.1	1.84	<0.874	<0.978	<0.991
trans-1,2-DCE	2.73E+05	(1)	3.39E+02	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
trans-1,3-Dichloropropene	2.35E+04	(1)	1.52E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Trichloroethene (TCE)	4.57E+04	(1)	5.96E+01	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Trichlorofluoromethane	2.01E+06	(1)	1.01E+04	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Vinyl chloride	8.65E+02	(1)	3.24E+00	(6)	<0.933	<0.991	--	<1.02	<0.930	<0.999	<0.962	<0.935	<0.893	<0.989	<0.914	<0.918	<0.892	<0.951	<0.966	<0.923	<0.874	<0.978	<0.991
Xylenes, Total	1.09E+06	(1)	1.98E+03	(6)	<0.933	<0.991	--	<1.02	6.94	<0.999	1.29	<0.935	1.99	<0.989	1.41	1.89	3.17	<0.951	<0.966	8.88	<0.874	<0.978	<0.991
Semi Volatile Organics - (EPA Method 8270) mg/kg																							
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	8.02E+01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 4-1 (0-0.5')	SWMU 4-1 (1.5-2.0')	SWMU 4-1 (6-8')	SWMU 4-1 (36-38')	SWMU 5-1 (0-0.5')	SWMU 5-1 (1.5-2.0')	SWMU 5-2 (0-0.5')	SWMU 5-2 (1.5-2.0')	SWMU 5-3 (0-0.5')	SWMU 5-3 (1.5-2.0')	SWMU 5-4 (0-0.5')	SWMU 5-4 (1.5-2.0')	SWMU 5-5 (0-0.5')	SWMU 5-5 (1.5-2.0')	SWMU 5-5 (1.5-2.0') DUP	SWMU 5-6 (0-0.5')	SWMU 5-6 (1.5-2.0')	AOC 23-1 (0-0.5')	AOC 23-1 (0-0.5') DUP
2,4,6-Trichlorophenol	6.11E+01	(1)	8.02E-01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	1.54E+00	(6)	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	1.03E+01	(6)	<0.30	<0.30	<1.5	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	5.91E-01	(6)	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.75E-02	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	3.00E-01	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	1.52E+02	(6)	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.72E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(7)	<0.25	<0.25	33	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	2.25E+01	(7)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	3.71E-01	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3,3'-Dichlorobenzidine	8.71E+00	(1)	1.92E-01	(6)	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3+4-Methylphenol	3.10E+02	(2)	2.14E+00	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	-		-		<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	-		-		<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	1.35E-03	(7)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	1.13E-02	(7)	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	2.31E+02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3.83E-02	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	3.79E+03	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	5.74E-03	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	3.59E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	1.22E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	0.48	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	1.25E+01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	-		-		<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	1.22E+02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	3.71E+02	(7)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	4.73E+01	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	0.5	<0.20	0.86	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	2.59E-01	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	2.62E-04	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	2.88E-02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.34E+02	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	7.54E+00	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	3.67E+02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	4.07E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.19E+02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	9.40E+02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	9.70E+01	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	-		-		<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	1.75E+03	(6)	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Fluorene	2.29E+03	(1)	2.81E+02	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	2.48E-02	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Table 9

Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25

Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	SWMU 4-1 (0-0.5')	SWMU 4-1 (1.5-2.0')	SWMU 4-1 (6-8')	SWMU 4-1 (36-38')	SWMU 5-1 (0-0.5')	SWMU 5-1 (1.5-2.0')	SWMU 5-2 (0-0.5')	SWMU 5-2 (1.5-2.0')	SWMU 5-3 (0-0.5')	SWMU 5-3 (1.5-2.0')	SWMU 5-4 (0-0.5')	SWMU 5-4 (1.5-2.0')	SWMU 5-5 (0-0.5')	SWMU 5-5 (1.5-2.0')	SWMU 5-5 (1.5-2.0') DUP	SWMU 5-6 (0-0.5')	SWMU 5-6 (1.5-2.0')	AOC 23-1 (0-0.5')	AOC 23-1 (0-0.5') DUP
Hexachlorocyclopentadiene	3.67E+02	(1)	6.90E+00	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.17E-01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	4.16E+01	(6)	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.08E+00	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	4.72E-02	(6)	<0.20	<0.20	8.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	7.72E-02	(6)	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	1.24E-04	(7)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	1.45E+01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	3.30E-01	(6)	<0.40	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	9.39E+02	(6)	<0.20	<0.20	2.8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	7.09E+01	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	1.26E+03	(6)	<0.20	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	-		<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																							
Diesel Range Organics (DRO)	1.80E+03	(4)	1000	(5)	<10	<10	**7800**	<10	280	20	130	<10	370	<10	520	42	210	<10	<10	66	44	<10	<10
Gasoline Range Organics (GRO)	-		-		<5.0	<5.0	110	<5.0	<5.0	<5.0	<5.0	6.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	1000	(5)	<50	<50	**4000**	<50	640	<50	600	<50	1200	<50	530	130	610	<50	<50	200	88	<50	<50

-- No screening level or analytical result available

NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA - Residential Screening Levels (April 2009)

(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways

(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

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

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

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

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 23-1 (1.5-2.0')	AOC 23-1 (52-53')	AOC 25-1 (0-0.5')	AOC 25-1 (1.5-2.0')	AOC 25-2 (0-0.5')	AOC 25-2 (0-0.5')-DUP	AOC 25-2 (1.5-2.0')	AOC 25-2 (36-38')
Sample Date					4/21/2009	4/22/2009	4/23/2009	4/23/2009	4/5/2009	4/5/2009	4/5/2009	4/5/2009
Metals (mg/kg)												
Antimony	3.13E+01	(1)	7.44E+00	(6)	<2.5	<2.5	<2.5	<13	<12	<2.5	<2.5	<2.5
Arsenic	3.90E+00	(2)	1.48E-01	(6)	<2.5	<2.5	<2.5	<13	<12	<2.5	<2.5	<2.5
Barium	1.56E+04	(1)	3.39E+03	(6)	130	6.9	120	160	130	150	120	88
Beryllium	1.56E+02	(1)	6.49E+02	(6)	0.3	0.27	0.2	<0.75	<0.75	0.26	0.23	<0.15
Cadmium	7.79E+01	(1)	1.55E+01	(6)	<0.10	<0.10	0.41	<0.50	<0.50	<0.10	<0.10	<0.10
Chromium	1.13E+05	(1)	1.11E+09	(6)	3.7	2.2	4.4	5.1	4.9	3.1	2.9	1
Cobalt	2.30E+01	(2)	5.51E+00	(7)	2.6	2.4	2.4	4.5	4	2.6	2.2	4.6
Cyanide	1.56E+03	(1)	8.37E+01	(6)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	-		3.2	2.3	10	5.1	5.7	4.1	2.8	2.9
Mercury	7.71E+00	(1)	3.30E-01	(6)	<0.033	<0.032	0.1	<0.033	<0.033	<0.033	<0.033	<0.033
Nickel	1.56E+03	(1)	5.36E+02	(6)	4.2	2.3	4.1	6	6	4.2	3.2	2.7
Selenium	3.91E+02	(1)	1.09E+01	(6)	<13	<13	<13	<13	<12	<13	<13	<2.5
Silver	3.91E+02	(1)	1.76E+01	(6)	<0.25	<0.25	<0.25	<1.3	<1.2	<0.25	<0.25	<0.25
Vanadium	3.91E+02	(1)	2.05E+03	(6)	11	4.4	9.6	15	15	9.3	9.5	5.5
Zinc	2.35E+04	(1)	7.67E+03	(6)	17	12	61	25	28	20	14	9.5
Volatile Organic Compounds - (EPA Method 8260B) mg/kg												
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.94E-02	(6)	<0.050	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2.18E+04	(1)	3.35E+01	(6)	<0.050	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	2.53E-03	(6)	<0.050	--	--	--	--	--	--	--
1,1,2-Trichloroethane	1.72E+01	(1)	7.58E-03	(6)	<0.050	--	--	--	--	--	--	--
1,1-Dichloroethane	6.29E+01	(1)	6.85E-02	(6)	<0.10	--	--	--	--	--	--	--
1,1-Dichloroethene	6.18E+02	(1)	1.34E+00	(6)	<0.050	--	--	--	--	--	--	--
1,1-Dichloropropene	-		-		<0.10	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	-		-		<0.10	--	--	--	--	--	--	--
1,2,3-Trichloropropane	9.15E-01	(1)	4.01E-04	(6)	<0.10	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(6)	<0.050	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.70E-01	(7)	<0.050	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	3.35E-05	(6)	<0.10	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	5.74E-01	(1)	1.78E-04	(6)	<0.050	--	--	--	--	--	--	--
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(6)	<0.050	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.11E-03	(6)	<0.050	--	--	--	--	--	--	--
1,2-Dichloropropane	1.47E+01	(1)	1.25E-02	(6)	<0.050	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.25E-01	(7)	<0.050	--	--	--	--	--	--	--
1,3-Dichlorobenzene	-		-		<0.050	--	--	--	--	--	--	--
1,3-Dichloropropane	1.60E+03	(2)	3.04E+00	(7)	<0.050	--	--	--	--	--	--	--
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(6)	<0.050	--	--	--	--	--	--	--
1-Methylnaphthalene	2.20E+02	(3)	1.69E-01	(7)	<0.20	--	--	--	--	--	--	--
2,2-Dichloropropane	-		-		<0.10	--	--	--	--	--	--	--
2-Butanone (MEK)	3.96E+04	(1)	1.43E+01	(6)	<0.50	--	--	--	--	--	--	--
2-Chlorotoluene	1.56E+03	(1)	7.02E+00	(6)	<0.050	--	--	--	--	--	--	--
2-Hexanone	-		-		<0.50	--	--	--	--	--	--	--
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(7)	<0.20	--	--	--	--	--	--	--
4-Chlorotoluene	5.50E+03	(2)	3.15E+01	(7)	<0.050	--	--	--	--	--	--	--
4-Isopropyltoluene	-		-		<0.050	--	--	--	--	--	--	--
4-Methyl-2-pentanone	-		-		<0.50	--	--	--	--	--	--	--
Acetone	6.75E+04	(1)	4.32E+01	(6)	<0.75	--	--	--	--	--	--	--
Benzene	1.55E+01	(1)	2.08E-02	(6)	<0.050	--	--	--	--	--	--	--
Bromobenzene	9.40E+01	(2)	1.69E-01	(7)	<0.050	--	--	--	--	--	--	--
Bromodichloromethane	5.25E+00	(1)	3.11E-03	(6)	<0.050	--	--	--	--	--	--	--

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 23-1 (1.5-2.0')	AOC 23-1 (52-53')	AOC 25-1 (0-0.5')	AOC 25-1 (1.5-2.0')	AOC 25-2 (0-0.5')	AOC 25-2 (0-0.5')-DUP	AOC 25-2 (1.5-2.0')	AOC 25-2 (36-38')
Bromoform	6.10E+02	(3)	2.59E-02	(7)	<0.050	--	--	--	--	--	--	--
Bromomethane	2.23E+01	(1)	2.18E-02	(6)	<0.10	--	--	--	--	--	--	--
Carbon disulfide	1.94E+03	(1)	2.84E+00	(6)	<0.50	--	--	--	--	--	--	--
Carbon tetrachloride	4.38E+00	(1)	8.32E-03	(6)	<0.10	--	--	--	--	--	--	--
Chlorobenzene	5.08E+02	(1)	6.06E-01	(6)	<0.050	--	--	--	--	--	--	--
Chloroethane	-		-		<0.10	--	--	--	--	--	--	--
Chloroform	5.72E+00	(1)	5.27E-03	(6)	<0.050	--	--	--	--	--	--	--
Chloromethane	3.56E+01	(1)	4.70E-02	(6)	<0.050	--	--	--	--	--	--	--
cis-1,2-DCE	7.82E+02	(1)	1.06E+00	(6)	<0.050	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(6)	<0.050	--	--	--	--	--	--	--
Dibromochloromethane	1.13E+01	(1)	3.80E-03	(6)	<0.050	--	--	--	--	--	--	--
Dibromomethane	7.80E+02	(2)	1.02E+00	(7)	<0.10	--	--	--	--	--	--	--
Dichlorodifluoromethane	4.81E+02	(1)	8.14E+00	(6)	<0.050	--	--	--	--	--	--	--
Ethylbenzene	6.97E+01	(2)	1.64E-01	(6)	<0.050	--	--	--	--	--	--	--
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(7)	<0.10	--	--	--	--	--	--	--
Isopropylbenzene	3.21E+03	(1)	1.11E+01	(6)	<0.050	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	2.58E-01	(6)	<0.050	--	--	--	--	--	--	--
Methylene chloride	1.99E+02	(1)	1.21E-01	(6)	<0.15	--	--	--	--	--	--	--
Naphthalene	4.50E+01	(1)	4.72E-02	(6)	<0.10	--	--	--	--	--	--	--
n-Butylbenzene	-		-		<0.050	--	--	--	--	--	--	--
n-Propylbenzene	-		-		<0.050	--	--	--	--	--	--	--
sec-Butylbenzene	-		-		<0.050	--	--	--	--	--	--	--
Styrene	8.97E+03	(1)	1.76E+01	(6)	<0.050	--	--	--	--	--	--	--
tert-Butylbenzene	-		-		<0.050	--	--	--	--	--	--	--
Tetrachloroethene (PCE)	6.99E+00	(1)	5.05E-03	(6)	<0.050	--	--	--	--	--	--	--
Toluene	5.57E+03	(1)	1.56E+01	(6)	<0.050	--	--	--	--	--	--	--
trans-1,2-DCE	2.73E+02	(1)	3.39E-01	(6)	<0.050	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	2.35E+01	(1)	1.52E-02	(6)	<0.050	--	--	--	--	--	--	--
Trichloroethene (TCE)	4.57E+01	(1)	5.96E-02	(6)	<0.050	--	--	--	--	--	--	--
Trichlorofluoromethane	2.01E+03	(1)	1.01E+01	(6)	<0.050	--	--	--	--	--	--	--
Vinyl chloride	8.65E-01	(1)	3.24E-03	(6)	<0.050	--	--	--	--	--	--	--
Xylenes, Total	1.09E+03	(1)	1.98E+00	(6)	<0.10	--	--	--	--	--	--	--
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg-dry												
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.94E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1,1-Trichloroethane	2.18E+07	(1)	3.35E+04	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	2.53E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1,2-Trichloroethane	1.72E+04	(1)	7.58E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1-Dichloroethane	6.29E+04	(1)	6.85E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1-Dichloroethene	6.18E+05	(1)	1.34E+03	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,1-Dichloropropene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2,3-Trichlorobenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2,3-Trichloropropane	9.15E+02	(1)	4.01E-01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2,4-Trichlorobenzene	1.43E+05	(1)	1.15E+02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2,4-Trimethylbenzene	6.70E+04	(2)	2.70E+02	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	3.35E-02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2-Dibromoethane (EDB)	5.74E+02	(1)	1.78E-01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2-Dichlorobenzene	3.01E+06	(1)	3.53E+03	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.11E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,2-Dichloropropane	1.47E+04	(1)	1.25E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,3,5-Trimethylbenzene	4.70E+04	(2)	2.25E+02	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,3-Dichlorobenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02

Table 9

Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25

Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 23-1 (1.5-2.0')	AOC 23-1 (52-53')	AOC 25-1 (0-0.5')	AOC 25-1 (1.5-2.0')	AOC 25-2 (0-0.5')	AOC 25-2 (0-0.5')-DUP	AOC 25-2 (1.5-2.0')	AOC 25-2 (36-38')
1,3-Dichloropropane	1.60E+06	(2)	3.04E+03	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
1,4-Dichlorobenzene	3.21E+04	(1)	4.02E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
2,2-Dichloropropane	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
2-Butanone	3.96E+07	(1)	1.43E+04	(6)	<4.50	<4.38	<3.44	<3.61	<3.59	<3.61	<3.71	<4.08
2-Chlorotoluene	1.56E+06	(1)	7.02E+03	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
2-Hexanone	-		-		<4.50	<4.38	<3.44	<3.61	<3.59	<3.61	<3.71	<4.08
4-Chlorotoluene	5.50E+06	(2)	3.15E+04	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
4-Isopropyltoluene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
4-Methyl-2-pentanone	-		-		<4.50	<4.38	<3.44	<3.61	<3.59	<3.61	<3.71	<4.08
Acetone	6.75E+07	(1)	4.32E+04	(6)	26.2	16.2	176	33.9	<3.59	<3.61	<3.71	4.21
Benzene	1.55E+04	(1)	2.08E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Bromobenzene	9.40E+04	(2)	1.69E+02	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Bromodichloromethane	5.25E+03	(1)	3.11E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Bromoform	6.10E+05	(3)	2.59E+01	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Bromomethane	2.23E+04	(1)	2.18E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Carbon disulfide	1.94E+06	(1)	2.84E+03	(6)	<4.50	<4.38	<3.44	<3.61	<3.59	<3.61	<3.71	<4.08
Carbon tetrachloride	4.38E+03	(1)	8.32E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Chlorobenzene	5.08E+05	(1)	6.06E+02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Chloroethane	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Chloroform	5.72E+03	(1)	5.27E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Chloromethane	3.56E+04	(1)	4.70E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
cis-1,2-DCE	7.82E+05	(1)	1.06E+03	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
cis-1,3-Dichloropropene	2.35E+04	(1)	1.52E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Dibromochloromethane	1.13E+04	(1)	3.80E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Dibromomethane	7.80E+05	(2)	1.02E+03	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Dichlorodifluoromethane	4.81E+05	(1)	8.14E+03	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Ethylbenzene	6.97E+04	(2)	1.64E+02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Hexachlorobutadiene	6.20E+04	(3)	2.14E+01	(7)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Isopropylbenzene	3.21E+06	(1)	1.11E+04	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	2.58E+02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Methylene chloride	1.99E+05	(1)	1.21E+02	(6)	8.91	113	8.39	25.8	<1.80	<1.80	<1.85	<2.04
Naphthalene	4.50E+04	(1)	4.72E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
n-Butylbenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
n-Propylbenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
sec-Butylbenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Styrene	8.97E+06	(1)	1.76E+04	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
tert-Butylbenzene	-		-		<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Tetrachloroethene (PCE)	6.99E+03	(1)	5.05E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Toluene	5.57E+06	(1)	1.56E+04	(6)	1.41	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
trans-1,2-DCE	2.73E+05	(1)	3.39E+02	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
trans-1,3-Dichloropropene	2.35E+04	(1)	1.52E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Trichloroethene (TCE)	4.57E+04	(1)	5.96E+01	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Trichlorofluoromethane	2.01E+06	(1)	1.01E+04	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Vinyl chloride	8.65E+02	(1)	3.24E+00	(6)	<1.12	<1.10	<0.861	<0.903	<0.898	<0.902	<0.926	<1.02
Xylenes, Total	1.09E+06	(1)	1.98E+03	(6)	<1.12	<1.10	1.2	<0.903	<0.898	<0.902	<0.926	<1.02
Semi Volatile Organics - (EPA Method 8270) mg/kg												
1,2,4-Trichlorobenzene	1.43E+02	(1)	1.15E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	3.53E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.21E+01	(1)	4.02E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	*6.11E+03*	*(1)*	*8.02E+01*	*(6)*	*<0.20*	*<0.20*	*<0.20*	*<0.20*	*<0.20*	*<0.20*	*<0.20*	*<0.20*

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 23-1 (1.5-2.0')	AOC 23-1 (52-53')	AOC 25-1 (0-0.5')	AOC 25-1 (1.5-2.0')	AOC 25-2 (0-0.5')	AOC 25-2 (0-0.5')-DUP	AOC 25-2 (1.5-2.0')	AOC 25-2 (36-38')
2,4,6-Trichlorophenol	6.11E+01	(1)	8.02E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	1.54E+00	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	1.03E+01	(6)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	5.91E-01	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.75E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	3.00E-01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	1.52E+02	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.72E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	1.01E+01	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	2.25E+01	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	3.71E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3,3'-Dichlorobenzidine	8.71E+00	(1)	1.92E-01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3+4-Methylphenol	3.10E+02	(2)	2.14E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	-		-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	-		-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	1.35E-03	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	1.13E-02	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	2.31E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3.83E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	3.79E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	5.74E-03	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	3.59E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	1.22E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	1.25E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	-		-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	1.22E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	3.71E+02	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	4.73E+01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	2.59E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	2.62E-04	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	2.88E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.34E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	7.54E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	3.67E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	4.07E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.19E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	9.40E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	9.70E+01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	-		-		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	1.75E+03	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Fluorene	2.29E+03	(1)	2.81E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	2.48E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	2.14E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Table 9
Group 3 Soil Analytical Results Summary SWMUs 4 and 5, AOC 23 and AOC 25
Bloomfield Refinery, Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 23-1 (1.5-2.0')	AOC 23-1 (52-53')	AOC 25-1 (0-0.5')	AOC 25-1 (1.5-2.0')	AOC 25-2 (0-0.5')	AOC 25-2 (0-0.5')-DUP	AOC 25-2 (1.5-2.0')	AOC 25-2 (36-38')
Hexachlorocyclopentadiene	3.67E+02	(1)	6.90E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.17E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	4.16E+01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.08E+00	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	4.72E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	7.72E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	1.24E-04	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	1.45E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	3.30E-01	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	9.39E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	7.09E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	1.26E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	-		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg												
Diesel Range Organics (DRO)	1.80E+03	(4)	1000	(5)	<10	<10	50	<10	<10	<10	<10	<10
Gasoline Range Organics (GRO)	-		-		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	1000	(5)	<50	<50	140	<50	<50	<50	<50	<50

-- No screening level or analytical result available
NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)
EPA - Regional Screening Levels (April 2009)
(1) NMED Residential Screening Level
(2) EPA - Residential Screening Levels (April 2009)
(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways
(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways
(6) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(7) SoilGW Risk-based EPA DAF = 11.25
(8) SoilGW MCL-based EPA DAF = 11.25

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

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-1 (0-0.5')	AOC 22-1 (1.5-2.0')	AOC 22-2 (0-0.5')	AOC 22-2 (1.5-2.0')	AOC 22-3 (0-0.5')	AOC 22-3 (1.5'-2.0')	AOC 22-4 (0-0.5')	AOC 22-4 (1.5-2.0)	AOC 22-5 (0-0.5')	AOC 22-5 1.5-2.0')	AOC 22-6 (0-0.5')	AOC 22-6 (1.5-2.0')	AOC 22-12 (0-0.5')	AOC 22-12 (0-0.5') DUP	AOC 22-12 (1.5-2.0')	AOC 22-12 (32-35')
Sample Date								4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009
Metals (mg/kg)																							
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	mg/Kg	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<2.5	<13	<13	<2.5	<12	<2.5
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	mg/Kg	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<2.5	<13	<13	<13	<12	<2.5
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	mg/Kg	170	210	190	160	210	230	190	180	210	180	230	220	230	220	180	130
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	mg/Kg	0.3	0.37	0.34	0.36	0.36	0.34	0.33	0.34	0.16	<0.75	0.17	<0.75	<0.75	0.38	<0.75	<0.15
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	mg/Kg	0.11	0.19	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.10	<0.50	<0.50	<0.10	<0.50	<0.10
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	mg/Kg	5.4	5.7	6.7	18	5.1	4.7	4.7	4.6	5.3	5.3	8.8	7.7	6.7	6	10	4
Cobalt	2.30E+01	(2)	3.00E+02	(3)	5.51E+00	(7)	mg/Kg	3.5	3.9	3.7	3.8	3.8	3.6	3.6	3.7	2.1	2.6	2.6	5.5	5	3.5	4.9	2.8
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	mg/Kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	8.00E+02	(1)	-	-	mg/Kg	7	6.8	4.7	4.9	4.5	3.8	4.2	4.1	4.2	3.8	2.9	5.4	6.5	5.5	7.8	2.7
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	mg/Kg	<0.032	<0.033	<0.033	<0.032	<0.032	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	mg/Kg	5.7	5.6	5.3	5.5	5.6	5.4	5.3	5.5	2.5	3.4	3.3	9.1	6.9	5.5	7.7	2.5
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	mg/Kg	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<13	<13	<13	<13	<13	<12	<12
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<0.25	<1.3	<1.3	<0.25	<1.2	<0.25
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	mg/Kg	13	15	14	14	14	14	14	13	13	14	14	23	16	14	19	14
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	mg/Kg	27	27	30	30	26	25	25	24	14	16	20	34	32	26	36	13
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																							
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,1-Dichloropropene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(3)	2.70E-01	(7)	mg/Kg	--	--	--	--	--	--	--	270	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(3)	2.25E-01	(7)	mg/Kg	--	--	--	--	--	--	--	98	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(3)	3.04E+00	(7)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
1-Methylnaphthalene	2.20E+02	(3)	9.90E+02	(3)	1.69E-01	(7)	mg/Kg	--	--	--	--	--	--	--	30	--	--	--	--	--	--	--	--
2,2-Dichloropropane	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
2-Butanone (MEK)	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	mg/Kg	--	--	--	--	--	--	--	<5.0	--	--	--	--	--	--	--	--
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
2-Hexanone	--		-	(1)	-	-	mg/Kg	--	--	--	--	--	--	--	<5.0	--	--	--	--	--	--	--	--
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	--	--	--	--	--	--	--	60	--	--	--	--	--	--	--	--
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(3)	3.15E+01	(7)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	5.5	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<5.0	--	--	--	--	--	--	--	--
Acetone	6.75E+04	(1)	2.63E+05	(2)	4.32E+01	(6)	mg/Kg	--	--	--	--	--	--	--	<7.5	--	--	--	--	--	--	--	--
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	mg/Kg	--	--	--	--	--	--	--	0.78	--	--	--	--	--	--	--	--
Bromobenzene	9.40E+01	(2)	4.10E+02	(3)	1.69E-01	(7)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Bromoform	6.10E+02	(3)	2.20E+03	(3)	2.59E-02	(7)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<5.0	--	--	--	--	--	--	--	--
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-1 (0-0.5')	AOC 22-1 (1.5-2.0')	AOC 22-2 (0-0.5')	AOC 22-2 (1.5-2.0')	AOC 22-3 (0-0.5')	AOC 22-3 (1.5'-2.0')	AOC 22-4 (0-0.5')	AOC 22-4 (1.5-2.0')	AOC 22-5 (0-0.5')	AOC 22-5 1.5-2.0')	AOC 22-6 (0-0.5')	AOC 22-6 (1.5-2.0')	AOC 22-12 (0-0.5')	AOC 22-12 (0-0.5') DUP	AOC 22-12 (1.5-2.0')	AOC 22-12 (32-35')
Sample Date								4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009
Chloroethane	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Dibromomethane	7.80E+02	(2)	1.00E+04	(3)	1.02E+00	(7)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	mg/Kg	--	--	--	--	--	--	--	11	--	--	--	--	--	--	--	--
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	--	--	--	--	--	--	--	<1.0	--	--	--	--	--	--	--	--
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	mg/Kg	--	--	--	--	--	--	--	3.6	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	mg/Kg	--	--	--	--	--	--	--	<1.5	--	--	--	--	--	--	--	--
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	--	--	--	--	--	--	--	45	--	--	--	--	--	--	--	--
n-Butylbenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	14	--	--	--	--	--	--	--	--
n-Propylbenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	15	--	--	--	--	--	--	--	--
sec-Butylbenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	5.5	--	--	--	--	--	--	--	--
Styrene	8.97E+03	(1)	3.03E+04	(2)	1.76E+01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
tert-Butylbenzene	--		-		-	-	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	mg/Kg	--	--	--	--	--	--	--	14	--	--	--	--	--	--	--	--
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	mg/Kg	--	--	--	--	--	--	--	<0.50	--	--	--	--	--	--	--	--
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	mg/Kg	--	--	--	--	--	--	--	350	--	--	--	--	--	--	--	--
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg																							
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,1-Dichloropropene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2,3-Trichlorobenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2,4-Trimethylbenzene	6.70E+04	(2)	2.80E+05	(3)	2.70E+02	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,3,5-Trimethylbenzene	4.70E+04	(2)	2.00E+05	(3)	2.25E+02	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,3-Dichlorobenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,3-Dichloropropane	1.60E+06	(2)	2.00E+07	(3)	3.04E+03	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
2,2-Dichloropropane	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
2-Butanone	*3.96E+07*	*(1)*	*1.48E+08*	*(2)*	*1.43E+04*	*(6)*	*µg/Kg-drX*	*<3.59*	*<3.78*	*<3.83*	*<3.81*	*<3.84*	*<3.80*	*<3.94*	--	*<3.87*	*<3.64*	*<3.82*	*<3.99*	*<4.45*	*<4.04*	*<4.10*	*4.66*
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
2-Hexanone	--		-		-	-	µg/Kg-drX	<3.59	<3.78	<3.83	<3.81	<3.84	<3.80	<3.94	--	<3.87	<3.64	<3.82	<3.99	<4.45	<4.04	<4.10	<3.88
4-Chlorotoluene	5.50E+06	(2)	7.20E+07	(3)	3.15E+04	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
4-Isopropyltoluene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
4-Methyl-2-pentanone	-	(1)	-		-	-	µg/Kg-drX	<3.59	<3.78	<3.83	<3.81	<3.84	<3.80	<3.94	--	<3.87	<3.64	<3.82	<3.99	<4.45	<4.04	<4.10	<3.88

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-1 (0-0.5')	AOC 22-1 (1.5-2.0')	AOC 22-2 (0-0.5')	AOC 22-2 (1.5-2.0')	AOC 22-3 (0-0.5')	AOC 22-3 (1.5'-2.0')	AOC 22-4 (0-0.5')	AOC 22-4 (1.5-2.0)	AOC 22-5 (0-0.5')	AOC 22-5 1.5-2.0')	AOC 22-6 (0-0.5')	AOC 22-6 (1.5-2.0')	AOC 22-12 (0-0.5')	AOC 22-12 (0-0.5') DUP	AOC 22-12 (1.5-2.0')	AOC 22-12 (32-35')
Sample Date								4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	µg/Kg-drX	<3.59	<3.78	<3.83	<3.81	<3.84	<3.80	<3.94	--	10.5	<3.64	<3.82	9.25	<4.45	<4.04	<4.10	30.1
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Bromobenzene	9.40E+04	(2)	4.10E+05	(3)	1.69E+02	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Bromoform	6.10E+05	(3)	2.20E+06	(3)	2.59E+01	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	µg/Kg-drX	<3.59	<3.78	<3.83	<3.81	<3.84	<3.80	<3.94	--	<3.87	<3.64	<3.82	<3.99	<4.45	<4.04	<4.10	<3.88
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Chloroethane	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Dibromomethane	7.80E+05	(2)	1.00E+07	(3)	1.02E+03	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Hexachlorobutadiene	6.20E+04	(3)	2.20E+05	(3)	2.14E+01	(7)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	0.981
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	µg/Kg-drX	8.24	10.3	7.26	9.35	8.3	11	8.26	--	2.02	2.22	<1.91	7.05	6.76	5.77	7.36	7.43
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	4.12	3.39	<0.954	<0.999	<1.11	<1.01	<1.03	1.4
n-Butylbenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
n-Propylbenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
sec-Butylbenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
tert-Butylbenzene	--		-		-	-	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	µg/Kg-drX	<0.898	<0.944	<0.957	<0.952	<0.960	<0.951	<0.984	--	<0.967	<0.911	<0.954	<0.999	<1.11	<1.01	<1.03	<0.971
Semi Volatile Organics - (EPA Method 8270) mg/kg																							
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	--		-		0.00E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	8.02E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	8.02E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	1.54E+00	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<2.0	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	1.03E+01	(6)	mg/Kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<3.0	<1.5	<0.30	<1.5	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	5.91E-01	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<2.0	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	53	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	3.10E+04	(3)	2.25E+01	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(3)	3.71E-01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
3,3'-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-1 (0-0.5')	AOC 22-1 (1.5-2.0')	AOC 22-2 (0-0.5')	AOC 22-2 (1.5-2.0')	AOC 22-3 (0-0.5')	AOC 22-3 (1.5'-2.0')	AOC 22-4 (0-0.5')	AOC 22-4 (1.5-2.0')	AOC 22-5 (0-0.5')	AOC 22-5 1.5-2.0')	AOC 22-6 (0-0.5')	AOC 22-6 (1.5-2.0')	AOC 22-12 (0-0.5')	AOC 22-12 (0-0.5') DUP	AOC 22-12 (1.5-2.0')	AOC 22-12 (32-35')
Sample Date								4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(3)	2.14E+00	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	8.60E+01	(3)	1.35E-03	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	8.60E+02	(3)	1.13E-02	(7)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3.00E+03	(3)	3.83E-02	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	2.20E+02	(3)	5.74E-03	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2.50E+06	(3)	3.71E+02	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(3)	4.73E+01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(3)	2.59E-01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	9.10E+03		7.54E+00	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<2.5	<1.3	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	28	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	2.50E+00	(3)	1.24E-04	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<2.0	<0.40	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	5.6	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<2.0	<1.0	<0.20	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1.00E+03	(3)	-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<2.5	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																							
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	75	23	<10	130	<10	<10	22	**7700**	56	73	130	<10	56	63	74	10
Gasoline Range Organics (GRO)	-		-		-		mg/Kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	75	86	<50	140	<50	<50	<50	<1000	270	320	770	64	62	67	87	<50

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-1 (0-0.5')	AOC 22-1 (1.5-2.0')	AOC 22-2 (0-0.5')	AOC 22-2 (1.5-2.0')	AOC 22-3 (0-0.5')	AOC 22-3 (1.5'-2.0')	AOC 22-4 (0-0.5')	AOC 22-4 (1.5-2.0)	AOC 22-5 (0-0.5')	AOC 22-5 1.5-2.0')	AOC 22-6 (0-0.5')	AOC 22-6 (1.5-2.0')	AOC 22-12 (0-0.5')	AOC 22-12 (0-0.5') DUP	AOC 22-12 (1.5-2.0')	AOC 22-12 (32-35')
Sample Date								4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009
Ethanol							mg/Kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

--* Laboratory inadvertently did not analyze for Cyanide for AOC (22-12 (36-37.75')
-- No screening level or analytical result available
NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)
EPA - Regional Screening Levels (April 2009)
(1) NMED Residential Screening Level
(2) EPA - Residential Screening Levels (April 2009)
(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways
(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

(6) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25
(7) SoilGW Risk-based EPA DAF = 11.25
(8) SoilGW MCL-based EPA DAF = 11.25
(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

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 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-12 (36-37.75')	AOC 22-13 (0-0.5')	AOC 22-13 (1.5-2.0')	AOC 22-13 (18-20')	AOC 22-13 (32-34.5')	AOC 22-13 (37-39')	AOC 22-15 (1.0-1.5')	AOC 22-15 (1.5-2.0')	AOC 22-15 (1.5-2.0') DUP	AOC 22-15 (30-32')	AOC 22-15 (34-36')	AOC 26-1 (0-0.5')	AOC 26-1 (1.5-2.0')	AOC 26-2 (0.0.5')	AOC 26-2 (1.5-2.0')	AOC 26-3 (0-0.5')	AOC 26-3 (1.5-2.0')	AOC 26-3 (1.5-2.0') DUP	AOC 26-4 (0-0.5')
Sample Date								4/13/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009
Metals (mg/kg)																										
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	mg/Kg	<2.5	<2.5	<13	<2.5	<2.5	--	<2.5	<2.5	<2.5	<2.5	<2.5	<12	<13	<13	<12	<12	<12	<13	<12
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	mg/Kg	<2.5	<2.5	<13	<2.5	<2.5	--	<13	<2.5	<2.5	<2.5	<2.5	<12	<13	<13	<12	<12	<12	<13	<12
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	mg/Kg	110	180	180	37	130	--	160	160	180	190	230	150	200	190	210	190	190	180	330
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	mg/Kg	<0.15	0.33	<0.75	<0.15	<0.15	--	0.26	0.39	0.37	0.18	<0.15	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	mg/Kg	<0.10	0.17	<0.50	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	mg/Kg	20	5.8	6.4	1.7	8.5	--	4.4	4.8	4.9	4.7	2.2	8	7.7	7.6	7.2	10	13	9	8.4
Cobalt	2.30E+01	(2)	3.00E+02	(3)	5.51E+00	(7)	mg/Kg	1.8	3.3	4.6	1.3	2	--	3.5	3.8	3.7	2.9	2.2	5.3	6.5	6.7	6	4.6	4.9	4.7	6.3
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	mg/Kg	--*	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	8.00E+02	(1)	-	-	mg/Kg	1.7	6.7	7.2	5.8	6.2	--	5.3	4.3	4.4	3.9	2.1	7.2	6	8.5	6	6	25	4.6	6.4
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	mg/Kg	<0.033	<0.033	<0.033	<0.033	<0.033	--	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	mg/Kg	2	4.9	7.2	2	2.2	--	5	5.7	5.6	3.8	1.7	6.8	8.8	8.5	7.9	6.4	6.4	6.2	10
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	mg/Kg	<2.5	<13	<13	<2.5	<2.5	--	<13	<13	<13	<2.5	<2.5	<12	<13	<13	<12	<12	<12	<13	<12
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	mg/Kg	<0.25	<0.25	<1.3	<0.25	<0.25	--	<0.25	<0.25	<0.25	<0.25	<0.25	<1.2	<1.3	<1.3	<1.2	<1.2	<1.2	<1.3	<1.2
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	mg/Kg	10	14	18	5.5	9.8	--	12	15	14	15	11	17	23	21	20	17	19	20	20
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	mg/Kg	10	28	32	9.1	14	--	18	24	23	21	12	54	41	62	38	36	47	34	41
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																										
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1;1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,1-Dichloropropene	--		-		-	-	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
1,2,3-Trichlorobenzene	--		-		-	-	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(3)	2.70E-01	(7)	mg/Kg	--	28	200	73	13	**400**	--	--	--	--	0.69	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(3)	2.25E-01	(7)	mg/Kg	--	11	77	21	4.4	140	--	--	--	--	0.26	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	--		-		-	-	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(3)	3.04E+00	(7)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
1-Methylnaphthalene	2.20E+02	(3)	9.90E+02	(3)	1.69E-01	(7)	mg/Kg	--	1.7	31	9.1	1.9	45	--	--	--	--	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20
2,2-Dichloropropane	--		-		-	-	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
2-Butanone (MEK)	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	mg/Kg	--	--	<10	<5.0	<0.50	<50	--	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
2-Hexanone	--		-	(1)	-	-	mg/Kg	--	--	<10	<5.0	<0.50	<50	--	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	--	3	47	17	3.4	72	--	--	--	--	--	--	--	--	--	<0.20	<0.20	<0.20	<0.20
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(3)	3.15E+01	(7)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
4-Isopropyltoluene	--		-		-	-	mg/Kg	--	0.83	4.9	1.7	0.46	6	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
4-Methyl-2-pentanone	--		-		-	-	mg/Kg	--	--	<10	<5.0	<0.50	<50	--	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50
Acetone	6.75E+04	(1)	2.63E+05	(2)	4.32E+01	(6)	mg/Kg	--	--	<15	<7.5	<0.75	<75	--	--	--	--	--	--	--	--	--	<0.75	<0.75	<0.75	<0.75
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	mg/Kg	--	--	3.1	0.81	0.066	7.7	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Bromobenzene	9.40E+01	(2)	4.10E+02	(3)	1.69E-01	(7)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Bromoform	6.10E+02	(3)	2.20E+03	(3)	2.59E-02	(7)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	mg/Kg	--	--	<10	<5.0	<0.50	<50	--	--	--	--	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-12 (36-37.75')	AOC 22-13 (0-0.5')	AOC 22-13 (1.5-2.0')	AOC 22-13 (18-20')	AOC 22-13 (32-34.5')	AOC 22-13 (37-39')	AOC 22-15 (1.0-1.5')	AOC 22-15 (1.5-2.0')	AOC 22-15 (1.5-2.0') DUP	AOC 22-15 (30-32')	AOC 22-15 (34-36')	AOC 26-1 (0-0.5')	AOC 26-1 (1.5-2.0')	AOC 26-2 (0.0.5')	AOC 26-2 (1.5-2.0')	AOC 26-3 (0-0.5')	AOC 26-3 (1.5-2.0')	AOC 26-3 (1.5-2.0') DUP	AOC 26-4 (0-0.5')
Sample Date								4/13/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009
Chloroethane	--		-		-	-	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Dibromomethane	7.80E+02	(2)	1.00E+04	(3)	1.02E+00	(7)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	mg/Kg	--	0.28	16	22	2.2	120	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	--	--	<2.0	<1.0	<0.10	<10	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	mg/Kg	--	--	2.5	3.7	0.55	12	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	mg/Kg	--	--	<3.0	<1.5	<0.15	<15	--	--	--	--	--	--	--	--	--	<0.15	<0.15	<0.15	<0.15
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	--	2.6	32	12	2.5	49	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
n-Butylbenzene	--		-		-	-	mg/Kg	--	2.8	4.4	7.9	2.3	36	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
n-Propylbenzene	--		-		-	-	mg/Kg	--	--	8.5	9.9	1.6	57	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
sec-Butylbenzene	--		-		-	-	mg/Kg	--	0.094	3	2.7	0.67	10	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Styrene	8.97E+03	(1)	3.03E+04	(2)	1.76E+01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
tert-Butylbenzene	--		-		-	-	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	mg/Kg	--	0.78	47	28	1.6	68	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	mg/Kg	--	--	<1.0	<0.50	<0.050	<5.0	--	--	--	--	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	mg/Kg	--	25	250	130	14	760	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg																										
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,1-Dichloropropene	--		-		-	-	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2,3-Trichlorobenzene	--		-		-	-	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2,4-Trimethylbenzene	6.70E+04	(2)	2.80E+05	(3)	2.70E+02	(7)	µg/Kg-drX	16.1	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	--	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,3,5-Trimethylbenzene	4.70E+04	(2)	2.00E+05	(3)	2.25E+02	(7)	µg/Kg-drX	5.42	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	--	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,3-Dichlorobenzene	--		-		-	-	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,3-Dichloropropane	1.60E+06	(2)	2.00E+07	(3)	3.04E+03	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
2,2-Dichloropropane	--		-		-	-	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
2-Butanone	3.96E+07	(1)	1.48E+08	(2)	1.43E+04	(6)	µg/Kg-drX	4.96	<4.42	--	--	--	--	<3.70	<4.01	<3.67	<3.90	<4.03	<4.53	<4.00	<3.63	<3.85	<3.81	<4.05	<3.85	<3.67
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
2-Hexanone	--		-		-	-	µg/Kg-drX	<3.76	<4.42	--	--	--	--	<3.70	<4.01	<3.67	<3.90	<4.03	<4.53	<4.00	<3.63	<3.85	<3.81	<4.05	<3.85	<3.67
4-Chlorotoluene	5.50E+06	(2)	7.20E+07	(3)	3.15E+04	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
4-Isopropyltoluene	--		-		-	-	µg/Kg-drX	<0.939	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	--	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
4-Methyl-2-pentanone	-	(1)	-		-	-	µg/Kg-drX	<3.76	<4.42	--	--	--	--	<3.70	<4.01	<3.67	<3.90	<4.03	<4.53	<4.00	<3.63	<3.85	<3.81	<4.05	<3.85	<3.67

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-12 (36-37.75')	AOC 22-13 (0-0.5')	AOC 22-13 (1.5-2.0')	AOC 22-13 (18-20')	AOC 22-13 (32-34.5')	AOC 22-13 (37-39')	AOC 22-15 (1.0-1.5')	AOC 22-15 (1.5-2.0')	AOC 22-15 (1.5-2.0') DUP	AOC 22-15 (30-32')	AOC 22-15 (34-36')	AOC 26-1 (0-0.5')	AOC 26-1 (1.5-2.0')	AOC 26-2 (0.0.5')	AOC 26-2 (1.5-2.0')	AOC 26-3 (0-0.5')	AOC 26-3 (1.5-2.0')	AOC 26-3 (1.5-2.0') DUP	AOC 26-4 (0-0.5')
Sample Date								4/13/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	µg/Kg-drX	21	<4.42	--	--	--	--	9.84	6.14	4.35	15	205	15.9	9.75	15.3	10.6	<3.81	<4.05	<3.85	<3.67
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	µg/Kg-drX	<0.939	6.43	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Bromobenzene	9.40E+04	(2)	4.10E+05	(3)	1.69E+02	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Bromoform	6.10E+05	(3)	2.20E+06	(3)	2.59E+01	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	µg/Kg-drX	<3.76	<4.42	--	--	--	--	<3.70	<4.01	<3.67	<3.90	<4.03	<4.53	<4.00	<3.63	<3.85	<3.81	<4.05	<3.85	<3.67
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Chloroethane	--		-		-	-	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Dibromomethane	7.80E+05	(2)	1.00E+07	(3)	1.02E+03	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	µg/Kg-drX	1.28	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<0.05	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Hexachlorobutadiene	6.20E+04	(3)	2.20E+05	(3)	2.14E+01	(7)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	µg/Kg-drX	<0.939	8.15	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<0.05	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	µg/Kg-drX	2.2	3.71	--	--	--	--	<0.924	<1.00	<0.918	28.1	7.07	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	µg/Kg-drX	8.3	14	--	--	--	--	16.3	11	9.09	12.1	15.6	7.64	5.85	5.81	6.43	8.97	9.83	10.8	7.78
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	µg/Kg-drX	6.22	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	0.1	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
n-Butylbenzene	--		-		-	-	µg/Kg-drX	6.37	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	0.15	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
n-Propylbenzene	--		-		-	-	µg/Kg-drX	1.88	11.9	--	--	--	--	<0.924	<1.00	<0.918	<0.976	0.084	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
sec-Butylbenzene	--		-		-	-	µg/Kg-drX	1	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<0.05	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
tert-Butylbenzene	--		-		-	-	µg/Kg-drX	<0.939	8.23	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	µg/Kg-drX	<0.939	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	1.59	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	µg/Kg-drX	<0.939	<1.10	--	--	--	--	<0.924	<1.00	<0.918	<0.976	<1.01	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	µg/Kg-drX	7.62	--	--	--	--	--	<0.924	<1.00	<0.918	<0.976	0.22	<1.13	<0.999	<0.908	<0.964	<0.952	<1.01	<0.962	<0.917
Semi Volatile Organics - (EPA Method 8270) mg/kg																										
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	--		-		0.00E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	8.02E+01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	8.02E-01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	1.54E+00	(6)	mg/Kg	<0.40	<2.0	<4.0	<0.40	<0.40	--	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	1.03E+01	(6)	mg/Kg	<0.30	<1.5	<3.0	<0.30	<0.30	--	<1.5	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	5.91E-01	(6)	mg/Kg	<0.40	<2.0	<4.0	<0.40	<0.40	--	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	mg/Kg	<0.25	<1.3	<2.5	<0.25	<0.25	--	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	<0.25	9.5	32	11	3.8	--	<1.3	<0.25	<0.25	<0.25	0.63	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	3.10E+04	(3)	2.25E+01	(7)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(3)	3.71E-01	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3,3´-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	mg/Kg	<0.25	<1.3	<2.5	<0.25	<0.25	--	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-12 (36-37.75')	AOC 22-13 (0-0.5')	AOC 22-13 (1.5-2.0')	AOC 22-13 (18-20')	AOC 22-13 (32-34.5')	AOC 22-13 (37-39')	AOC 22-15 (1.0-1.5')	AOC 22-15 (1.5-2.0')	AOC 22-15 (1.5-2.0') DUP	AOC 22-15 (30-32')	AOC 22-15 (34-36')	AOC 26-1 (0-0.5')	AOC 26-1 (1.5-2.0')	AOC 26-2 (0.0.5')	AOC 26-2 (1.5-2.0')	AOC 26-3 (0-0.5')	AOC 26-3 (1.5-2.0')	AOC 26-3 (1.5-2.0') DUP	AOC 26-4 (0-0.5')
Sample Date								4/13/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(3)	2.14E+00	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	--		-		-	-	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	8.60E+01	(3)	1.35E-03	(7)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	8.60E+02	(3)	1.13E-02	(7)	mg/Kg	<0.25	<1.3	<2.5	<0.25	<0.25	--	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3.00E+03	(3)	3.83E-02	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	2.20E+02	(3)	5.74E-03	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	--		-		-	-	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2.50E+06	(3)	3.71E+02	(7)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(3)	4.73E+01	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(3)	2.59E-01	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	9.10E+03		7.54E+00	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	--		-		-	-	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	mg/Kg	<0.25	<1.3	<2.5	<0.25	<0.25	--	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	mg/Kg	<0.25	<1.3	<2.5	<0.25	<0.25	--	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	<0.20	3.5	17	5.3	1.8	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	2.50E+00	(3)	1.24E-04	(7)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	mg/Kg	<0.40	<2.0	<4.0	<0.40	<0.40	--	<2.0	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	mg/Kg	<0.20	1.5	3.1	0.67	0.41	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	mg/Kg	<0.20	<1.0	<2.0	<0.20	<0.20	--	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1.00E+03	(3)	-	-	mg/Kg	<0.50	<2.5	<5.0	<0.50	<0.50	--	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																										
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	46	4400	**8600**	1400	1300	**7800**	19	<10	<10	<10	100	<10	<10	<10	<10	<10	<10	<10	<10
Gasoline Range Organics (GRO)	-		-		-		mg/Kg	<5.0	180	1900	1300	<250	5500	<5.0	<5.0	<5.0	<5.0	15	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	<50	1000	540	<500	<500	<1000	71	<50	<50	<50	<50	<50	<50	<50	<50	70	56	67	<50

Table 10

Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26

Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 22-12 (36-37.75')	AOC 22-13 (0-0.5')	AOC 22-13 (1.5-2.0')	AOC 22-13 (18-20')	AOC 22-13 (32-34.5')	AOC 22-13 (37-39')	AOC 22-15 (1.0-1.5')	AOC 22-15 (1.5-2.0')	AOC 22-15 (1.5-2.0') DUP	AOC 22-15 (30-32')	AOC 22-15 (34-36')	AOC 26-1 (0-0.5')	AOC 26-1 (1.5-2.0')	AOC 26-2 (0.0.5')	AOC 26-2 (1.5-2.0')	AOC 26-3 (0-0.5')	AOC 26-3 (1.5-2.0')	AOC 26-3 (1.5-2.0') DUP	AOC 26-4 (0-0.5')
Sample Date								4/13/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/8/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/15/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009
Ethanol							mg/Kg	--	--	--	--	--	--	--	--	--	--	--	<1.0	<1.0	<1.0	<1.0	--	--	--	--

--* Laboratory inadvertently did not analyze for Cyanide for AOC (22-12 (36-37.75')

-- No screening level or analytical result available

NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA - Residential Screening Levels (April 2009)

(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways

(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

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

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

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 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 26-4 (1.5-2.0')	AOC 26-5 (0-0.5')	AOC 26-5 (1.5-2.0')	AOC 26-6 (0-0.5')	AOC 26-6 (1.5-2.0')	AOC 26-7 (0-0.5')	AOC 26-7 (1.5-2.0')	AOC 26-8 (0-1.0')	AOC 26-8 (0-1.0') DUP	AOC 26-8 (1.5-2.0')	AOC 26-8 (32-36')	AOC 26-9 (0-0.5')	AOC 26-9 (1.5-2.0')	AOC 26-9 (36-38')
Sample Date								4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/16/2009	4/16/2009	4/16/2009	4/16/2009	4/20/2009	4/20/2009	4/20/2009
Metals (mg/kg)																					
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	mg/Kg	<13	<12	<13	<12	<12	<13	<13	<13	<12	<2.5	<2.5	<13	<12	<2.5
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	mg/Kg	<13	<12	<13	<12	<12	<13	<13	<13	<12	<2.5	<2.5	<13	<12	<2.5
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	mg/Kg	230	260	170	200	180	220	150	380	240	280	230	150	130	180
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	mg/Kg	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	0.29	<0.15	<0.75	<0.75	<0.15
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.10	<0.10	<0.50	<0.50	<0.10
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	mg/Kg	7.2	7.2	6.4	6.6	6.4	6.8	5.2	2.4	2.1	4.2	2.5	14	6.8	3.9
Cobalt	2.30E+01	(2)	3.00E+02	(3)	5.51E+00	(7)	mg/Kg	6.2	5.7	5.8	5.7	5.8	6.4	4.5	3.1	3.1	3.5	2.3	4.2	5.6	2.3
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	mg/Kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.5
Lead	4.00E+02	(1)	8.00E+02	(1)	-	-	mg/Kg	6.2	6.1	5.3	10	5.4	16	6	2.8	2.8	3.2	3.1	4.3	5.5	1.4
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	mg/Kg	<0.033	<0.033	<0.032	<0.033	<0.032	<0.032	<0.032	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.032
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	mg/Kg	8.5	7.8	7.1	7.3	6.7	7.6	6.8	3	2.8	4.8	1.8	5.8	7.6	1.8
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	mg/Kg	<13	<12	<13	<12	<12	<13	<13	<13	<12	<12	<12	<13	<12	<13
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	mg/Kg	<1.3	<1.2	<1.3	<1.2	<1.2	<1.3	<1.3	<1.3	<1.2	<0.25	<0.25	<1.3	<1.2	<0.25
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	mg/Kg	22	21	21	19	23	19	17	<13	<12	13	10	14	19	11
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	mg/Kg	40	48	33	83	36	160	30	22	20	24	14	39	32	11
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																					
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,1-Dichloropropene	--		-		-	-	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
1,2,3-Trichlorobenzene	--		-		-	-	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,2,4-Trimethylbenzene	6.70E+01	(2)	2.80E+02	(3)	2.70E-01	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	71
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,3,5-Trimethylbenzene	4.70E+01	(2)	2.00E+02	(3)	2.25E-01	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	25
1,3-Dichlorobenzene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,3-Dichloropropane	1.60E+03	(2)	2.00E+04	(3)	3.04E+00	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
1-Methylnaphthalene	2.20E+02	(3)	9.90E+02	(3)	1.69E-01	(7)	mg/Kg	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--	8.8
2,2-Dichloropropane	--		-		-	-	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
2-Butanone (MEK)	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	mg/Kg	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	<5.0
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
2-Hexanone	--		-	(1)	-	-	mg/Kg	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	<5.0
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	<0.20	<0.20	--	<0.20	<0.20	<0.20	<0.20	--	--	--	--	--	--	16
4-Chlorotoluene	5.50E+03	(2)	7.20E+04	(3)	3.15E+01	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
4-Isopropyltoluene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	1.2
4-Methyl-2-pentanone	--		-		-	-	mg/Kg	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	<5.0
Acetone	6.75E+04	(1)	2.63E+05	(2)	4.32E+01	(6)	mg/Kg	<0.75	<0.75	--	<0.75	<0.75	<0.75	<0.75	--	--	--	--	--	--	<7.5
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	1.8
Bromobenzene	9.40E+01	(2)	4.10E+02	(3)	1.69E-01	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Bromoform	6.10E+02	(3)	2.20E+03	(3)	2.59E-02	(7)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	mg/Kg	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	<5.0
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 26-4 (1.5-2.0')	AOC 26-5 (0-0.5')	AOC 26-5 (1.5-2.0')	AOC 26-6 (0-0.5')	AOC 26-6 (1.5-2.0')	AOC 26-7 (0-0.5')	AOC 26-7 (1.5-2.0')	AOC 26-8 (0-1.0')	AOC 26-8 (0-1.0') DUP	AOC 26-8 (1.5-2.0')	AOC 26-8 (32-36')	AOC 26-9 (0-0.5')	AOC 26-9 (1.5-2.0')	AOC 26-9 (36-38')
Sample Date								4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/16/2009	4/16/2009	4/16/2009	4/16/2009	4/20/2009	4/20/2009	4/20/2009
Chloroethane	--		-		-	-	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Dibromomethane	7.80E+02	(2)	1.00E+04	(3)	1.02E+00	(7)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	22
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	<1.0
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	2.6
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	mg/Kg	<0.050	<0.050	0.22	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	mg/Kg	<0.15	<0.15	--	<0.15	<0.15	<0.15	<0.15	--	--	--	--	--	--	<1.5
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	11
n-Butylbenzene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	5
n-Propylbenzene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	12
sec-Butylbenzene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	2.1
Styrene	8.97E+03	(1)	3.03E+04	(2)	1.76E+01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
tert-Butylbenzene	--		-		-	-	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	23
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	mg/Kg	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	--	--	--	--	--	--	<0.50
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	mg/Kg	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	--	--	--	--	--	--	130
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg																					
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,1-Dichloropropene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2,3-Trichlorobenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2,4-Trimethylbenzene	6.70E+04	(2)	2.80E+05	(3)	2.70E+02	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	4.33	1.6	<1.09	3.2	<0.896	<0.960	--
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,3,5-Trimethylbenzene	4.70E+04	(2)	2.00E+05	(3)	2.25E+02	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,3-Dichlorobenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,3-Dichloropropane	1.60E+06	(2)	2.00E+07	(3)	3.04E+03	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
2,2-Dichloropropane	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
2-Butanone	3.96E+07	(1)	1.48E+08	(2)	1.43E+04	(6)	µg/Kg-drX	<4.06	<4.33	<4.05	<3.60	<3.97	<3.67	<3.94	<3.71	<3.97	<4.36	9.58	<3.58	<3.84	--
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
2-Hexanone	--		-		-	-	µg/Kg-drX	<4.06	<4.33	<4.05	<3.60	<3.97	<3.67	<3.94	<3.71	<3.97	<4.36	<3.65	<3.58	<3.84	--
4-Chlorotoluene	5.50E+06	(2)	7.20E+07	(3)	3.15E+04	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
4-Isopropyltoluene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
4-Methyl-2-pentanone	-	(1)	-		-	-	µg/Kg-drX	<4.06	<4.33	<4.05	<3.60	<3.97	<3.67	<3.94	<3.71	<3.97	<4.36	<3.65	<3.58	<3.84	--

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 26-4 (1.5-2.0')	AOC 26-5 (0-0.5')	AOC 26-5 (1.5-2.0')	AOC 26-6 (0-0.5')	AOC 26-6 (1.5-2.0')	AOC 26-7 (0-0.5')	AOC 26-7 (1.5-2.0')	AOC 26-8 (0-1.0')	AOC 26-8 (0-1.0') DUP	AOC 26-8 (1.5-2.0')	AOC 26-8 (32-36')	AOC 26-9 (0-0.5')	AOC 26-9 (1.5-2.0')	AOC 26-9 (36-38')
Sample Date								4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/16/2009	4/16/2009	4/16/2009	4/16/2009	4/20/2009	4/20/2009	4/20/2009
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	µg/Kg-drX	5.06	44.8	7.14	49.8	6.34	78	25.8	<3.71	<3.97	<4.36	42.4	7.73	6.71	--
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	0.966	<0.896	<0.960	--
Bromobenzene	9.40E+04	(2)	4.10E+05	(3)	1.69E+02	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Bromoform	6.10E+05	(3)	2.20E+06	(3)	2.59E+01	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	µg/Kg-drX	<4.06	<4.33	<4.05	<3.60	<3.97	<3.67	<3.94	<3.71	<3.97	<4.36	<3.65	<3.58	<3.84	--
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Chloroethane	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Dibromomethane	7.80E+05	(2)	1.00E+07	(3)	1.02E+03	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Hexachlorobutadiene	6.20E+04	(3)	2.20E+05	(3)	2.14E+01	(7)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	µg/Kg-drX	<1.02	20.7	--	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	µg/Kg-drX	7.58	6.28	7.83	4.63	7.82	5.14	6.38	8.24	10.5	9.76	8.38	5.73	6.57	--
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	1.82	<0.991	<1.09	2.34	<0.896	<0.960	--
n-Butylbenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
n-Propylbenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
sec-Butylbenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
tert-Butylbenzene	--		-		-	-	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	3.02	<0.991	6.58	<0.984	3.92	3.55	<1.09	<0.912	<0.896	<0.960	--
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	<0.912	<0.896	<0.960	--
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	µg/Kg-drX	<1.02	<1.08	<1.01	<0.899	<0.991	<0.919	<0.984	<0.928	<0.991	<1.09	2.54	<0.896	<0.960	--
Semi Volatile Organics - (EPA Method 8270) mg/kg																					
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	--		-		0.00E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	8.02E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	8.02E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	1.54E+00	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	1.03E+01	(6)	mg/Kg	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	5.91E-01	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4.10E+03	(3)	1.01E+01	(7)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	6
2-Methylphenol	3.10E+03	(2)	3.10E+04	(3)	2.25E+01	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1.80E+03	(3)	3.71E-01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3,3´-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25

Table 10
Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26
Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 26-4 (1.5-2.0')	AOC 26-5 (0-0.5')	AOC 26-5 (1.5-2.0')	AOC 26-6 (0-0.5')	AOC 26-6 (1.5-2.0')	AOC 26-7 (0-0.5')	AOC 26-7 (1.5-2.0')	AOC 26-8 (0-1.0')	AOC 26-8 (0-1.0') DUP	AOC 26-8 (1.5-2.0')	AOC 26-8 (32-36')	AOC 26-9 (0-0.5')	AOC 26-9 (1.5-2.0')	AOC 26-9 (36-38')
Sample Date								4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/16/2009	4/16/2009	4/16/2009	4/16/2009	4/20/2009	4/20/2009	4/20/2009
3+4-Methylphenol	3.10E+02	(2)	3.10E+03	(3)	2.14E+00	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	8.60E+01	(3)	1.35E-03	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	8.60E+02	(3)	1.13E-02	(7)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3.00E+03	(3)	3.83E-02	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	2.20E+02	(3)	5.74E-03	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	--		-		-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2.50E+06	(3)	3.71E+02	(7)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	3.10E+05	(3)	4.73E+01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1.80E+03	(3)	2.59E-01	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	9.10E+03		7.54E+00	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	--		-		-	-	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	2.20E+02	(3)	2.14E-02	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	mg/Kg	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	2.8
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	2.50E+00	(3)	1.24E-04	(7)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	mg/Kg	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.56
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	mg/Kg	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1.00E+03	(3)	-	-	mg/Kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																					
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	<10	<10	<10	<10	<10	<10	<10	11	<10	<10	<10	120	<10	840
Gasoline Range Organics (GRO)	-		-		-		mg/Kg	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	930
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	mg/Kg	<50	<50	<50	<50	<50	<50	<50	160	79	64	<50	160	<50	<50

Table 10

Group 3 Soil Analytical Results Summary - AOC 22 (Product Loading Rack) and AOC 26

Bloomfield Refinery, Bloomfield, New Mexico

AnalXtes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	Units	AOC 26-4 (1.5-2.0')	AOC 26-5 (0-0.5')	AOC 26-5 (1.5-2.0')	AOC 26-6 (0-0.5')	AOC 26-6 (1.5-2.0')	AOC 26-7 (0-0.5')	AOC 26-7 (1.5-2.0')	AOC 26-8 (0-1.0')	AOC 26-8 (0-1.0') DUP	AOC 26-8 (1.5-2.0')	AOC 26-8 (32-36')	AOC 26-9 (0-0.5')	AOC 26-9 (1.5-2.0')	AOC 26-9 (36-38')
Sample Date								4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/20/2009	4/16/2009	4/16/2009	4/16/2009	4/16/2009	4/20/2009	4/20/2009	4/20/2009
Ethanol							mg/Kg	--	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--

--* Laboratory inadvertently did not analyze for Cyanide for AOC (22-12 (36-37.75')

-- No screening level or analytical result available

NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009)

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA - Residential Screening Levels (April 2009)

(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways

(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

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

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

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 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-7 (0-0.5')	AOC 22-7 (1.5-2.0)	AOC 22-8 (0.0.5')	AOC 22-8 (1.5-2.0)	AOC 22-8 (1.5-2.0) DUP	AOC 22-9 (0-0.5)	AOC 22-9 (1.5-2.0')	AOC 22-10 (0-0.5')	AOC 22-10 (1.5'-2.0')	AOC 22-11 (0-0.5')	AOC 22-11 (1.5'-2.0')	AOC 22-14 (0-0.5')	AOC 22-14 (1.5-2.0')	AOC 22-16 (0-0.5')
Sample Date							4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/14/2009	4/14/2009	4/14/2009	4/14/2009	4/8/2009	4/8/2009	4/13/2009
Metals (mg/kg)																				
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	130	180	150	110	150	170	190	180	160	130	170	160	160	230
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	0.27	0.39	0.34	0.26	0.3	0.37	0.38	<0.75	0.33	0.28	0.33	0.34	0.35	0.35
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	9.4	4.8	10	11	11	8	8.1	4.2	9.3	32	27	11	13	16
Cobalt	2.30E+01	(2)	300	(3)	5.51E+00	(7)	2.6	3.7	3.4	3.1	3.5	3.2	3.4	2.2	3.2	2.8	3.3	3	3.3	3.2
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	800	(1)	-	-	3.5	4.4	4.3	3.9	7.3	3.9	4.1	3.8	4.1	3.4	4	4.5	4.5	4.4
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	4	5.7	5	3.8	4.3	5.2	5.5	2.7	4.9	4.1	5.1	4.8	5.1	5.1
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	<13	<13	<2.5	<13	<12	<12	<13	<13	<13	<13	<13	<13	<12	<13
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	11	16	12	10	12	15	14	<13	13	11	13	12	13	14
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	21	25	25	23	24	24	24	22	24	33	35	24	27	34
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																				
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	6.70E+01	(2)	280	(3)	2.70E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	4.70E+01	(2)	200	(3)	2.25E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	1.60E+03	(2)	20000	(3)	3.04E+00	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	2.20E+02	(3)	990	(3)	1.69E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	--		-	(1)	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	5.50E+03	(2)	72000	(3)	3.15E+01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	6.75E+04	(1)	262713.781	(2)	4.32E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	9.40E+01	(2)	410	(3)	1.69E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-7 (0-0.5')	AOC 22-7 (1.5-2.0)	AOC 22-8 (0.0.5')	AOC 22-8 (1.5-2.0)	AOC 22-8 (1.5-2.0) DUP	AOC 22-9 (0-0.5)	AOC 22-9 (1.5-2.0')	AOC 22-10 (0-0.5')	AOC 22-10 (1.5'-2.0')	AOC 22-11 (0-0.5')	AOC 22-11 (1.5'-2.0')	AOC 22-14 (0-0.5')	AOC 22-14 (1.5-2.0')	AOC 22-16 (0-0.5')
Sample Date							4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/14/2009	4/14/2009	4/14/2009	4/14/2009	4/8/2009	4/8/2009	4/13/2009
Bromoform	6.10E+02	(3)	2200	(3)	2.59E-02	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	7.80E+02	(2)	10000	(3)	1.02E+00	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	6.20E+01	(3)	22	(3)	2.14E-02	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	8.97E+03	(1)	30341.8143	(2)	1.76E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg-dry																				
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,1-Dichloropropene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2,3-Trichlorobenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2,4-Trimethylbenzene	6.70E+04	(2)	280000	(3)	2.70E+02	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,3,5-Trimethylbenzene	4.70E+04	(2)	200000	(3)	2.25E+02	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-7 (0-0.5')	AOC 22-7 (1.5-2.0)	AOC 22-8 (0.0.5')	AOC 22-8 (1.5-2.0)	AOC 22-8 (1.5-2.0) DUP	AOC 22-9 (0-0.5)	AOC 22-9 (1.5-2.0')	AOC 22-10 (0-0.5')	AOC 22-10 (1.5'-2.0')	AOC 22-11 (0-0.5')	AOC 22-11 (1.5'-2.0')	AOC 22-14 (0-0.5')	AOC 22-14 (1.5-2.0')	AOC 22-16 (0-0.5')
Sample Date							4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/14/2009	4/14/2009	4/14/2009	4/14/2009	4/8/2009	4/8/2009	4/13/2009
1,3-Dichlorobenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,3-Dichloropropane	1.60E+06	(2)	20000000	(3)	3.04E+03	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
2,2-Dichloropropane	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
2-Butanone	3.96E+07	(1)	1.48E+08	(2)	1.43E+04	(6)	<4.32	<4.13	<4.01	<4.10	<3.50	<3.71	<3.83	<3.91	<3.58	<4.05	<3.84	<4.92	<3.83	<4.03
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
2-Hexanone	--		-		-	-	<4.32	<4.13	<4.01	<4.10	<3.50	<3.71	<3.83	<3.91	<3.58	<4.05	<3.84	<4.92	<3.83	<4.03
4-Chlorotoluene	5.50E+06	(2)	72000000	(3)	3.15E+04	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
4-Isopropyltoluene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
4-Methyl-2-pentanone	-	(1)	-		-	-	<4.32	<4.13	<4.01	<4.10	<3.50	<3.71	<3.83	<3.91	<3.58	<4.05	<3.84	<4.92	<3.83	<4.03
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	<4.32	<4.13	<4.01	<4.10	<3.50	<3.71	<3.83	<3.91	<3.58	<4.05	<3.84	<4.92	<3.83	<4.03
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Bromobenzene	9.40E+04	(2)	410000	(3)	1.69E+02	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Bromoform	6.10E+05	(3)	220000	(3)	2.59E+01	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	<4.32	<4.13	<4.01	<4.10	<3.50	<3.71	<3.83	<3.91	<3.58	<4.05	<3.84	<4.92	<3.83	<4.03
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Chloroethane	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Dibromomethane	7.80E+05	(2)	10000000	(3)	1.02E+03	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Hexachlorobutadiene	6.20E+04	(3)	220000	(3)	2.14E+01	(7)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	9.29	12.3	3.29	9.01	8.71	8.83	11.1	10.6	9.42	9.64	11.4	<2.46	2.02	8.85
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
n-Butylbenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
n-Propylbenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
sec-Butylbenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
tert-Butylbenzene	--		-		-	-	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	<1.08	<1.03	<1.00	<1.03	<0.875	<0.929	<0.957	<0.977	<0.896	<1.01	<0.959	<1.23	<0.959	<1.01
Semi Volatile Organics - (EPA Method 8270) mg/kg																				
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
1,3-Dichlorobenzene	--				0.00E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-7 (0-0.5')	AOC 22-7 (1.5-2.0)	AOC 22-8 (0.0.5')	AOC 22-8 (1.5-2.0)	AOC 22-8 (1.5-2.0) DUP	AOC 22-9 (0-0.5)	AOC 22-9 (1.5-2.0')	AOC 22-10 (0-0.5')	AOC 22-10 (1.5'-2.0')	AOC 22-11 (0-0.5')	AOC 22-11 (1.5'-2.0')	AOC 22-14 (0-0.5')	AOC 22-14 (1.5-2.0')	AOC 22-16 (0-0.5')
Sample Date							4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/14/2009	4/14/2009	4/14/2009	4/14/2009	4/8/2009	4/8/2009	4/13/2009
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	**8.02E+01**	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	**8.02E-01**	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	**1.54E+00**	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<2.0	<2.0	<2.0	<2.0	<2.0	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	**1.03E+01**	(6)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<1.5	<1.5	<1.5	<1.5	<1.5	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	**5.91E-01**	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<2.0	<2.0	<2.0	<2.0	<2.0	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25
2-Methylphenol	3.10E+03	(2)	31000	(3)	2.25E+01	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
2-Nitroaniline	1.80E+02	(2)	1800	(3)	3.71E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
2-Nitrophenol	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
3,3´-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25
3+4-Methylphenol	3.10E+02	(2)	3100	(3)	2.14E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
3-Nitroaniline	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
4-Chloro-3-methylphenol	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
4-Chloroaniline	2.40E+01	(3)	86	(3)	1.35E-03	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
4-Nitroaniline	2.40E+02	(3)	860	(3)	1.13E-02	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25
4-Nitrophenol	--		-	(1)	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Acenaphthylene	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Aniline	8.50E+02	(3)	3000	(3)	3.83E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Azobenzene	4.90E+01	(3)	220	(3)	5.74E-03	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Benzo(g,h,i)perylene	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Benzoic acid	2.40E+05	(2)	2500000	(3)	3.71E+02	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Benzyl alcohol	3.10E+04	(2)	310000	(3)	4.73E+01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1800	(3)	2.59E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	910	(3)	7.54E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Carbazole	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Dibenzofuran	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Di-n-octyl phthalate	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-7 (0-0.5')	AOC 22-7 (1.5-2.0)	AOC 22-8 (0.0.5')	AOC 22-8 (1.5-2.0)	AOC 22-8 (1.5-2.0) DUP	AOC 22-9 (0-0.5)	AOC 22-9 (1.5-2.0')	AOC 22-10 (0-0.5')	AOC 22-10 (1.5'-2.0')	AOC 22-11 (0-0.5')	AOC 22-11 (1.5'-2.0')	AOC 22-14 (0-0.5')	AOC 22-14 (1.5-2.0')	AOC 22-16 (0-0.5')
Sample Date							4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/13/2009	4/14/2009	4/14/2009	4/14/2009	4/14/2009	4/8/2009	4/8/2009	4/13/2009
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Hexachlorobutadiene	6.20E+01	(3)	220	(3)	2.14E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<1.3	<1.3	<1.3	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	0.25	(3)	1.24E-04	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<2.0	<2.0	<2.0	<2.0	<2.0	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<1.0	<1.0	<1.0	<1.0	<1.0	<0.20
Pyridine	7.80E+01	(2)	1000	(3)	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<2.5	<2.5	<2.5	<2.5	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																				
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	<10	<10	120	180	190	46	53	<10	190	34	410	71	670	24
Gasoline Range Organics (GRO)	-		-		-		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	<50	<50	220	510	580	110	120	<50	620	74	1100	350	1800	67

-- No screening level or analytical result available

NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009) - Residential Soil

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA - Residential Screening Levels (April 2009)

(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways

(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

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

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

Bold represents value above Non-Residential Screening Level

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-16 (1.5-2.0')	AOC 22-16 (36-38')	AOC 24-1 (0-0.5')	AOC 24-1 (1.5-2.0')	AOC 24-2 (0.0.5')	AOC 24-2 (1.5-2.0')	AOC 24-3 (0-0.5')	AOC 24-3 (1.5-2.0')	AOC 24-4 (0-0.5')	AOC 24-4 (1.5-2.0')	AOC 24-4 (1.5-2.0') DUP	AOC 24-5 (0-0.5')	AOC 24-5 (0-0.5') DUP	AOC 24-5 (1.5-2.0')
Sample Date							4/13/2009	4/14/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/8/2009	4/8/2009	4/8/2009
Metals (mg/kg)																				
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	<2.5	<2.5	<13	<13	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<13	<2.5	<13
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	<2.5	<2.5	<13	<13	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<13	<13	<2.5	<2.5
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	130	220	230	180	220	160	170	130	230	200	190	160	170	140
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	0.32	<0.15	<0.75	<0.75	0.28	0.3	0.18	0.16	0.27	0.31	<0.75	<0.75	0.28	<0.75
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	<0.10	<0.10	<0.50	<0.50	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50	<0.50	<0.10	<0.50
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	82	2.7	6.6	6.3	4.7	3.8	2.8	3.1	11	4.1	6.4	11	9.4	6.2
Cobalt	2.30E+01	(2)	300	(3)	5.51E+00	(7)	2.8	2	3.8	4.7	2.9	2.8	2.4	2.1	2.9	3.2	4.8	4.7	4.4	4.2
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	800	(1)	-	-	3.6	1.8	4.8	6	3.1	3.5	1.6	1.4	3.3	3.3	4.9	5.8	4.7	5.1
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	0.042	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	5.2	1.7	5.9	7.4	3.9	4.6	2.5	2.1	3.6	4.5	6.2	5.3	4.4	6.2
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	<13	<2.5	<13	<13	<13	<13	<13	<13	<13	<13	<13	<13	<2.5	<13
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	<0.25	<0.25	<1.3	<1.3	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<1.3	<1.3	<0.25	<1.3
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	13	12	18	24	15	12	13	14	15	12	17	15	13	15
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	75	12	29	33	20	18	14	12	24	18	27	40	36	28
Volatile Organic Compounds - (EPA Method 8260B) mg/kg																				
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloropropene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichlorobenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2,4-Trimethylbenzene	6.70E+01	(2)	280	(3)	2.70E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3,5-Trimethylbenzene	4.70E+01	(2)	200	(3)	2.25E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,3-Dichloropropane	1.60E+03	(2)	20000	(3)	3.04E+00	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	2.20E+02	(3)	990	(3)	1.69E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2,2-Dichloropropane	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Hexanone	--		-	(1)	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Chlorotoluene	5.50E+03	(2)	72000	(3)	3.15E+01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Isopropyltoluene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone	6.75E+04	(1)	262713.781	(2)	4.32E+01	(6)	--	<0.75	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromobenzene	9.40E+01	(2)	410	(3)	1.69E-01	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-16 (1.5-2.0')	AOC 22-16 (36-38')	AOC 24-1 (0-0.5')	AOC 24-1 (1.5-2.0')	AOC 24-2 (0.0.5')	AOC 24-2 (1.5-2.0')	AOC 24-3 (0-0.5')	AOC 24-3 (1.5-2.0')	AOC 24-4 (0-0.5')	AOC 24-4 (1.5-2.0')	AOC 24-4 (1.5-2.0') DUP	AOC 24-5 (0-0.5')	AOC 24-5 (0-0.5') DUP	AOC 24-5 (1.5-2.0')
Sample Date							4/13/2009	4/14/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/8/2009	4/8/2009	4/8/2009
Bromoform	6.10E+02	(3)	2200	(3)	2.59E-02	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroethane	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibromomethane	7.80E+02	(2)	10000	(3)	1.02E+00	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexachlorobutadiene	6.20E+01	(3)	22	(3)	2.14E-02	(7)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
n-Propylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
sec-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene	8.97E+03	(1)	30341.8143	(2)	1.76E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
tert-Butylbenzene	--		-		-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg-dry																				
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,1-Dichloropropene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2,3-Trichlorobenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2,4-Trimethylbenzene	6.70E+04	(2)	280000	(3)	2.70E+02	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,3,5-Trimethylbenzene	4.70E+04	(2)	200000	(3)	2.25E+02	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-16 (1.5-2.0')	AOC 22-16 (36-38')	AOC 24-1 (0-0.5')	AOC 24-1 (1.5-2.0')	AOC 24-2 (0.0.5')	AOC 24-2 (1.5-2.0')	AOC 24-3 (0-0.5')	AOC 24-3 (1.5-2.0')	AOC 24-4 (0-0.5')	AOC 24-4 (1.5-2.0')	AOC 24-4 (1.5-2.0') DUP	AOC 24-5 (0-0.5')	AOC 24-5 (0-0.5') DUP	AOC 24-5 (1.5-2.0')
Sample Date							4/13/2009	4/14/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/8/2009	4/8/2009	4/8/2009
1,3-Dichlorobenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,3-Dichloropropane	1.60E+06	(2)	20000000	(3)	3.04E+03	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
2,2-Dichloropropane	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
2-Butanone	3.96E+07	(1)	1.48E+08	(2)	1.43E+04	(6)	<4.94	<3.86	<3.96	<3.95	<3.89	<4.03	<3.91	<3.81	<3.76	<3.78	<3.84	<3.59	<4.17	<4.36
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
2-Hexanone	--		-		-	-	<4.94	<3.86	<3.96	<3.95	<3.89	<4.03	<3.91	<3.81	<3.76	<3.78	<3.84	<3.59	<4.17	<4.36
4-Chlorotoluene	5.50E+06	(2)	72000000	(3)	3.15E+04	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
4-Isopropyltoluene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
4-Methyl-2-pentanone	-	(1)	-		-	-	<4.94	<3.86	<3.96	<3.95	<3.89	<4.03	<3.91	<3.81	<3.76	<3.78	<3.84	<3.59	<4.17	<4.36
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	<4.94	--	4.94	<3.95	5.76	4.65	4.57	4.81	4.92	5.19	6.95	<3.59	<4.17	<4.36
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Bromobenzene	9.40E+04	(2)	410000	(3)	1.69E+02	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Bromoform	6.10E+05	(3)	220000	(3)	2.59E+01	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	<4.94	<3.86	<3.96	<3.95	<3.89	<4.03	<3.91	<3.81	<3.76	<3.78	<3.84	<3.59	<4.17	<4.36
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Chloroethane	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Dibromomethane	7.80E+05	(2)	10000000	(3)	1.02E+03	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Hexachlorobutadiene	6.20E+04	(3)	220000	(3)	2.14E+01	(7)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	7.26	13.2	2.59	2.77	3.11	4.46	2.13	<1.90	3.48	5.49	3.85	2.42	<2.09	2.18
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
n-Butylbenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
n-Propylbenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
sec-Butylbenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
tert-Butylbenzene	--		-		-	-	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	<1.24	<0.965	<0.989	<0.987	<0.973	<1.01	<0.977	<0.951	<0.941	<0.946	<0.961	<0.898	<1.04	<1.09
Semi Volatile Organics - (EPA Method 8270) mg/kg																				
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,3-Dichlorobenzene	--				0.00E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-16 (1.5-2.0')	AOC 22-16 (36-38')	AOC 24-1 (0-0.5')	AOC 24-1 (1.5-2.0')	AOC 24-2 (0.0.5')	AOC 24-2 (1.5-2.0')	AOC 24-3 (0-0.5')	AOC 24-3 (1.5-2.0')	AOC 24-4 (0-0.5')	AOC 24-4 (1.5-2.0')	AOC 24-4 (1.5-2.0') DUP	AOC 24-5 (0-0.5')	AOC 24-5 (0-0.5') DUP	AOC 24-5 (1.5-2.0')
Sample Date							4/13/2009	4/14/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/8/2009	4/8/2009	4/8/2009
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	**8.02E+01**	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	**8.02E-01**	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	**1.54E+00**	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	**1.03E+01**	(6)	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	**5.91E-01**	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	31000	(3)	2.25E+01	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1800	(3)	3.71E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3,3'-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
3+4-Methylphenol	3.10E+02	(2)	3100	(3)	2.14E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
3-Nitroaniline	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Chloro-3-methylphenol	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	86	(3)	1.35E-03	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	860	(3)	1.13E-02	(7)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
4-Nitrophenol	--		-	(1)	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Acenaphthylene	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Aniline	8.50E+02	(3)	3000	(3)	3.83E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Azobenzene	4.90E+01	(3)	220	(3)	5.74E-03	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzo(g,h,i)perylene	--		-		-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2500000	(3)	3.71E+02	(7)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	310000	(3)	4.73E+01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1800	(3)	2.59E-01	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	910	(3)	7.54E+00	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Carbazole	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dibenzofuran	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Di-n-octyl phthalate	--		-		-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 22-16 (1.5-2.0')	AOC 22-16 (36-38')	AOC 24-1 (0-0.5')	AOC 24-1 (1.5-2.0')	AOC 24-2 (0.0.5')	AOC 24-2 (1.5-2.0')	AOC 24-3 (0-0.5')	AOC 24-3 (1.5-2.0')	AOC 24-4 (0-0.5')	AOC 24-4 (1.5-2.0')	AOC 24-4 (1.5-2.0') DUP	AOC 24-5 (0-0.5')	AOC 24-5 (0-0.5') DUP	AOC 24-5 (1.5-2.0')
Sample Date							4/13/2009	4/14/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/23/2009	4/8/2009	4/8/2009	4/8/2009
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	220	(3)	2.14E-02	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	0.25	(3)	1.24E-04	(7)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Pyridine	7.80E+01	(2)	1000	(3)	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg																				
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	1000	18	28	<10	22	<10	<10	<10	130	<10	<10	360	330	12
Gasoline Range Organics (GRO)	-		-		-		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	1200	59	140	<50	76	<50	<50	<50	240	<50	<50	670	610	99

-- No screening level or analytical result available

NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009) - Residential Soil

EPA - Regional Screening Levels (April 2009)

(1) NMED Residential Screening Level

(2) EPA - Residential Screening Levels (April 2009)

(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways

(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways

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

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

Bold represents value above Non-Residential Screening Level

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 24-6 (0-0.5')	AOC 24-6 (1.5-2.0')	AOC 24-7 (0-0.5')	AOC 24-7 (1.5-2.0')	AOC 24-7 (39-42')
Sample Date							4/8/2009	4/8/2009	4/7/2009	4/7/2009	4/7/2009
Metals (mg/kg)											
Antimony	3.13E+01	(1)	1.24E+02	(2)	7.44E+00	(6)	<13	<13	<13	<13	<2.5
Arsenic	3.90E+00	(1)	1.77E+01	(1)	1.48E-01	(6)	<13	<13	<13	<13	<2.5
Barium	1.56E+04	(1)	4.35E+03	(2)	3.39E+03	(6)	180	160	210	150	530
Beryllium	1.56E+02	(1)	1.44E+02	(2)	6.49E+02	(6)	<0.75	<0.75	<0.75	<0.75	<0.15
Cadmium	7.79E+01	(1)	3.09E+02	(2)	1.55E+01	(6)	<0.50	<0.50	<0.50	<0.50	<0.10
Chromium	1.13E+05	(1)	4.47E+05	(2)	1.11E+09	(6)	12	23	38	54	4
Cobalt	2.30E+01	(2)	300	(3)	5.51E+00	(7)	5	4.8	4.9	4.4	2.4
Cyanide	1.56E+03	(1)	6.19E+03	(2)	8.37E+01	(6)	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	4.00E+02	(1)	800	(1)	-	-	6.1	6	7.2	5.1	0.84
Mercury	7.71E+00	(1)	4.99E+01	(1)	3.30E-01	(6)	<0.033	<0.033	<0.033	<0.033	<0.032
Nickel	1.56E+03	(1)	6.19E+03	(2)	5.36E+02	(6)	7.2	7	6.8	5.8	1.6
Selenium	3.91E+02	(1)	1.55E+03	(2)	1.09E+01	(6)	<13	<13	<13	<13	<2.5
Silver	3.91E+02	(1)	1.55E+03	(2)	1.76E+01	(6)	<1.3	<1.3	<1.3	<1.3	<0.25
Vanadium	3.91E+02	(1)	1.55E+03	(2)	2.05E+03	(6)	18	16	17	15	11
Zinc	2.35E+04	(1)	9.29E+04	(2)	7.67E+03	(6)	35	40	52	48	15
Volatile Organic Compounds - (EPA Method 8260B) mg/kg											
1,1,1,2-Tetrachloroethane	2.92E+01	(1)	1.61E+02	(1)	1.94E-02	(6)	--	--	--	--	--
1,1,1-Trichloroethane	2.18E+04	(1)	6.43E+04	(2)	3.35E+01	(6)	--	--	--	--	--
1,1,2,2-Tetrachloroethane	7.97E+00	(1)	4.33E+01	(1)	2.53E-03	(6)	--	--	--	--	--
1,1,2-Trichloroethane	1.72E+01	(1)	9.43E+01	(1)	7.58E-03	(6)	--	--	--	--	--
1,1-Dichloroethane	6.29E+01	(1)	3.50E+02	(1)	6.85E-02	(6)	--	--	--	--	--
1,1-Dichloroethene	6.18E+02	(1)	1.83E+03	(2)	1.34E+00	(6)	--	--	--	--	--
1,1-Dichloropropene	--		-		-	-	--	--	--	--	--
1,2,3-Trichlorobenzene	--		-		-	-	--	--	--	--	--
1,2,3-Trichloropropane	9.15E-01	(1)	4.54E+00	(1)	4.01E-04	(6)	--	--	--	--	--
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	--	--	--	--	--
1,2,4-Trimethylbenzene	6.70E+01	(2)	280	(3)	2.70E-01	(7)	--	--	--	--	--
1,2-Dibromo-3-chloropropane	1.94E-01	(1)	1.09E+00	(1)	3.35E-05	(6)	--	--	--	--	--
1,2-Dibromoethane (EDB)	5.74E-01	(1)	3.14E+00	(1)	1.78E-04	(6)	--	--	--	--	--
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	--	--	--	--	--
1,2-Dichloroethane (EDC)	7.74E+00	(1)	4.28E+01	(1)	4.11E-03	(6)	--	--	--	--	--
1,2-Dichloropropane	1.47E+01	(1)	8.17E+01	(1)	1.25E-02	(6)	--	--	--	--	--
1,3,5-Trimethylbenzene	4.70E+01	(2)	200	(3)	2.25E-01	(7)	--	--	--	--	--
1,3-Dichlorobenzene	--		-		-	-	--	--	--	--	--
1,3-Dichloropropane	1.60E+03	(2)	20000	(3)	3.04E+00	(7)	--	--	--	--	--
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	--	--	--	--	--
1-Methylnaphthalene	2.20E+02	(3)	990	(3)	1.69E-01	(7)	--	--	--	--	--
2,2-Dichloropropane	--		-		-	-	--	--	--	--	--
2-Butanone	3.96E+04	(1)	1.48E+05	(2)	1.43E+01	(6)	--	--	--	--	--
2-Chlorotoluene	1.56E+03	(1)	6.19E+03	(2)	7.02E+00	(6)	--	--	--	--	--
2-Hexanone	--		-	(1)	-	-	--	--	--	--	--
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	--	--	--	--	--
4-Chlorotoluene	5.50E+03	(2)	72000	(3)	3.15E+01	(7)	--	--	--	--	--
4-Isopropyltoluene	--		-		-	-	--	--	--	--	--
4-Methyl-2-pentanone	--		-		-	-	--	--	--	--	--
Acetone	6.75E+04	(1)	262713.781	(2)	4.32E+01	(6)	--	--	--	--	--
Benzene	1.55E+01	(1)	8.54E+01	(1)	2.08E-02	(6)	--	--	--	--	--
Bromobenzene	9.40E+01	(2)	410	(3)	1.69E-01	(7)	--	--	--	--	--
Bromodichloromethane	5.25E+00	(1)	2.92E+01	(1)	3.11E-03	(6)	--	--	--	--	--

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 24-6 (0.0.5')	AOC 24-6 (1.5-2.0')	AOC 24-7 (0-0.5')	AOC 24-7 (1.5-2.0')	AOC 24-7 (39-42')
Sample Date							4/8/2009	4/8/2009	4/7/2009	4/7/2009	4/7/2009
Bromoform	6.10E+02	(3)	2200	(3)	2.59E-02	(7)	--	--	--	--	--
Bromomethane	2.23E+01	(1)	6.71E+01	(2)	2.18E-02	(6)	--	--	--	--	--
Carbon disulfide	1.94E+03	(1)	5.89E+03	(2)	2.84E+00	(6)	--	--	--	--	--
Carbon tetrachloride	4.38E+00	(1)	2.43E+01	(1)	8.32E-03	(6)	--	--	--	--	--
Chlorobenzene	5.08E+02	(1)	1.58E+03	(2)	6.06E-01	(6)	--	--	--	--	--
Chloroethane	--		-		-	-	--	--	--	--	--
Chloroform	5.72E+00	(1)	3.19E+01	(1)	5.27E-03	(6)	--	--	--	--	--
Chloromethane	3.56E+01	(1)	1.98E+02	(1)	4.70E-02	(6)	--	--	--	--	--
cis-1,2-DCE	7.82E+02	(1)	3.10E+03	(2)	1.06E+00	(6)	--	--	--	--	--
cis-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--
Dibromochloromethane	1.13E+01	(1)	6.13E+01	(1)	3.80E-03	(6)	--	--	--	--	--
Dibromomethane	7.80E+02	(2)	10000	(3)	1.02E+00	(7)	--	--	--	--	--
Dichlorodifluoromethane	4.81E+02	(1)	1.37E+03	(2)	8.14E+00	(6)	--	--	--	--	--
Ethylbenzene	6.97E+01	(1)	3.85E+02	(1)	1.64E-01	(6)	--	--	--	--	--
Hexachlorobutadiene	6.20E+01	(3)	22	(3)	2.14E-02	(7)	--	--	--	--	--
Isopropylbenzene	3.21E+03	(1)	1.03E+04	(2)	1.11E+01	(6)	--	--	--	--	--
Methyl tert-butyl ether (MTBE)	8.62E+02	(1)	4.69E+03	(1)	2.58E-01	(6)	--	--	--	--	--
Methylene chloride	1.99E+02	(1)	1.09E+03	(1)	1.21E-01	(6)	--	--	--	--	--
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	--	--	--	--	--
n-Butylbenzene	--		-		-	-	--	--	--	--	--
n-Propylbenzene	--		-		-	-	--	--	--	--	--
sec-Butylbenzene	--		-		-	-	--	--	--	--	--
Styrene	8.97E+03	(1)	30341.8143	(2)	1.76E+01	(6)	--	--	--	--	--
tert-Butylbenzene	--		-		-	-	--	--	--	--	--
Tetrachloroethene (PCE)	6.99E+00	(1)	3.64E+01	(1)	5.05E-03	(6)	--	--	--	--	--
Toluene	5.57E+03	(1)	2.11E+04	(2)	1.56E+01	(6)	--	--	--	--	--
trans-1,2-DCE	2.73E+02	(1)	8.14E+02	(2)	3.39E-01	(6)	--	--	--	--	--
trans-1,3-Dichloropropene	2.35E+01	(1)	1.26E+02	(1)	1.52E-02	(6)	--	--	--	--	--
Trichloroethene (TCE)	4.57E+01	(1)	2.53E+02	(1)	5.96E-02	(6)	--	--	--	--	--
Trichlorofluoromethane	2.01E+03	(1)	5.82E+03	(2)	1.01E+01	(6)	--	--	--	--	--
Vinyl chloride	8.65E-01	(1)	2.59E+01	(1)	3.24E-03	(6)	--	--	--	--	--
Xylenes, Total	1.09E+03	(1)	3.13E+03	(2)	1.98E+00	(6)	--	--	--	--	--
Volatile Organic Compounds - (EPA Method 8260B) µg/Kg-dry											
1,1,1,2-Tetrachloroethane	2.92E+04	(1)	1.61E+05	(1)	1.94E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1,1-Trichloroethane	2.18E+07	(1)	6.43E+07	(2)	3.35E+04	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1,2,2-Tetrachloroethane	7.97E+03	(1)	4.33E+04	(1)	2.53E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1,2-Trichloroethane	1.72E+04	(1)	9.43E+04	(1)	7.58E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1-Dichloroethane	6.29E+04	(1)	3.50E+05	(1)	6.85E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1-Dichloroethene	6.18E+05	(1)	1.83E+06	(2)	1.34E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,1-Dichloropropene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
1,2,3-Trichlorobenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
1,2,3-Trichloropropane	9.15E+02	(1)	4.54E+03	(1)	4.01E-01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2,4-Trichlorobenzene	1.43E+05	(1)	4.27E+05	(2)	1.15E+02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2,4-Trimethylbenzene	6.70E+04	(2)	280000	(3)	2.70E+02	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2-Dibromo-3-chloropropane	1.94E+02	(1)	1.09E+03	(1)	3.35E-02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2-Dibromoethane (EDB)	5.74E+02	(1)	3.14E+03	(1)	1.78E-01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2-Dichlorobenzene	3.01E+06	(1)	9.71E+06	(2)	3.53E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2-Dichloroethane (EDC)	7.74E+03	(1)	4.28E+04	(1)	4.11E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,2-Dichloropropane	1.47E+04	(1)	8.17E+04	(1)	1.25E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
1,3,5-Trimethylbenzene	4.70E+04	(2)	200000	(3)	2.25E+02	(7)	<1.03	<0.923	<1.04	<1.01	<1.07

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 24-6 (0.0.5')	AOC 24-6 (1.5-2.0')	AOC 24-7 (0-0.5')	AOC 24-7 (1.5-2.0')	AOC 24-7 (39-42')
Sample Date							4/8/2009	4/8/2009	4/7/2009	4/7/2009	4/7/2009
1,3-Dichlorobenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
1,3-Dichloropropane	1.60E+06	(2)	20000000	(3)	3.04E+03	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
1,4-Dichlorobenzene	3.21E+04	(1)	1.80E+05	(1)	4.02E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
2,2-Dichloropropane	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
2-Butanone	3.96E+07	(1)	1.48E+08	(2)	1.43E+04	(6)	<4.11	<3.69	<4.16	<4.06	<4.29
2-Chlorotoluene	1.56E+06	(1)	6.19E+06	(2)	7.02E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
2-Hexanone	--		-		-	-	<4.11	<3.69	<4.16	<4.06	<4.29
4-Chlorotoluene	5.50E+06	(2)	72000000	(3)	3.15E+04	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
4-Isopropyltoluene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
4-Methyl-2-pentanone	-	(1)	-		-	-	<4.11	<3.69	<4.16	<4.06	<4.29
Acetone	6.75E+07	(1)	2.63E+08	(2)	4.32E+04	(6)	<4.11	<3.69	<4.16	<4.06	7.8
Benzene	1.55E+04	(1)	8.54E+04	(1)	2.08E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Bromobenzene	9.40E+04	(2)	410000	(3)	1.69E+02	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
Bromodichloromethane	5.25E+03	(1)	2.92E+04	(1)	3.11E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Bromoform	6.10E+05	(3)	220000	(3)	2.59E+01	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
Bromomethane	2.23E+04	(1)	6.71E+04	(2)	2.18E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Carbon disulfide	1.94E+06	(1)	5.89E+06	(2)	2.84E+03	(6)	<4.11	<3.69	<4.16	<4.06	<4.29
Carbon tetrachloride	4.38E+03	(1)	2.43E+04	(1)	8.32E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Chlorobenzene	5.08E+05	(1)	1.58E+06	(2)	6.06E+02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Chloroethane	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
Chloroform	5.72E+03	(1)	3.19E+04	(1)	5.27E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Chloromethane	3.56E+04	(1)	1.98E+05	(1)	4.70E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
cis-1,2-DCE	7.82E+05	(1)	3.10E+06	(2)	1.06E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
cis-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Dibromochloromethane	1.13E+04	(1)	6.13E+04	(1)	3.80E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Dibromomethane	7.80E+05	(2)	10000000	(3)	1.02E+03	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
Dichlorodifluoromethane	4.81E+05	(1)	1.37E+06	(2)	8.14E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Ethylbenzene	6.97E+04	(1)	3.85E+05	(1)	1.64E+02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Hexachlorobutadiene	6.20E+04	(3)	220000	(3)	2.14E+01	(7)	<1.03	<0.923	<1.04	<1.01	<1.07
Isopropylbenzene	3.21E+06	(1)	1.03E+07	(2)	1.11E+04	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Methyl tert-butyl ether (MTBE)	8.62E+05	(1)	4.69E+06	(1)	2.58E+02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Methylene chloride	1.99E+05	(1)	1.09E+06	(1)	1.21E+02	(6)	<2.05	<1.85	2.37	2.39	2.71
Naphthalene	4.50E+04	(1)	2.52E+05	(1)	4.72E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
n-Butylbenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
n-Propylbenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
sec-Butylbenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
Styrene	8.97E+06	(1)	3.03E+07	(2)	1.76E+04	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
tert-Butylbenzene	--		-		-	-	<1.03	<0.923	<1.04	<1.01	<1.07
Tetrachloroethene (PCE)	6.99E+03	(1)	3.64E+04	(1)	5.05E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Toluene	5.57E+06	(1)	2.11E+07	(2)	1.56E+04	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
trans-1,2-DCE	2.73E+05	(1)	8.14E+05	(2)	3.39E+02	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
trans-1,3-Dichloropropene	2.35E+04	(1)	1.26E+05	(1)	1.52E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Trichloroethene (TCE)	4.57E+04	(1)	2.53E+05	(1)	5.96E+01	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Trichlorofluoromethane	2.01E+06	(1)	5.82E+06	(2)	1.01E+04	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Vinyl chloride	8.65E+02	(1)	2.59E+04	(1)	3.24E+00	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Xylenes, Total	1.09E+06	(1)	3.13E+06	(2)	1.98E+03	(6)	<1.03	<0.923	<1.04	<1.01	<1.07
Semi Volatile Organics - (EPA Method 8270) mg/kg											
1,2,4-Trichlorobenzene	1.43E+02	(1)	4.27E+02	(2)	1.15E-01	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
1,2-Dichlorobenzene	3.01E+03	(1)	9.71E+03	(2)	3.53E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
1,3-Dichlorobenzene	--				0.00E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 24-6 (0.0.5')	AOC 24-6 (1.5-2.0')	AOC 24-7 (0-0.5')	AOC 24-7 (1.5-2.0')	AOC 24-7 (39-42')
Sample Date							4/8/2009	4/8/2009	4/7/2009	4/7/2009	4/7/2009
1,4-Dichlorobenzene	3.21E+01	(1)	1.80E+02	(1)	4.02E-02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
2,4,5-Trichlorophenol	6.11E+03	(1)	2.38E+04	(2)	**8.02E+01**	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
2,4,6-Trichlorophenol	6.11E+01	(1)	2.38E+02	(2)	**8.02E-01**	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
2,4-Dichlorophenol	1.83E+02	(1)	7.15E+02	(2)	**1.54E+00**	(6)	<0.40	<2.0	<2.0	<0.40	<0.40
2,4-Dimethylphenol	1.22E+03	(1)	4.76E+03	(2)	**1.03E+01**	(6)	<0.30	<1.5	<1.5	<0.30	<0.30
2,4-Dinitrophenol	1.22E+02	(1)	4.76E+02	(2)	**5.91E-01**	(6)	<0.40	<2.0	<2.0	<0.40	<0.40
2,4-Dinitrotoluene	1.26E+01	(1)	1.03E+02	(1)	1.75E-02	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
2,6-Dinitrotoluene	6.12E+01	(1)	2.39E+02	(2)	3.00E-01	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
2-Chloronaphthalene	6.26E+03	(1)	2.48E+04	(2)	1.52E+02	(6)	<0.25	<1.3	<1.3	<0.25	<0.25
2-Chlorophenol	3.91E+02	(1)	1.55E+03	(2)	1.72E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
2-Methylnaphthalene	3.10E+02	(2)	4100	(3)	1.01E+01	(7)	<0.25	<1.3	<1.3	<0.25	<0.25
2-Methylphenol	3.10E+03	(2)	31000	(3)	2.25E+01	(7)	<0.50	<2.5	<2.5	<0.50	<0.50
2-Nitroaniline	1.80E+02	(2)	1800	(3)	3.71E-01	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
2-Nitrophenol	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
3,3´-Dichlorobenzidine	8.71E+00	(1)	4.26E+01	(1)	1.92E-01	(6)	<0.25	<1.3	<1.3	<0.25	<0.25
3+4-Methylphenol	3.10E+02	(2)	3100	(3)	2.14E+00	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
3-Nitroaniline	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
4,6-Dinitro-2-methylphenol	--		-		-	-	<0.50	<2.5	<2.5	<0.50	<0.50
4-Bromophenyl phenyl ether	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
4-Chloro-3-methylphenol	--		-		-	-	<0.50	<2.5	<2.5	<0.50	<0.50
4-Chloroaniline	2.40E+01	(3)	86	(3)	1.35E-03	(7)	<0.50	<2.5	<2.5	<0.50	<0.50
4-Chlorophenyl phenyl ether	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
4-Nitroaniline	2.40E+02	(3)	860	(3)	1.13E-02	(7)	<0.25	<1.3	<1.3	<0.25	<0.25
4-Nitrophenol	--		-	(1)	-	-	<0.20	<1.0	<1.0	<0.20	<0.20
Acenaphthene	3.44E+03	(1)	1.86E+04	(2)	2.31E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Acenaphthylene	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
Aniline	8.50E+02	(3)	3000	(3)	3.83E-02	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Anthracene	1.72E+04	(1)	6.68E+04	(2)	3.79E+03	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Azobenzene	4.90E+01	(3)	220	(3)	5.74E-03	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Benz(a)anthracene	4.81E+00	(1)	2.34E+01	(1)	3.59E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Benzo(a)pyrene	4.81E-01	(1)	2.34E+00	(1)	1.22E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Benzo(b)fluoranthene	4.81E+00	(1)	2.34E+01	(1)	1.25E+01	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Benzo(g,h,i)perylene	--		-		-	-	<0.50	<2.5	<2.5	<0.50	<0.50
Benzo(k)fluoranthene	4.81E+01	(1)	2.34E+02	(1)	1.22E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Benzoic acid	2.40E+05	(2)	2500000	(3)	3.71E+02	(7)	<0.50	<2.5	<2.5	<0.50	<0.50
Benzyl alcohol	3.10E+04	(2)	310000	(3)	4.73E+01	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Bis(2-chloroethoxy)methane	1.80E+02	(2)	1800	(3)	2.59E-01	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Bis(2-chloroethyl)ether	2.56E+00	(1)	1.36E+01	(1)	2.62E-04	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Bis(2-chloroisopropyl)ether	9.15E+01	(1)	4.54E+02	(1)	2.88E-02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Bis(2-ethylhexyl)phthalate	2.80E+02	(1)	1.37E+03	(1)	1.34E+02	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
Butyl benzyl phthalate	2.60E+03	(3)	910	(3)	7.54E+00	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Carbazole	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
Chrysene	4.81E+02	(1)	2.34E+03	(1)	3.67E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Dibenz(a,h)anthracene	4.81E-01	(1)	2.34E+00	(1)	4.07E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Dibenzofuran	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
Diethyl phthalate	4.89E+04	(1)	1.91E+05	(2)	1.19E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Dimethyl phthalate	6.11E+05	(1)	2.38E+06	(2)	9.40E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Di-n-butyl phthalate	6.11E+03	(1)	2.38E+04	(2)	9.70E+01	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
Di-n-octyl phthalate	--		-		-	-	<0.20	<1.0	<1.0	<0.20	<0.20
Fluoranthene	2.29E+03	(1)	8.91E+03	(2)	1.75E+03	(6)	<0.25	<1.3	<1.3	<0.25	<0.25

Table 11
Group 3 Soil Analytical Results Summary - AOC 22 (Crude Receiving Rack) and AOC 24
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Residential Soil Screening Level	Source	Non-Residential Soil Screening Level	Source	Leachate DAF (11.25) (mg/kg) SoilGW NMED	Source	AOC 24-6 (0.0.5')	AOC 24-6 (1.5-2.0')	AOC 24-7 (0-0.5')	AOC 24-7 (1.5-2.0')	AOC 24-7 (39-42')
Sample Date							4/8/2009	4/8/2009	4/7/2009	4/7/2009	4/7/2009
Fluorene	2.29E+03	(1)	8.91E+03	(2)	2.81E+02	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
Hexachlorobenzene	2.45E+00	(1)	1.20E+01	(1)	2.48E-02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Hexachlorobutadiene	6.20E+01	(3)	220	(3)	2.14E-02	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
Hexachlorocyclopentadiene	3.67E+02	(1)	8.11E+02	(2)	6.90E+00	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Hexachloroethane	6.11E+01	(1)	2.38E+02	(2)	2.17E-01	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Indeno(1,2,3-cd)pyrene	4.81E+00	(1)	2.34E+01	(1)	4.16E+01	(6)	<0.25	<1.3	<1.3	<0.25	<0.25
Isophorone	4.13E+03	(1)	2.02E+04	(1)	2.08E+00	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
Naphthalene	4.50E+01	(1)	2.52E+02	(1)	4.72E-02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Nitrobenzene	4.94E+01	(1)	2.77E+02	(1)	7.72E-02	(6)	<0.50	<2.5	<2.5	<0.50	<0.50
N-Nitrosodi-n-propylamine	6.90E-01	(3)	0.25	(3)	1.24E-04	(7)	<0.20	<1.0	<1.0	<0.20	<0.20
N-Nitrosodiphenylamine	8.00E+02	(1)	3.91E+03	(1)	1.45E+01	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Pentachlorophenol	2.07E+01	(1)	1.00E+02	(1)	3.30E-01	(6)	<0.40	<2.0	<2.0	<0.40	<0.40
Phenanthrene	1.83E+03	(1)	7.15E+03	(2)	9.39E+02	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Phenol	1.83E+04	(1)	6.88E+04	(2)	7.09E+01	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Pyrene	1.72E+03	(1)	6.68E+03	(2)	1.26E+03	(6)	<0.20	<1.0	<1.0	<0.20	<0.20
Pyridine	7.80E+01	(2)	1000	(3)	-	-	<0.50	<2.5	<2.5	<0.50	<0.50
Total Petroleum Hydrocarbons - (EPA Method 8015B) mg/kg											
Diesel Range Organics (DRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	20	1400	120	34	<10
Gasoline Range Organics (GRO)	-		-		-		<5.0	<5.0	<5.0	<5.0	<5.0
Motor Oil Range Organics (MRO)	1.80E+03	(4)	7.15E+03	(9)	1.0E+03	(5)	72	2200	280	140	<50

-- No screening level or analytical result available
NMED - Technical Background Document for Development of Soil Screening Levels - Revision 5.0 (August 2009) - Residential Soil
EPA - Regional Screening Levels (April 2009)
(1) NMED Residential Screening Level
(2) EPA - Residential Screening Levels (April 2009)
(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 Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, direct contact pathways
(5) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, residential, all pathways
(6) SoilGW NMED Dilution Attenuation Factor (DAF) = 11.25

(7) SoilGW Risk-based EPA DAF = 11.25

(8) SoilGW MCL-based EPA DAF = 11.25

(9) NMED Oct. 2006 TPH Screening Guidelines (updated with Masschusetts Department of Environmental Protection 2009 tox data - uknown oil, construction worker, direct contact pathways

Bold represents value above Non-Residential Screening Level

TABLE 12
Surface Soil Samples - Vapor Screening Results
Bloomfield Refinery - Bloomfield, New Mexico

Sample Interval Depth	SWMU 5-1	SWMU 5-2	SWMU 5-3	SWMU 5-4	SWMU 5-5
0 – 0.5’	9.8	7.7	12.2	13.7	12.0
1.5 – 2’	9.4	9.3	15.9	14.3	17.8

Sample Interval Depth	SWMU 5-6	AOC 22-1	AOC 22-2	AOC 22-3	AOC 22-4
0 – 0.5’	16.0	4.5	16.1	5.1	3.4
1.5 – 2’	12.5	3.5	2.1	3.7	2429

Sample Interval Depth	AOC 22-5	AOC 22-6	AOC 22-7	AOC 22-8	AOC 22-9
0 – 0.5’	1.6	1.5	1.3	1.4	0.6
1.5 – 2’	1.4	4.1	2.6	1.2	1.1

Sample Interval Depth	AOC 22-10	AOC 22-11	AOC 24-1	AOC 24-2	AOC 24-3
0 – 0.5’	7.9	5.9	3.3	2.7	1.7
1.5 – 2’	3.8	4.3	3.9	4.1	7.7

Sample Interval Depth	AOC 24-4	AOC 25-1	AOC 26-1	AOC 26-2	AOC 26-3
0 – 0.5’	3.9	5.5	5.6	4.6	4.3
1.5 – 2’	6.4	5.5	3.5	3.9	7.2

Sample Interval Depth	AOC 26-4	AOC 26-5	AOC 26-6	AOC 26-7
0 – 0.5’	4.5	9.2	9.3	5.7
1.5 – 2’	4.1	15.2	6.6	6.1

Units - ppm

TABLE 13
Soil Boring Samples - Vapor Screening Results
Bloomfield Refinery - Bloomfield, New Mexico

Sample Interval Depth	SWMU 4-1 (MW-59)	AOC 22-12	AOC 22-13	AOC 22-14	AOC 22-15 (MW-61)	AOC 22-16 (MW-63)	AOC 23-1 (MW-62)	AOC 24-5	AOC 24-6	AOC 24-7 (MW-64)	AOC 25-2 (MW-60)	AOC 26-8 (MW-65)	AOC 26-9 (MW-66)
0 – 2'	0.2	0.9/3.4	1427	2.1	2.8/29.5	1.6/0.9	3.1/3.3	1.2/6.0	0.3/5.0	0.4	0.1	1.8/1.0	8.6
2 – 4'	2.9	4.9	1186	3.1	23.4	4.5	14.5	5.4	4.8	0.4	0.1	2.3	10.5
4 – 6'	50.8	5.6	1373	6.3	5.5	5.8	14.4	6.4	4.9	0.2	--	2.0	10.5
6 – 8'	214	5.2	1349	5.1	13.1	5.8	14.8	7.8	2.0	0.3	0.1	1.2	9.0
8 –10'	41	4.9	1302	4.6	18.1	7.3	12.3	5.9	5.3	0.4	0.0	1.0	10.0
10 – 12'	9.5	4.2	1302	3.8	16.6	3.2	--			0.3	0.0	1.9	8.3
12 – 14'	9.7	6.3	1345		11.2	3.8	7.1			0.4	0.1	2.5	8.2
14 – 16'	8.0	6.0	1277		6.5	6.2	17.6			0.4	0.0	2.1	9.6
16 – 18'	8.1	5.2	1250		13.2	5.8	8.7			0.1	0.2	2.1	9.5
18 – 20'	7.3	5.1	1660		13.2	5.7	2.2			0.5	0.4	1.8	8.8
20 – 22'	6.4	4.4	1611		21.5	5.8	3.9			0.3	0.1	1.2	10.9
22 – 24'	6.6	4.3	1336		12.9	6.8	2.4			0.1	0.3	1.1	10.4
24 – 26'	5.5	5.7	1131		16.0	4.9	1.6			0.1	0.4	1.3	10.0
26 – 28'	6.3	5.2	1131		17.1	7.5	4.0			0.1	0.3	2.4	9.5
28 – 30'	4.2	22.7	1184		22.0	7.9	3.6			0.3	0.2	11.0	7.9
30 – 32'	3.9	35.0	1268		165	6.0	5.4			0.2	0.1	20.8	5.6
32 – 34'	2.8	25.0	1694		510	6.5	3.2			0.4	3.6	58.7	6.3
34 – 36'	3.1	68.0	1596			10.9	3.3			0.9	2.5	145	25.3
36 – 38'	3.8	220	908			12.2	4.4			3.4	4.2		3939
38 – 40'			1228				5.3			4.4			
40 – 42'							3.3			1.2			
42 – 44'							--			3.1			
44 – 46'							3.3			3.1			
46 – 48'							--			3.6			
48 – 50'							2.3						
50 – 52'							3.8						
52 – 54'							4.4						

Units - ppm

TABLE 14
Ground Water Field Measurements & Subsurface Vapor Readings
Bloomfield Refinery - Bloomfield, New Mexico

		Ground Water Data								Vapor Data		
Well	**Date**	**Well Volume**	**Temp (degrees F)**	**Specific Conductivity**	**Dissolved Oxygen (mg/L)**	**pH**	**ORP**	**TDS (ppm)**	**Purge Volume (calculated / actual - gallons)**	**O_2 (%)**	**CO_2 (%)**	**PID (ppm)**
MW-59	5/14/2009	0	61.00	1.644	7.65	7.07	269	1295		19.0	0.5	41.1
		1	60.30	1.499	4.31	6.96	260	1151				
		2	61.20	1.468	4.52	6.79	261	1205				
		3	60.90	1.472	4.61	6.80	263	1241	7.2/10			
	7/16/2009	0	63.90	1.822	9.90	6.77	272	1336		18.7	0.3	37.5
		1	63.50	1.774	4.91	6.76	268	1297				
		2	63.10	1.748	4.50	6.77	263	1278				
		3	63.20	1.751	4.63	6.77	264	1281	7.07/10			
MW-60	5/14/2009	0	67.30	1.335	5.91	7.18	227	1031		18.1	0.1	21
		1	69.30	1.329	6.15	7.16	211	1027				
		2	68.30	1.341	4.91	7.20	215	1053				
		3	67.40	1.379	5.12	7.19	220	1068	1.96/2			
	7/16/2009	DRY	DRY	DRY	DRY	DRY	DRY	DRY	0	18.4	0.2	18
MW-61	5/13/2009	0	63.20	1.170	8.76	7.02	258	900.9		0	4.8	1245
		1	65.50	1.212	4.79	7.02	262	933.5				
		2	65.70	1.143	4.91	6.96	255	788.5				
		3	65.30	1.163	4.83	6.98	259	771	8.4/10			
	7/16/2009	0	75.30	0.460	9.61	6.91	122	329		0	3.9	1305
		1	74.40	1.262	3.61	6.89	152	894				
		2	71.90	1.293	5.22	6.87	156	918				
		3	72.10	1.291	4.05	6.86	157	899	7.82/10			
MW-62	5/13/2009	0	62.30	6.330	5.51	6.92	269	5671		11.2	0	79.1
		1	62.20	6.369	5.62	6.90	237	5709				
		2	62.50	6.392	5.43	6.95	200	5732				
		3	62.40	6.385	5.70	6.91	225	5721	10.45/15			
	7/16/2009	0	66.10	6.821	5.80	6.86	231	5644		10.9	0	65
		1	63.90	6.740	8.07	6.84	227	5584				
		2	63.60	6.765	5.80	6.83	223	5596				
		3	63.50	6.769	5.76	6.84	225	5589	10.08/15			
MW-63	5/13/2009	0	69.10	4.137	21.76	6.99	291	3491		3.6	7	79
		1	68.90	3.855	13.02	7.08	277	3285				
		2	68.30	3.902	12.79	7.06	239	3339				
		3	67.40	3.911	13.14	7.05	221	3340	5.86/8			
	7/15/2009	0	76.30	4.445	30.55	6.91	255	3506		3.8	6.4	101
		1	68.90	4.309	15.05	6.90	215	3493				
		2	68.10	4.270	11.25	6.88	198	3371				
		3	68.40	4.373	12.73	6.85	201	3357	5.78 / 7			
MW-64	5/13/2009	0	68.4	5.539	nm	7.06	228	4858		18.1	0.8	17
		1	65	5.554	nm	7.03	231	4885				
		2	69	5.789	nm	7.02	225	4174				
		3	67.1	5.494	nm	7.04	227	4861	4.5 / 7			
	7/15/2009	0	69.7	5.650	30.42	6.93	220	4733		18	0.5	10
		1	66.5	5.705	12.65	6.92	213	4770				
		2	66.3	5.827	11.83	6.90	211	4732				
		3	65.1	5.833	11.41	6.89	203	4751	4.45 / 7			
	5/12/2009	0	69.9	3.006	7.59	6.84	247	2490		0	4.9	1820
		1	67.8	2.988	4.15	6.92	201	2459				
		2	66.1	3.023	3.78	6.85	180	2483				

TABLE 14
Ground Water Field Measurements & Subsurface Vapor Readings
Bloomfield Refinery - Bloomfield, New Mexico

		Ground Water Data								Vapor Data		
Well	Date	Well Volume	Temp (degrees F)	Specific Conductivity	Dissolved Oxygen (mg/L)	pH	ORP	TDS (ppm)	Purge Volume (calculated / actual - gallons)	O_2 (%)	CO_2 (%)	PID (ppm)
MW-65		3	66.5	3.059	3.65	6.83	195	2465	14.6 / 15			
	7/16/2009	0	73.9	3.022	10.14	6.94	236	2303		0.1	3.9	1530
		1	70.3	3.150	3.65	6.93	216	2415				
		2	69.1	3.229	2.50	6.87	193	2490				
		3	69.7	3.308	2.60	6.86	180	2552	14.3 / 15			
MW-66	5/12/2009	0	74.4	2.923	11.51	6.97	188	2432		0.4	6.8	1880
		1	67.7	3.120	9.85	6.95	168	2605				
		2	66.2	3.205	7.67	6.94	191	2654				
		3	68.7	3.125	8.15	6.93	187	2605	7.4 / 10			
	7/15/2009	0	72.0	3.277	37.40	6.97	239	2529		0.3	7.2	2180
		1	71.9	3.162	22.90	6.95	192	2436				
		2	70.6	3.479	9.72	6.94	182	2689				
		3	71.9	3.455	7.97	6.98	169	2653	7.4 / 10			
AOC (22-12) /TW-1	4/14/2009	NA	58.9	2.585	1.81	7.77	-102.5	nm	0	nm	nm	nm
	7/29/2009	0	69.1	2.561	18.79	6.99	261	nm		5.3	2.19	450
		1	66.9	2.540	10.12	6.97	258	nm				
		2	65.3	2.547	9.51	6.96	233	nm				
		3	65.9	2.550	10.13	6.97	245	nm	2.31 / 5			

nm - not measured

TABLE 15
Water Level Measurements
Bloomfield Refinery - Bloomfield, New Mexico

Well	Date	Top of Casing (ft-msl)	Depth to Bottom (ft)	Depth to Product (ft)	Depth to Water (ft)	Groundwater Elevation (ft-msl)	Product Thickness (ft)
MW-59	5/14/2009	5545.2	46.95	NPP	43.33	5501.87	0
	7/16/2009	5545.2	46.95	NPP	43.38	5501.82	0
MW-60	5/14/2009	5543.71	43.39	NPP	42.4	5501.31	0
	7/16/2009	5543.71	43.40	NPP	42.84	5500.87	0
MW-61	5/13/2009	5539.41	40.86	36.63	36.85	5502.74	0.22
	7/16/2009	5539.41	40.58	36.63	37.05	5502.7	0.42
MW-62	5/13/2009	5561.32	61.28	NPP	56.00	5505.32	0
	7/16/2009	5561.32	61.33	NPP	56.24	5505.08	0
MW-63	5/13/2009	5547.26	47.84	NPP	44.88	5502.38	0
	7/15/2009	5547.26	47.85	NPP	44.93	5502.33	0
MW-64	5/13/2009	5552.29	52.40	NPP	50.12	5502.17	0
	7/15/2009	5552.29	52.43	NPP	50.18	5502.11	0
MW-65	5/12/2009	5539.52	44.37	NPP	37.00	5502.52	0
	7/16/2009	5539.52	44.25	NPP	37.02	5502.5	0
MW-66	5/12/2009	5544.63	45.58	41.84	41.85	5502.79	0.01
	7/15/2009	5544.63	45.57	41.82	42.02	5502.77	0.2
TW-1	7/29/2009	5543.61	45.56	NPP	40.99	5502.62	0

NPP - no product present

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-59	MW-59	MW-60	MW-61	MW-61	MW-62	MW-62	MW-63	MW-63	MW-63 (DUP)
Sample Date				4/14/2009	7/29/2009	4/9/2009	5/14/2009	7/16/2009	5/14/2009	5/13/2009	7/16/2009	5/13/2009	7/16/2009	5/13/2009	7/15/2009	7/15/2009
Metals																
Antimony	0.006	(2)	mg/L	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001	0.002	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001
Arsenic	0.01	(2)	mg/L	**0.013**	**0.031**	**0.017**	**0.014**	**0.016**	0.003	**0.041**	**0.024**	0.001	<0.001	0.007	0.005	0.004
Barium	1	(3)	mg/L	0.88	0.44	0.73	0.087	0.1	0.065	0.29	0.28	0.1	0.023	0.15	0.027	0.026
Beryllium	0.004	(2)	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Cadmium	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	<0.0020	<0.0020	<0.0020
Calcium *	-		mg/L	--	210	--	--	120	--	--	120	--	430	--	420	410
Calcium, Dissolved	-		mg/L	140	150	180	110	120	87	110	120	420	460	390	410	420
Chromium	0.05	(3)	mg/L	<0.0060	<0.0060	0.013	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0063	<0.0060	<0.0060
Cobalt	0.05	(3)	mg/L	0.0083	0.0084	0.024	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	0.0078	0.0079	0.013	<0.0060	<0.0060
Cyanide, Total	0.2	(3)	mg/L	<0.005	<0.005	<0.005	<0.005	0.005	<0.005	<0.005	<0.005	0.072	0.011	<0.005	<0.005	<0.005
Iron, Dissolved	1	(3)	mg/L	**2.2**	**5.9**	**24**	0.11	0.26	<0.020	0.14	**1.6**	<0.020	0.51	0.35	0.028	0.044
Iron, Total	-	(3)	mg/L	10	17	61	3.6	2.4	4.6	1.2	2.8	2.9	0.26	21	1.5	1.3
Lead	0.015	(2)	mg/L	<0.0050	**0.018**	**0.038**	0.0097	0.007	0.0063	**0.025**	**0.042**	<0.0050	<0.0050	0.0097	<0.0050	0.0051
Magnesium	-		mg/L	--	78	--	--	27	--	--	44	--	39	--	130	120
Magnesium, Dissolved	-		mg/L	61	70	81	31	29	29	37	45	36	40	110	120	120
Manganese	-	(3)	mg/L	--	5.4	--	--	2.7	--	3.2	4.3	2.7	3.0	--	4.6	4.5
Manganese, Dissolved	0.2	(3)	mg/L	**3.4**	**3.7**	**3.9**	**2.6**	**2.7**	**0.22**	--	4.4	--	**2.9**	**3**	**4.4**	**4.5**
Mercury	0.002	(3)	mg/L	<0.00020	<0.00020	0.00045	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel	0.2	(3)	mg/L	0.011	0.013	0.034	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.021	0.012	0.012
Potassium *	-		mg/L	--	3.6	--	--	2.4	--	--	1.9	--	10	--	4.6	4.6
Potassium, Dissolved	-		mg/L	3.8	5.1	3.7	2.4	2.3	4.2	1.7	2.1	8.8	11	4.7	4.1	4.3
Selenium	0.05	(3)	mg/L	<0.050	<0.005	<0.050	<0.25	<0.001	<0.25	<0.25	<0.001	<0.25	<0.001	<0.25	0.026	0.023
Silver	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	<0.0050	<0.0050	<0.0050
Sodium *	-		mg/L	--	410	--	--	280	--	--	110	--	1400	--	540	530
Sodium, Dissolved	-		mg/L	380	400	360	270	280	190	130	110	1400	1400	510	510	520
Vanadium	0.26	(1)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	10	(3)	mg/L	0.027	0.054	0.051	0.025	<0.020	0.067	<0.020	<0.020	<0.020	<0.020	0.074	<0.020	<0.020
Volatile Organic Compounds - (EPA Method 8260W)																
1,1,1,2-Tetrachloroethane	0.52	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	60	(3)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	10	(3)	µg/L	<100	<200	<200	<2.0	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0
1,1,2-Trichloroethane	5	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	25	(3)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	-	(3)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloropropene	-		µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichlorobenzene	-		µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	0.0096	(1)	µg/L	<100	<200	<200	<2.0	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0
1,2,4-Trichlorobenzene	70	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trimethylbenzene	15	(1)	µg/L	**1500**	**1300**	**4800**	**19**	**18**	<1.0	**2400**	**2900**	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dibromo-3-chloropropane	0.2	(2)	µg/L	<100	<200	<200	<2.0	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0
1,2-Dibromoethane (EDB)	0.05	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	600	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloroethane (EDC)	5	(2)	µg/L	**61**	<100	**220**	**7.2**	**5.4**	<1.0	<20	<10	<1.0	<1.0	1.9	1.4	1.6

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-59	MW-59	MW-60	MW-61	MW-61	MW-62	MW-62	MW-63	MW-63	MW-63 (DUP)
1,2-Dichloropropane	5	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene	12	(1)	µg/L	**240**	<100	**1300**	4.4	<1.0	<1.0	**820**	**550**	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	-		µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-Dichloropropane	730	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	75	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
1-Methylnaphthalene	2.3	(1)	µg/L	<200	<400	<400	**54**	**36**	<4.0	**270**	**150**	<4.0	<4.0	<4.0	<4.0	<4.0
2,2-Dichloropropane	-		µg/L	<100	<200	<200	<2.0	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0
2-Butanone	7100	(1)	µg/L	<500	<1000	<1000	<10	<10	<10	<200	<100	<10	<10	<10	<10	<10
2-Chlorotoluene	730	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	-		µg/L	<500	<1000	<1000	<10	<10	<10	<200	<100	<10	<10	<10	<10	<10
2-Methylnaphthalene	150	(1)	µg/L	<200	<400	**710**	14	5	<4.0	**450**	**260**	<4.0	<4.0	<4.0	<4.0	<4.0
4-Chlorotoluene	2600	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
4-Isopropyltoluene	-		µg/L	<50	<100	<100	2.4	1.4	<1.0	22	13	<1.0	<1.0	<1.0	<1.0	<1.0
4-Methyl-2-pentanone	-		µg/L	<500	<1000	<1000	<10	<10	<10	<200	<100	<10	<10	<10	<10	<10
Acetone	22000	(1)	µg/L	<500	<1000	<1000	<10	<10	<10	1100	3000	<10	<10	<10	<10	<10
Benzene	5	(2)	µg/L	**8600**	**8200**	**13000**	**210**	**140**	<1.0	**49**	**48**	<1.0	<1.0	<1.0	<1.0	<1.0
Bromobenzene	20	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	0.12	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	8.5	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	8.7	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon disulfide	1000	(1)	µg/L	<500	<1000	<1000	<10	<10	<10	<200	<100	<10	<10	<10	<10	<10
Carbon Tetrachloride	5	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	100	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	-		µg/L	<100	<200	<200	<2.0	<2.0	<2.0	<40	<20	<2.0	<2.0	<2.0	<2.0	<2.0
Chloroform	100	(3)	µg/L	<50	<100	<100	<1.0	<1.0	1.2	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	190	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-DCE	70	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	-		µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	0.15	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromomethane	370	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Dichlorodifluoromethane	390	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	700	(2)	µg/L	**2100**	**2200**	**4300**	380	410	<1.0	**1400**	**1500**	<1.0	<1.0	<1.0	<1.0	<1.0
Hexachlorobutadiene	0.86	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Isopropylbenzene (Cumene)	680	(1)	µg/L	69	190	240	38	30	<1.0	100	70	<1.0	<1.0	<1.0	<1.0	<1.0
Methyl tert-butyl ether (MTBE)	12	(1)	µg/L	**20000**	**23000**	**14000**	**16**	**13**	<1.0	**380**	**410**	<1.0	<1.0	**48**	**54**	**61**
Methylene Chloride	5	(2)	µg/L	<150	<300	<300	<3.0	<3.0	<3.0	<60	<30	<3.0	<3.0	<3.0	<3.0	<3.0
Naphthalene	0.14	(1)	µg/L	**380**	**480**	**800**	**210**	**180**	<2.0	**690**	**500**	<2.0	<2.0	<2.0	<2.0	<2.0
n-Butylbenzene	-		µg/L	<50	<100	420	10	11	<1.0	110	97	<1.0	<1.0	<1.0	<1.0	<1.0
n-Propylbenzene	-		µg/L	200	180	700	48	43	<1.0	310	240	<1.0	<1.0	<1.0	<1.0	<1.0
sec-Butylbenzene	-		µg/L	<50	<100	110	7.4	6.6	<1.0	<20	15	<1.0	<1.0	<1.0	<1.0	<1.0
Styrene	100	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
tert-Butylbenzene	-		µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene (PCE)	5	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	750	(3)	µg/L	**870**	380	**16000**	2.7	1.8	<1.0	<20	11	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-DCE	100	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-59	MW-59	MW-60	MW-61	MW-61	MW-62	MW-62	MW-63	MW-63	MW-63 (DUP)
trans-1,3-Dichloropropene	0.43	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene (TCE)	5	(2)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	1300	(1)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	1	(3)	µg/L	<50	<100	<100	<1.0	<1.0	<1.0	<20	<10	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes, Total	620	(3)	µg/L	**6100**	**5000**	**23000**	<1.5	3.6	<1.5	**7300**	**6800**	<1.5	<1.5	<1.5	<1.5	<1.5
Semi Volatile Organics - (EPA Method 8270W)																
1,2,4-Trichlorobenzene	70	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
1,2-Dichlorobenzene	600	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
1,3-Dichlorobenzene	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
1,4-Dichlorobenzene	75	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2,4,5-Trichlorophenol	3700	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2,4,6-Trichlorophenol	6.1	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2,4-Dichlorophenol	110	(1)	µg/L	<20	<100	<20	<20	<100	<20	<100	<100	<20	<20	<20	<20	<20
2,4-Dimethylphenol	730	(1)	µg/L	30	<50	<10	<10	<50	<10	<50	130	<10	<10	<10	<10	<10
2,4-Dinitrophenol	73	(1)	µg/L	<20	<100	<20	<20	<100	<20	<100	<100	<20	<20	<20	<20	<20
2,4-Dinitrotoluene	0.22	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2,6-Dinitrotoluene	37	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2-Chloronaphthalene	2900	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2-Chlorophenol	180	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2-Methylnaphthalene	150	(1)	µg/L	81	71	100	<10	<50	<10	**17000**	**1200**	<10	<10	<10	<10	<10
2-Methylphenol	1800	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2-Nitroaniline	110	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
2-Nitrophenol	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
3,3'-Dichlorobenzidine	0.15	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
3+4-Methylphenol	180	(1)	µg/L	16	<50	10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
3-Nitroaniline	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4,6-Dinitro-2-methylphenol	-		µg/L	<20	<100	<20	<20	<100	<20	<100	<100	<20	<20	<20	<20	<20
4-Bromophenyl phenyl ether	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4-Chloro-3-methylphenol	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4-Chloroaniline	0.34	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4-Chlorophenyl phenyl ether	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4-Nitroaniline	3.4	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
4-Nitrophenol	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Acenaphthene	2200	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Acenaphthylene	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Aniline	12	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Anthracene	11000	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Azobenzene	0.12	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benz(a)anthracene	0.029	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benzo(a)pyrene	0.2	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benzo(b)fluoranthene	0.029	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benzo(g,h,i)perylene	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benzo(k)fluoranthene	0.29	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Benzoic acid	150000	(1)	µg/L	<20	<100	<20	<20	<100	<20	<100	<100	<20	<20	<20	<20	<20
Benzyl alcohol	18000	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-59	MW-59	MW-60	MW-61	MW-61	MW-62	MW-62	MW-63	MW-63	MW-63 (DUP)
Bis(2-chloroethoxy)methane	110	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Bis(2-chloroethyl)ether	0.012	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Bis(2-chloroisopropyl)ether	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Bis(2-ethylhexyl)phthalate	6	(2)	µg/L	<10	<50	<10	<10	<50	<10	**140**	<50	<10	<10	<10	<10	<10
Butyl benzyl phthalate	35	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Carbazole	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Chrysene	2.9	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Dibenz(a,h)anthracene	0.0029	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Dibenzofuran	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Diethyl phthalate	29000	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Dimethyl phthalate	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Di-n-butyl phthalate	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Di-n-octyl phthalate	-		µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Fluoranthene	1500	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Fluorene	1500	(1)	µg/L	<10	<50	<10	<10	<50	<10	300	<50	<10	<10	<10	<10	<10
Hexachlorobenzene	1	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Hexachlorobutadiene	0.86	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Hexachlorocyclopentadiene	50	(2)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Hexachloroethane	4.8	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Indeno(1,2,3-cd)pyrene	0.029	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Isophorone	71	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Naphthalene	0.14	(1)	µg/L	**250**	**220**	**110**	**100**	**120**	<10	**7500**	**690**	<10	<10	<10	<10	<10
Nitrobenzene	0.12	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
N-Nitrosodimethylamine	0.00042	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
N-Nitrosodi-n-propylamine	0.0096	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
N-Nitrosodiphenylamine	14	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Pentachlorophenol	1	(2)	µg/L	<20	<100	<20	<20	<100	<20	<100	<100	<20	<20	<20	<20	<20
Phenanthrene	-		µg/L	<10	<50	<10	<10	<50	<10	1500	130	<10	<10	<10	<10	<10
Phenol	5	(3)	µg/L	**30**	<50	**19**	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Pyrene	1100	(1)	µg/L	<10	<50	<10	<10	<50	<10	58	<50	<10	<10	<10	<10	<10
Pyridine	37	(1)	µg/L	<10	<50	<10	<10	<50	<10	<50	<50	<10	<10	<10	<10	<10
Alkalinity, Total (As CaCO3)	-		mg/L CaCO3	1100	1200	1200	850	820	420	590	520	640	620	640	630	640
Bicarbonate	-		mg/L CaCO3	1100	1200	1200	850	820	420	590	520	640	620	640	630	640
Bromide	-		mg/L	--												
Carbonate	-		mg/L CaCO3	<5.0	<5.0	<5.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloride	250	(3)	mg/L	140	170	210	58	57	48	67	70	15	15	210	240	240
Fluoride	1.6	(3)	mg/L	--	0.28	--	0.35	0.34	0.21	0.38	0.39	0.14	0.16	0.19	0.17	0.14
Nitrate (As N)+Nitrite (As N)			mg/L	--	--	--	<2.0	<1.0	15	--	<1.0	--	<1.0	72	--	--
Nitrogen, Nitrate (As N)	10	(2)	mg/L	0.12	0.19	0.15	--	--	--	<1.0	--	0.17	--	--	**74**	**75**
Nitrogen, Nitrite (As N)	1	(2)	mg/L	<1.0	<2.0	<1.0	--	--	--	<1.0	--	<0.10	--	--	<2.0	--
Sulfate	600	(3)	mg/L	56	39	110	92	70	240	65	110	**3900**	**3900**	**1600**	**1500**	**1500**
Phosphorus, Orthophosphate (As P)	-		mg/L	--	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Dissolved Solids	1000	(3)	mg/L	**2500**	**1720**	**1700**	**1100**	**1070**	990	820	872	**6000**	**5410**	**3500**	**3710**	**3700**
Diesel Range Organics (DRO)	1.34	(4)	mg/L	**9.4**	**5.7**	**65**	**3.4**	**2.3**	<1.0	**550**	**59**	<1.0	<1.0	<1.0	<1.0	<1.0

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	AOC 22-12 (GW)	AOC 22-12/TW-01	AOC 22-13 (GW)	MW-59	MW-59	MW-60	MW-61	MW-61	MW-62	MW-62	MW-63	MW-63	MW-63 (DUP)
Gasoline Range Organics (GRO)	1.34	(4)	mg/L	**84**	**54**	**190**	**2.6**	**3.1**	0.15	**24**	**30**	<0.050	<0.050	0.055	0.077	0.073
Motor Oil Range Organics (MRO)	-		mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethanol	-		mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--

-- No screening level or analytical result available
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 TPH Screening Guidelines Oct. 2006 - #3 and #6 fuel oil
* = General Chemistry analytes not required by Work Plan.

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	MW-66	MW-66
Sample Date				5/13/2009	7/15/2009	5/12/2009	5/12/2009	7/16/2009	5/12/2009	7/15/2009
Metals										
Antimony	0.006	(2)	mg/L	<0.001	<0.001	0.001	<0.001	<0.005	0.002	0.004
Arsenic	0.01	(2)	mg/L	0.006	**0.017**	**0.021**	**0.015**	**0.024**	**0.024**	**0.033**
Barium	1	(3)	mg/L	0.18	0.036	0.15	0.13	0.074	0.13	0.088
Beryllium	0.004	(2)	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Cadmium	0.005	(2)	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Calcium *	-		mg/L	--	480	--	--	240	--	240
Calcium, Dissolved	-		mg/L	470	500	230	230	260	220	250
Chromium	0.05	(3)	mg/L	0.0075	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060	<0.0060
Cobalt	0.05	(3)	mg/L	0.01	0.0067	<0.0060	<0.0060	<0.0060	0.012	0.0074
Cyanide, Total	0.2	(3)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Iron, Dissolved	1	(3)	mg/L	0.051	0.1	0.98	**1.1**	**4**	**3.4**	**5**
Iron, Total	-	(3)	mg/L	19	5.3	3.5	3.6	5.3	18	8.9
Lead	0.015	(2)	mg/L	0.014	0.011	<0.0050	0.006	<0.0050	**0.019**	**0.026**
Magnesium	-		mg/L	--	73	--	--	82	--	69
Magnesium, Dissolved	-		mg/L	75	73	79	79	84	64	68
Manganese	-	(3)	mg/L	--	0.53	2.7	2.8	3.8	--	6.3
Manganese, Dissolved	0.2	(3)	mg/L	0.13	0.032	--	--	**3.9**	**5.1**	**6.5**
Mercury	0.002	(3)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Nickel	0.2	(3)	mg/L	0.02	0.012	<0.010	<0.010	<0.010	0.012	<0.010
Potassium *	-		mg/L	--	5	--	--	3.4	--	4.7
Potassium, Dissolved	-		mg/L	5.5	5.7	3.8	3.7	3.9	4.7	4.4
Selenium	0.05	(3)	mg/L	<0.25	0.024	<0.050	<0.050	<0.001	<0.050	0.005
Silver	0.05	(3)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium *	-		mg/L	--	850	--	--	520	--	550
Sodium, Dissolved	-		mg/L	820	850	480	480	520	540	560
Vanadium	0.26	(1)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	10	(3)	mg/L	0.085	0.035	<0.020	<0.020	<0.020	0.055	<0.020
Volatile Organic Compounds - (EPA Method 8260W)										
1,1,1,2-Tetrachloroethane	0.52	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,1,1-Trichloroethane	60	(3)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,1,2,2-Tetrachloroethane	10	(3)	µg/L	<2.0	<2.0	<40	<40	<20	<200	<100
1,1,2-Trichloroethane	5	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,1-Dichloroethane	25	(3)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,1-Dichloroethene	-	(3)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,1-Dichloropropene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,2,3-Trichlorobenzene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,2,3-Trichloropropane	0.0096	(1)	µg/L	<2.0	<2.0	<40	<40	<20	<200	<100
1,2,4-Trichlorobenzene	70	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,2,4-Trimethylbenzene	15	(1)	µg/L	<1.0	<1.0	**1400**	**1500**	**1300**	**2000**	**2800**
1,2-Dibromo-3-chloropropane	0.2	(2)	µg/L	<2.0	<2.0	<40	<40	<20	<200	<100
1,2-Dibromoethane (EDB)	0.05	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,2-Dichlorobenzene	600	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,2-Dichloroethane (EDC)	5	(2)	µg/L	<1.0	<1.0	**220**	**250**	**270**	**120**	**88**

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	MW-66	MW-66
1,2-Dichloropropane	5	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,3,5-Trimethylbenzene	12	(1)	µg/L	<1.0	<1.0	**500**	**510**	**490**	**700**	**810**
1,3-Dichlorobenzene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,3-Dichloropropane	730	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1,4-Dichlorobenzene	75	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
1-Methylnaphthalene	2.3	(1)	µg/L	<4.0	<4.0	**150**	**170**	**130**	<400	**280**
2,2-Dichloropropane	-		µg/L	<2.0	<2.0	<40	<40	<20	<200	<100
2-Butanone	7100	(1)	µg/L	<10	<10	<200	<200	<100	<1000	<500
2-Chlorotoluene	730	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
2-Hexanone	-		µg/L	<10	<10	<200	<200	<100	<1000	<500
2-Methylnaphthalene	150	(1)	µg/L	<4.0	<4.0	**220**	**230**	**210**	<400	**500**
4-Chlorotoluene	2600	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
4-Isopropyltoluene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
4-Methyl-2-pentanone	-		µg/L	<10	<10	<200	<200	<100	<1000	<500
Acetone	22000	(1)	µg/L	<10	<10	<200	<200	110	1300	1100
Benzene	5	(2)	µg/L	<1.0	<1.0	**6800**	**7100**	**5400**	**4600**	**3500**
Bromobenzene	20	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Bromodichloromethane	0.12	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Bromoform	8.5	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Bromomethane	8.7	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Carbon disulfide	1000	(1)	µg/L	<10	<10	<200	<200	<100	<1000	<500
Carbon Tetrachloride	5	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Chlorobenzene	100	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Chloroethane	-		µg/L	<2.0	<2.0	<40	<40	<20	<200	<100
Chloroform	100	(3)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Chloromethane	190	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
cis-1,2-DCE	70	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
cis-1,3-Dichloropropene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Dibromochloromethane	0.15	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Dibromomethane	370	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Dichlorodifluoromethane	390	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Ethylbenzene	700	(2)	µg/L	<1.0	<1.0	**1800**	**2000**	**1400**	**1600**	**1500**
Hexachlorobutadiene	0.86	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Isopropylbenzene (Cumene)	680	(1)	µg/L	<1.0	<1.0	84	92	81	140	85
Methyl tert-butyl ether (MTBE)	12	(1)	µg/L	<1.0	<1.0	**1700**	**1800**	**1700**	**780**	**650**
Methylene Chloride	5	(2)	µg/L	<3.0	<3.0	<60	<60	<30	<300	<150
Naphthalene	0.14	(1)	µg/L	<2.0	<2.0	**480**	**520**	**450**	**560**	**880**
n-Butylbenzene	-		µg/L	<1.0	<1.0	49	50	85	<100	51
n-Propylbenzene	-		µg/L	<1.0	<1.0	230	240	260	290	310
sec-Butylbenzene	-		µg/L	<1.0	<1.0	<20	<20	14	<100	<50
Styrene	100	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
tert-Butylbenzene	-		µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Tetrachloroethene (PCE)	5	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Toluene	750	(3)	µg/L	<1.0	<1.0	**2500**	**2800**	150	**2000**	**2500**
trans-1,2-DCE	100	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	MW-66	MW-66
trans-1,3-Dichloropropene	0.43	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Trichloroethene (TCE)	5	(2)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Trichlorofluoromethane	1300	(1)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Vinyl chloride	1	(3)	µg/L	<1.0	<1.0	<20	<20	<10	<100	<50
Xylenes, Total	620	(3)	µg/L	<1.5	<1.5	**8500**	**9200**	**6400**	**6200**	**7900**
Semi Volatile Organics - (EPA Method 8270W)										
1,2,4-Trichlorobenzene	70	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
1,2-Dichlorobenzene	600	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
1,3-Dichlorobenzene	-		µg/L	<10	<10	<10	<10	<50	<10	<50
1,4-Dichlorobenzene	75	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
2,4,5-Trichlorophenol	3700	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2,4,6-Trichlorophenol	6.1	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2,4-Dichlorophenol	110	(1)	µg/L	<20	<20	<20	<20	<100	<20	<100
2,4-Dimethylphenol	730	(1)	µg/L	<10	<10	24	22	<50	59	<50
2,4-Dinitrophenol	73	(1)	µg/L	<20	<20	<20	<20	<100	<20	<100
2,4-Dinitrotoluene	0.22	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2,6-Dinitrotoluene	37	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2-Chloronaphthalene	2900	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2-Chlorophenol	180	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2-Methylnaphthalene	150	(1)	µg/L	<10	<10	**160**	150	130	150	**19000**
2-Methylphenol	1800	(1)	µg/L	<10	<10	<10	<10	<50	32	<50
2-Nitroaniline	110	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
2-Nitrophenol	-		µg/L	<10	<10	<10	<10	<50	<10	<50
3,3´-Dichlorobenzidine	0.15	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
3+4-Methylphenol	180	(1)	µg/L	<10	<10	<10	<10	<50	16	<50
3-Nitroaniline	-		µg/L	<10	<10	<10	<10	<50	<10	<50
4,6-Dinitro-2-methylphenol	-		µg/L	<20	<20	<20	<20	<100	<20	<100
4-Bromophenyl phenyl ether	-		µg/L	<10	<10	<10	<10	<50	<10	<50
4-Chloro-3-methylphenol	-		µg/L	<10	<10	<10	<10	<50	<10	<50
4-Chloroaniline	0.34	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
4-Chlorophenyl phenyl ether	-		µg/L	<10	<10	<10	<10	<50	<10	<50
4-Nitroaniline	3.4	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
4-Nitrophenol	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Acenaphthene	2200	(1)	µg/L	<10	<10	<10	<10	<50	<10	250
Acenaphthylene	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Aniline	12	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Anthracene	11000	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Azobenzene	0.12	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Benz(a)anthracene	0.029	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Benzo(a)pyrene	0.2	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
Benzo(b)fluoranthene	0.029	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Benzo(g,h,i)perylene	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Benzo(k)fluoranthene	0.29	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Benzoic acid	150000	(1)	µg/L	<20	<20	<20	<20	<100	<20	<100
Benzyl alcohol	18000	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	MW-66	MW-66
Bis(2-chloroethoxy)methane	110	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Bis(2-chloroethyl)ether	0.012	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Bis(2-chloroisopropyl)ether	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Bis(2-ethylhexyl)phthalate	6	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
Butyl benzyl phthalate	35	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Carbazole	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Chrysene	2.9	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Dibenz(a,h)anthracene	0.0029	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Dibenzofuran	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Diethyl phthalate	29000	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Dimethyl phthalate	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Di-n-butyl phthalate	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Di-n-octyl phthalate	-		µg/L	<10	<10	<10	<10	<50	<10	<50
Fluoranthene	1500	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Fluorene	1500	(1)	µg/L	<10	<10	<10	<10	<50	<10	250
Hexachlorobenzene	1	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
Hexachlorobutadiene	0.86	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Hexachlorocyclopentadiene	50	(2)	µg/L	<10	<10	<10	<10	<50	<10	<50
Hexachloroethane	4.8	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Indeno(1,2,3-cd)pyrene	0.029	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Isophorone	71	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Naphthalene	0.14	(1)	µg/L	<10	<10	**370**	**350**	**290**	**330**	**9700**
Nitrobenzene	0.12	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
N-Nitrosodimethylamine	0.00042	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
N-Nitrosodi-n-propylamine	0.0096	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
N-Nitrosodiphenylamine	14	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Pentachlorophenol	1	(2)	µg/L	<20	<20	<20	<20	<100	<20	<100
Phenanthrene	-		µg/L	<10	<10	<10	<10	<50	<10	1600
Phenol	5	(3)	µg/L	<10	<10	**49**	**49**	<50	**25**	<50
Pyrene	1100	(1)	µg/L	<10	<10	<10	<10	<50	<10	62
Pyridine	37	(1)	µg/L	<10	<10	<10	<10	<50	<10	<50
Alkalinity, Total (As CaCO3)	-		mg/L CaCO3	300	300	1000	1000	990	1000	1100
Bicarbonate	-		mg/L CaCO3	300	300	1000	1000	990	1000	1100
Bromide	-		mg/L							
Carbonate	-		mg/L CaCO3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloride	250	(3)	mg/L	**1100**	**1100**	140	130	160	99	94
Fluoride	1.6	(3)	mg/L	0.21	0.19	0.21	0.22	0.24	0.22	0.19
Nitrate (As N)+Nitrite (As N)			mg/L	44	--	<1.0	<1.0	<1.0	3.1	--
Nitrogen, Nitrate (As N)	10	(2)	mg/L	--	**48**	--	--	--	--	0.7
Nitrogen, Nitrite (As N)	1	(2)	mg/L	--	<2.0	--	--	--	--	<2.0
Sulfate	600	(3)	mg/L	**1800**	**1700**	**790**	**750**	**950**	**1100**	**1100**
Phosphorus, Orthophosphate (As P)	-		mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Dissolved Solids	1000	(3)	mg/L	**4500**	**4580**	**2300**	**2400**	**2420**	**2600**	**2820**
Diesel Range Organics (DRO)	1.34	(4)	mg/L	<1.0	<1.0	**14**	**14**	**11**	**12**	**31**

Table 16
Ground Water Analytical Results Summary
Bloomfield Refinery - Bloomfield, New Mexico

Analytes	Screening Levels	Source	Units	MW-64	MW-64	MW-65	MW-65 (DUP)	MW-65	MW-66	MW-66
Gasoline Range Organics (GRO)	1.34	(4)	mg/L	<0.050	<0.050	**42**	**44**	**43**	**34**	**46**
Motor Oil Range Organics (MRO)	-		mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethanol	-		mg/L	--	--	<1.0	<1.0	<1.0	<1.0	<1.0

-- No screening level or analytical result available
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 TPH Screening Guidelines Oct. 2006 - #3 and #6 fuel oil
* = General Chemistry analytes not required by Work Plan.

Table 17
Tanks Information Table
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

Tank ID	Status	Contents	Location	Comments
B-12	not in service	Liquefied Petroleum Gas (LPG)	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-13	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-14	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-15	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-16	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-17	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-18	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-19	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-20	not in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater

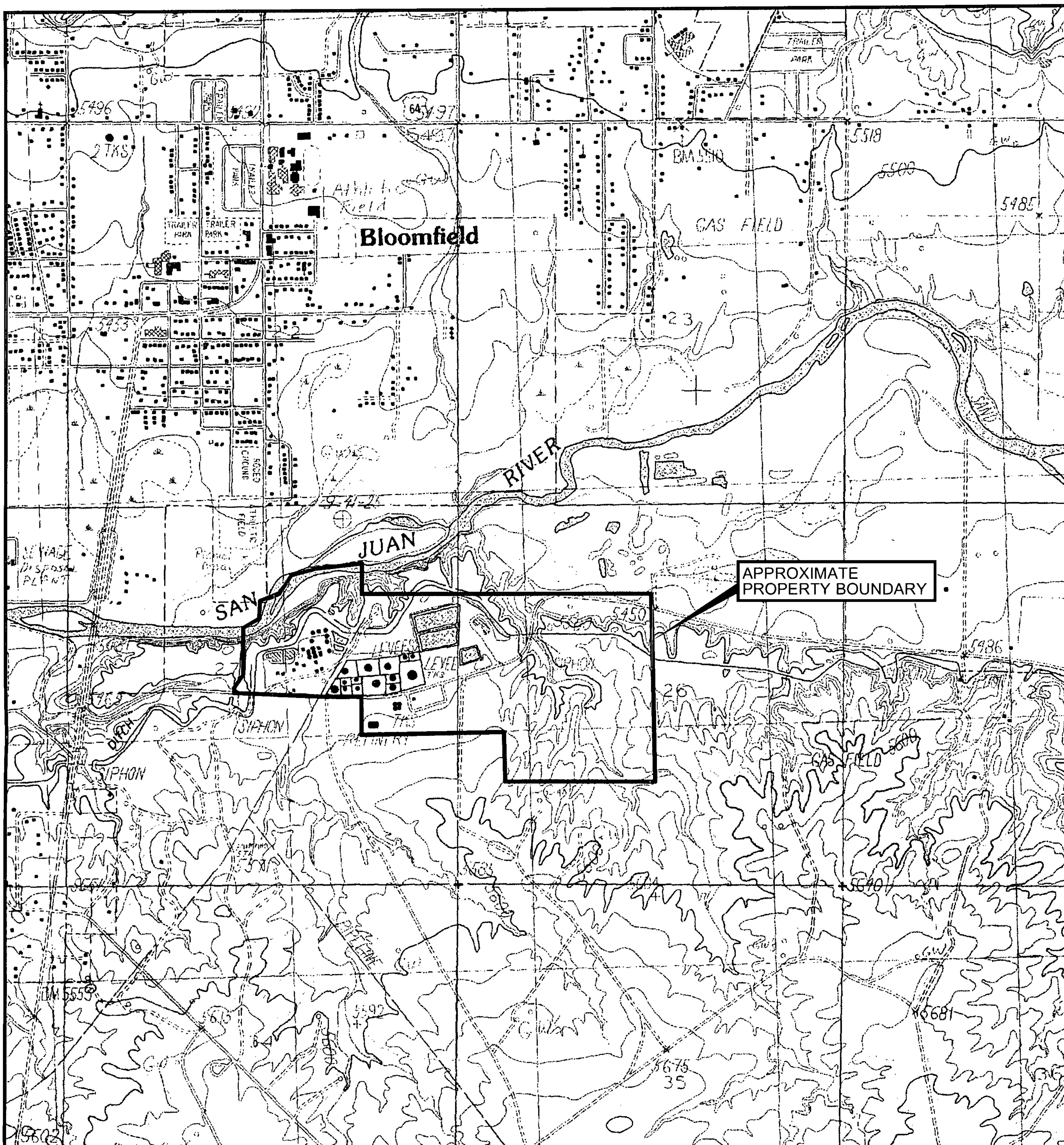
Table 17
Tanks Information Table
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

B-21	in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
B-22	in service	LPG	South of Cty Rd 4990, northeast of Auxiliary Warehouse	LPG storage will not threaten release to soils or groundwater
Tank 34	in service	treated process water	at injection well	tank used for temporary storage of refinery treated process water prior to discharge in disposal well
Tank 40	removed	water from separator/heater treater	AOC No. 24 - southern property line	used for temporary storage of water from heater treater
Tank 41	in service	crude oil	AOC No. 24 - southern property line	used for temporary storage of "wet" crude
Tank 42	removed	water from separator/heater treater	AOC No. 24 - southern property line	used for temporary storage of water from heater treater
Tank 42A	in service, replaced Tank 40	water from separator/heater treater	AOC No. 24 - southern property line	used for temporary storage of water from heater treater, located on bermed concrete pad
Tank 42B	in service, replaced Tank 42	water from separator/heater treater	AOC No. 24 - southern property line	used for temporary storage of water from heater treater, located on bermed concrete pad
Tank 43	not currently in service	crude oil	AOC No. 24 - southern property line	Used for temporary storage of "wet" crude. There was a small spill of approximately 100 to 150 gallons of oily water that spilled near Tank 43 in 2006.
Tank 44	in service	ethanol	AOC No. 26 - east of product loading racks	Stored MTBE and naphtha in the past

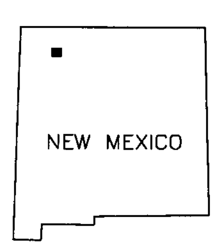
Table 17
Tanks Information Table
Group 3 Investigation
Bloomfield Refinery - Bloomfield, New Mexico

Tank 45	in service	ethanol	AOC No. 26 - east of product loading racks	Stored MTBE and naphtha in the past
Diesel AST	out of service	Diesel	far southwest corner of property, south of Auxiliary Warehouse	Former diesel fueling system owned and operated by Transportation Department of Giant; not part of refinery operations.
V-607	in service	ethyl mercaptan (LPG odorant)	North of Bullet Tanks B12-B-21	This is a small elevated tank that would pose no risk to soil or groundwater
Additive Tank	in service	gasoline additives	immediately north of product loading racks	Tank owned by Chevron/Texaco contains proprietary fuel additives for mixing at sales/product loading rack. The tank is slightly elevated on a concrete pad with berm. All associated piping is above ground and runs through a conduit to each of the bays below ground. The conduit open-ends at the containment pad.
Additive Tank	in service	gasoline additives	immediately northeast of product loading racks	The tank contains a red-dye additive and is slightly elevated on a concrete pad with berm. All associated piping is above ground and runs through a conduit to each of the bays below ground. The conduit open-ends at the containment pad.
Additive Tanks	in service	gasoline and diesel additives	northeast of product loading racks and west of Tank 44	There are six tanks that used for proprietary fuel additives for mixing at sales/product loading rack; five are currently in-service. The tanks are located on a concrete pad constructed with a berm. The tubing that runs from the tanks to the loading bays runs above ground and/or within a lined conduit trench. Therefore there is no risk to groundwater or soil that wouldn't otherwise bee seen via visual inspections.

Figures



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



N

0 2000
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 6/19/08	FILE:WestRef-A25

FIGURE 1
SITE LOCATION MAP
BLOOMFIELD REFINERY

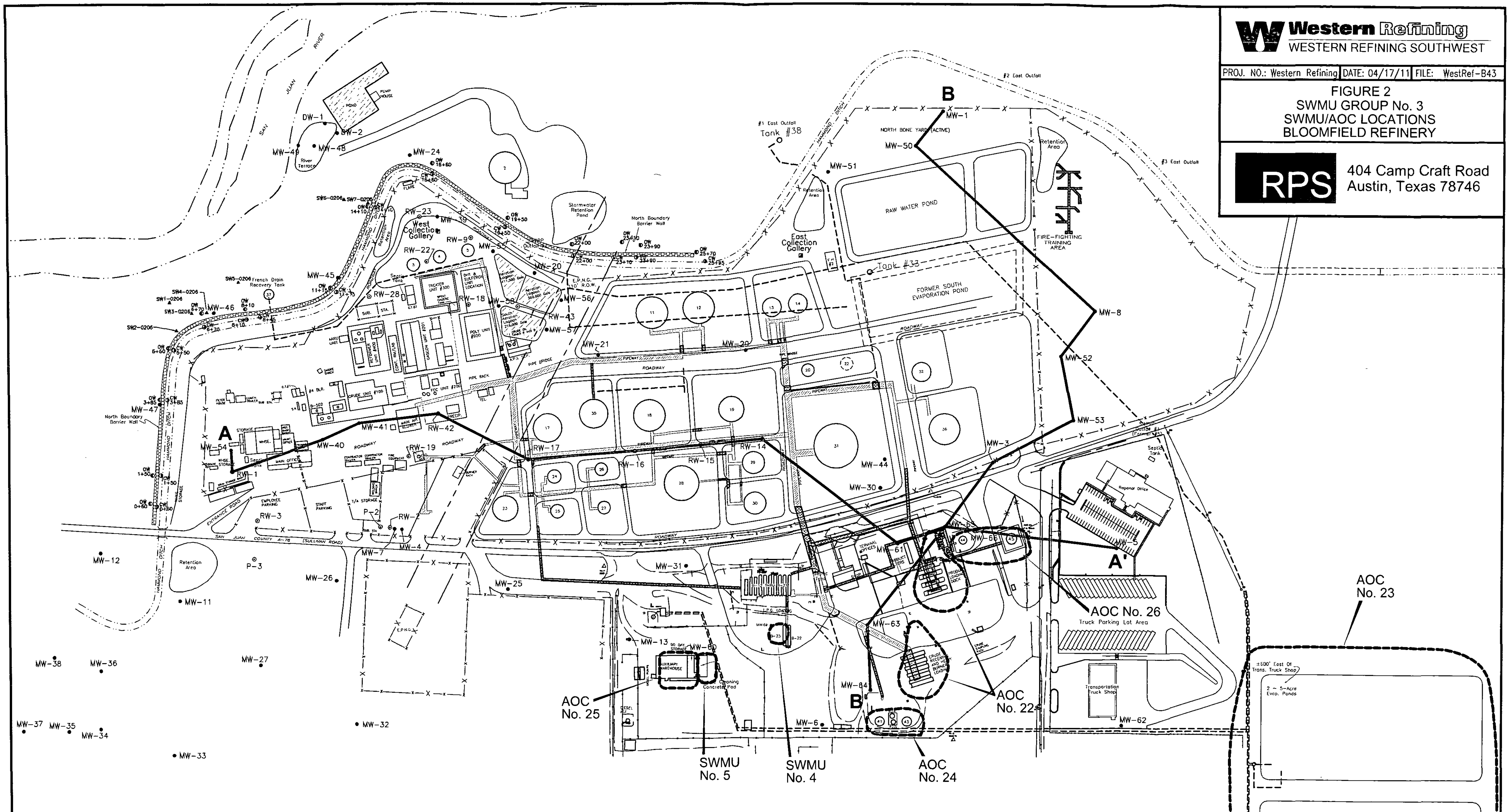
RPS JDC
404 Camp Craft Road
Austin, Texas 78746

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/17/11 | FILE: WestRef-B43

FIGURE 2
SWMU GROUP No. 3
SWMU/AOC LOCATIONS
BLOOMFIELD REFINERY

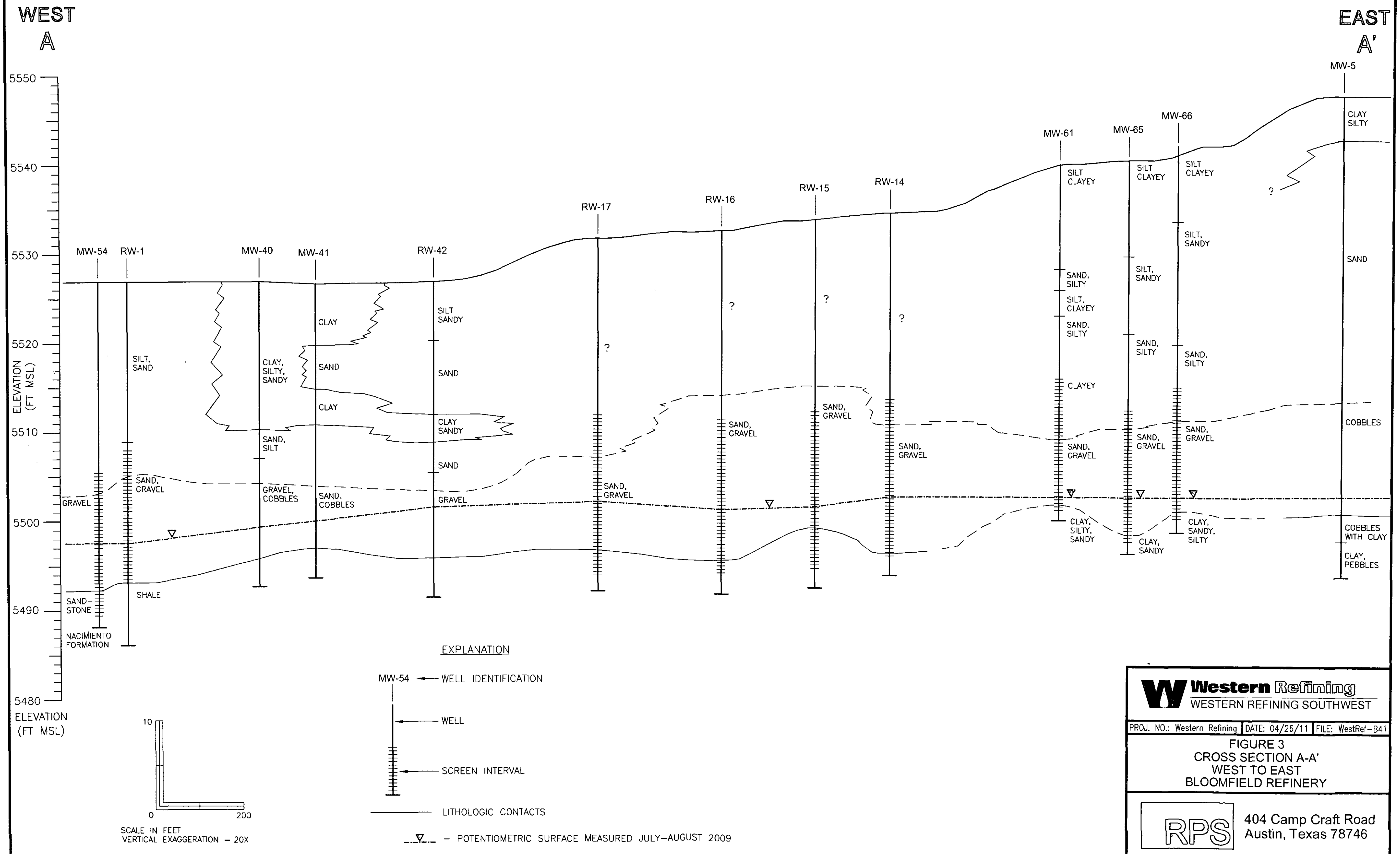
RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

- MW-1 ● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
- RW-1 ⊚ RECOVERY 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
- P-2 PIEZOMETER IDENTIFICATION
- UNDER GROUND PIPE-WAY
- ABOVE GROUND PIPE-WAY
- SLURRY BARRIER WALL
- A —— A' CROSS SECTION LINE
- FORMER TANK LOCATION
- —x——x— FENCE
- ABANDONED UNDERGROUND PIPING (SWMU No. 6)
- UNDER GROUND WASTEWATER PIPING (SWMU No. 3)

0 300
SCALE IN FEET

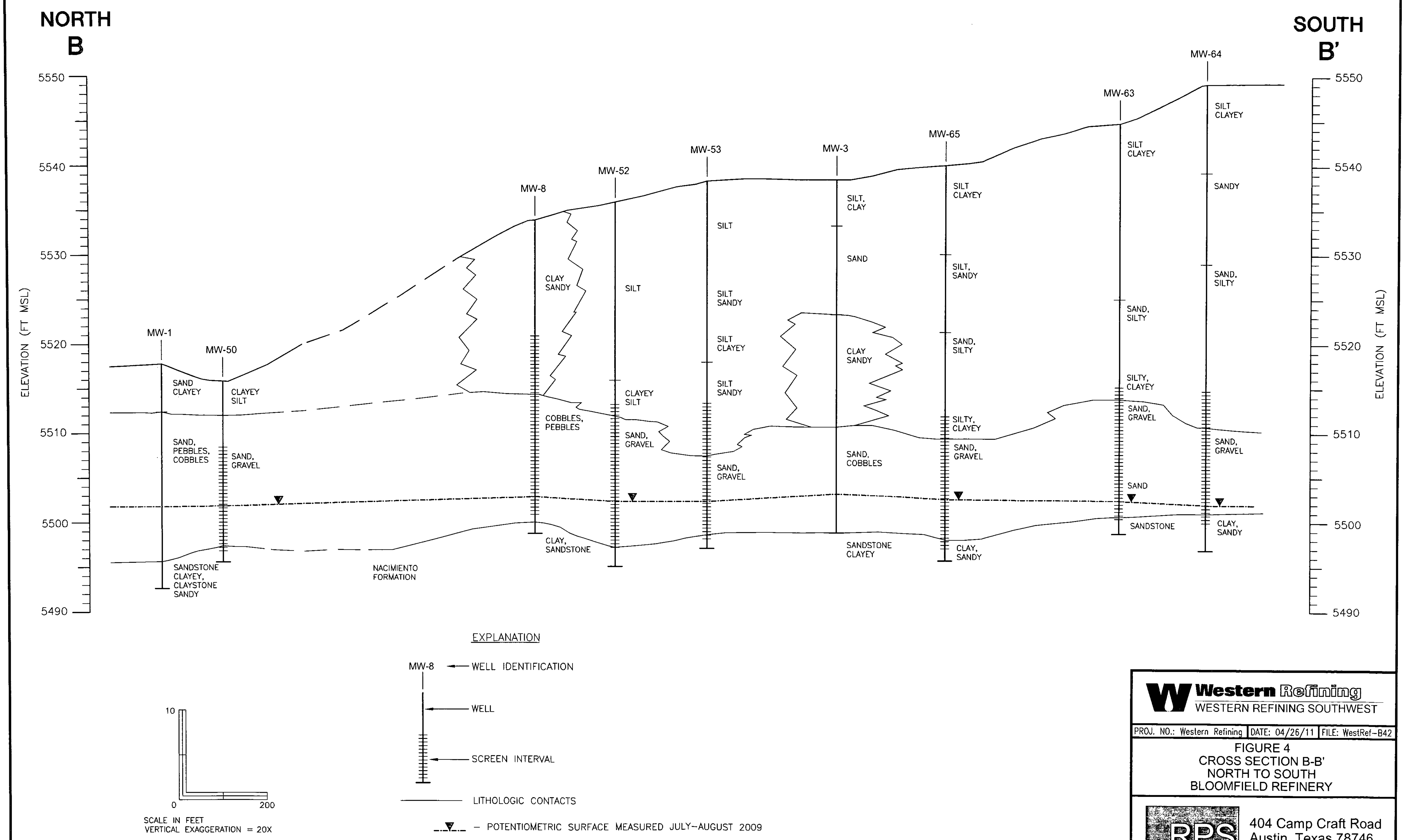


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/26/11	FILE: WestRef-B41

FIGURE 3
CROSS SECTION A-A'
WEST TO EAST
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

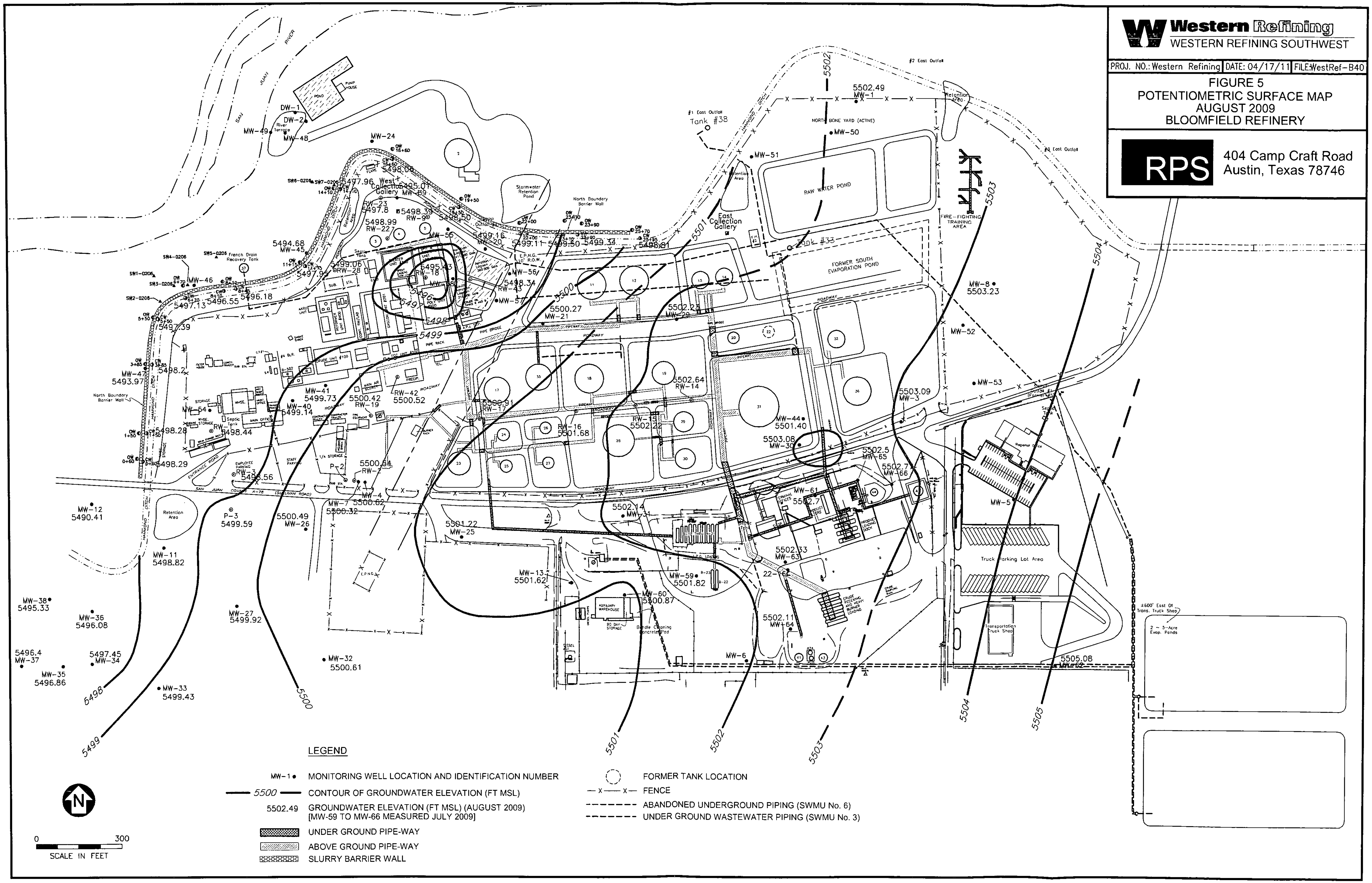


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/26/11	FILE: WestRef-B42

FIGURE 4
CROSS SECTION B-B'
NORTH TO SOUTH
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/17/11 | FILE: WestRef-B40

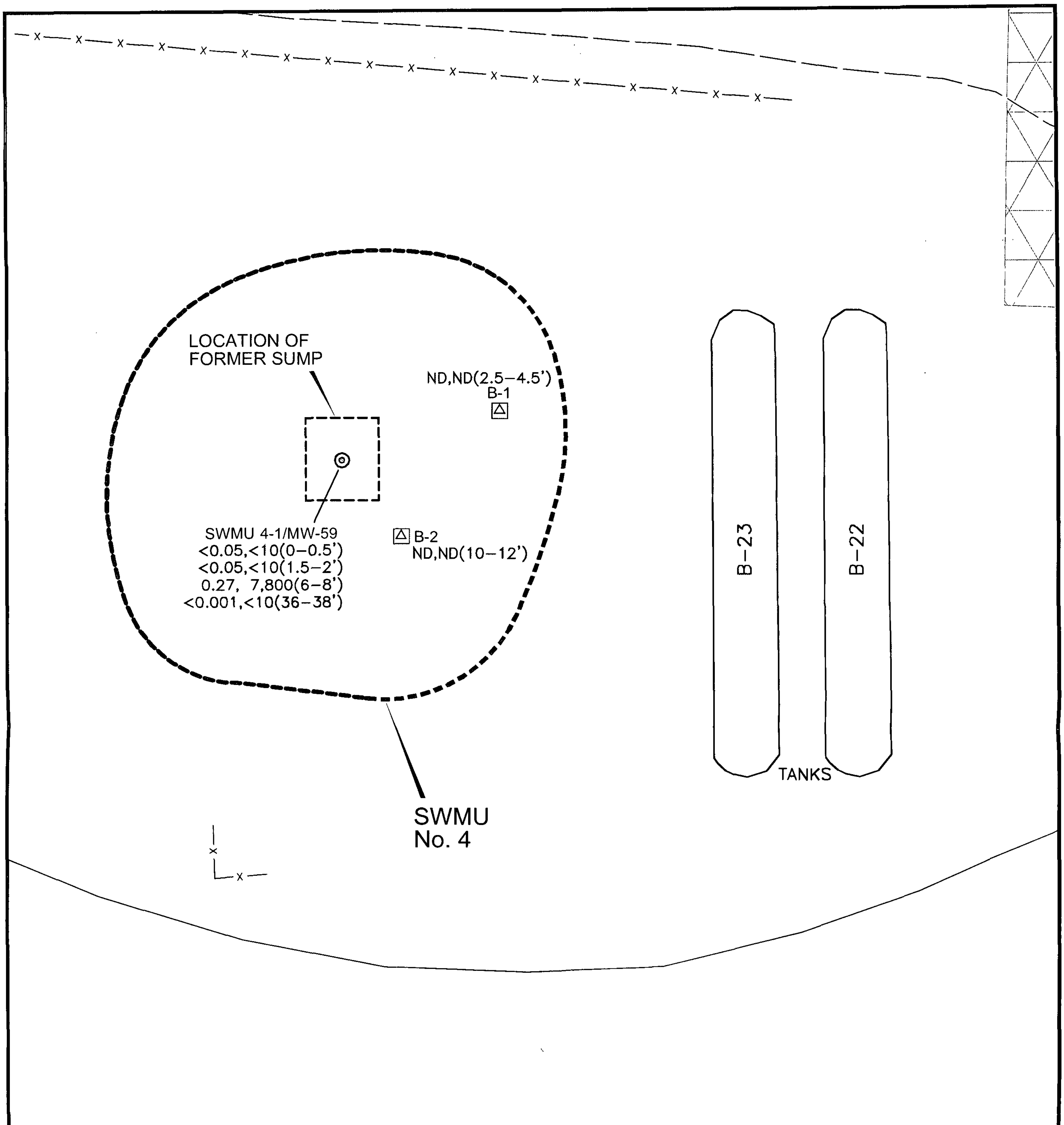
FIGURE 5
POTENTIOMETRIC SURFACE MAP
AUGUST 2009
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-1● MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
5500 CONTOUR OF GROUNDWATER ELEVATION (FT MSL)
5502.49 GROUNDWATER ELEVATION (FT MSL) (AUGUST 2009) [MW-59 TO MW-66 MEASURED JULY 2009]
UNDER GROUND PIPE-WAY
ABOVE GROUND PIPE-WAY
SLURRY BARRIER WALL
FORMER TANK LOCATION
—x—x— FENCE
ABANDONED UNDERGROUND PIPING (SWMU No. 6)
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)

0 300
SCALE IN FEET



LEGEND

<0.05,<10(0–0.5') BENZENE,DRO CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)

APPROXIMATE SWMU No. 4 BOUNDARY

SWMU 4-1/MW-59 MONITORING WELL COMPLETION

B-1 1994 RFI SOIL BORING

—x—x— FENCE

N

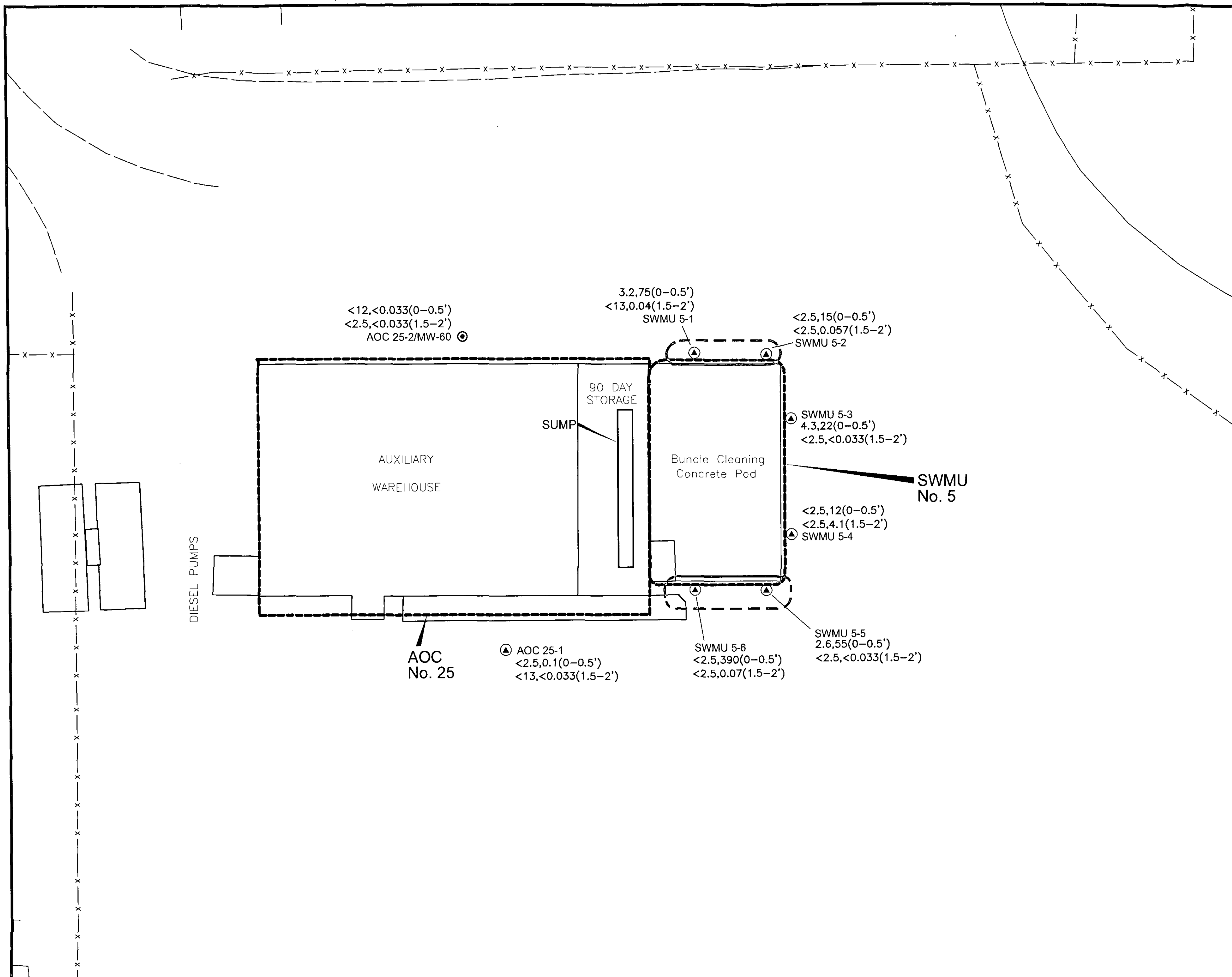
0 20
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/12/11	FILE:WestRef–A34

FIGURE 6
SWMU No. 4
SAMPLE LOCATIONS MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

<2.5,12(0–0.5') ARSENIC,MERCURY CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)

AFFECTED AREA

APPROXIMATE SWMU No. 5 AND AOC No. 25 BOUNDARY

AOC 25-2/MW-60 ⦿ MONITORING WELL COMPLETION

SWMU 5-1 Ⓐ SURFACE SOIL SAMPLE

— X —— X — FENCE

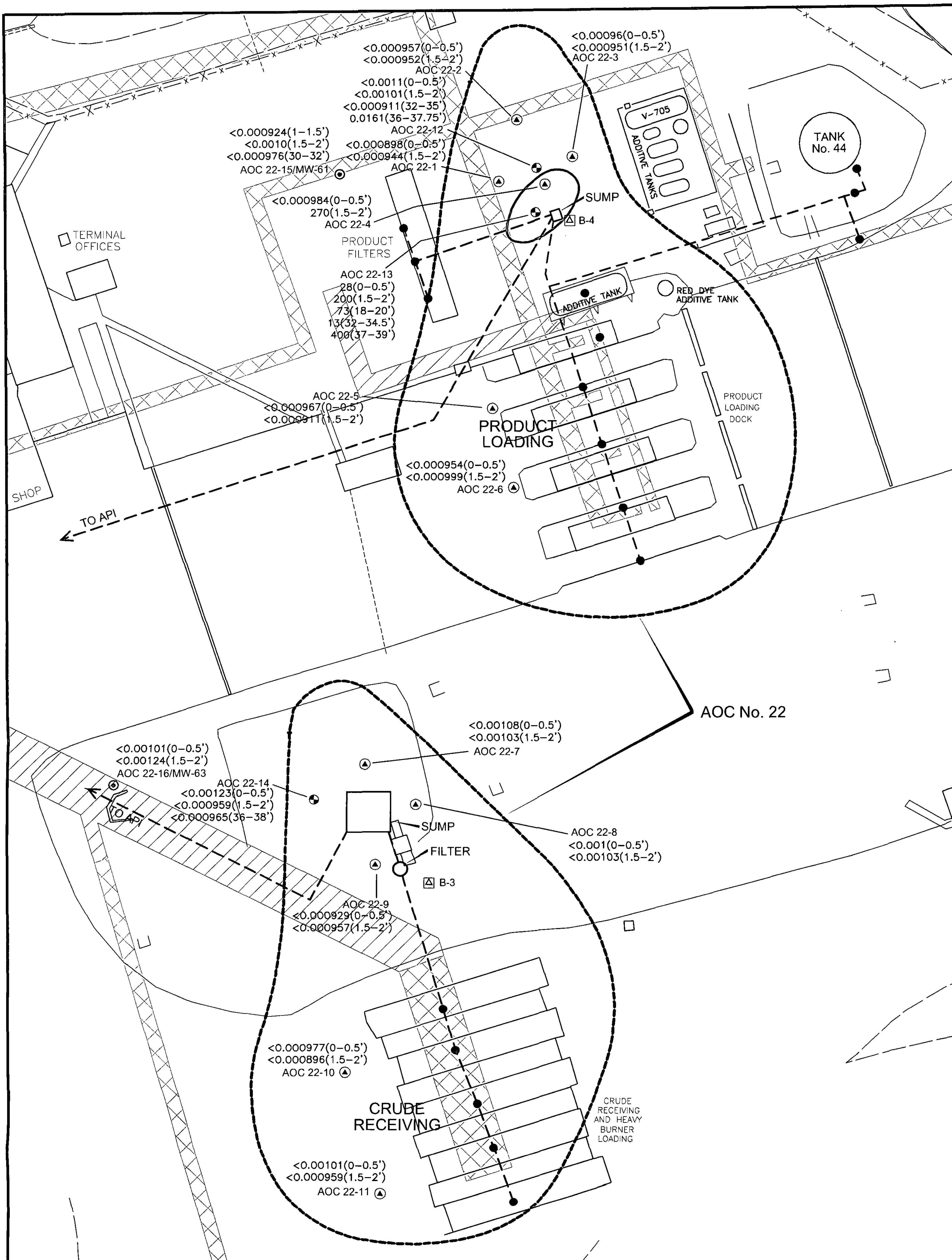
Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/17/11	FILE: WestRefB37

FIGURE 7

SWMU No. 5 AND AOC No. 25
SAMPLE LOCATIONS MAP
BLOOMFIELD REFINERY

RPS 404 Camp Craft Road
Austin, Texas 78746



N

0 40
SCALE IN FEET

LEGEND

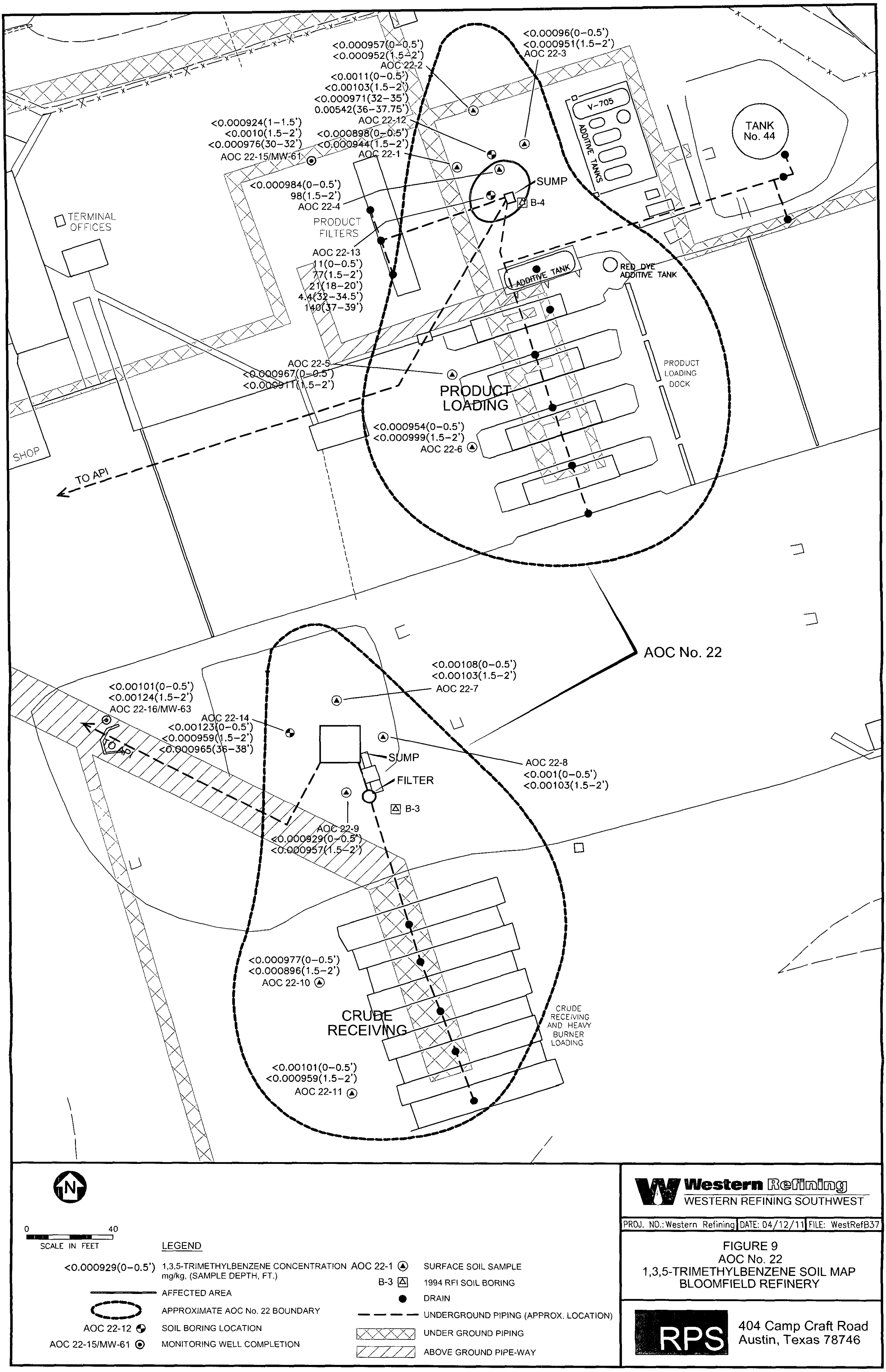
<0.000924(0-0.5')	1,2,4-TRIMETHYLBENZENE CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)	AOC 22-1	SURFACE SOIL SAMPLE
		B-3	1994 RFI SOIL BORING
	AFFECTED AREA		DRAIN
	APPROXIMATE AOC No. 22 BOUNDARY		UNDERGROUND PIPING (APPROX. LOCATION)
AOC 22-12	SOIL BORING LOCATION		UNDER GROUND PIPING
AOC 22-15/MW-61	MONITORING WELL COMPLETION		ABOVE GROUND PIPE-WAY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/12/11 | FILE: WestRefB37

FIGURE 8
AOC No. 22
1,2,4-TRIMETHYLBENZENE SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

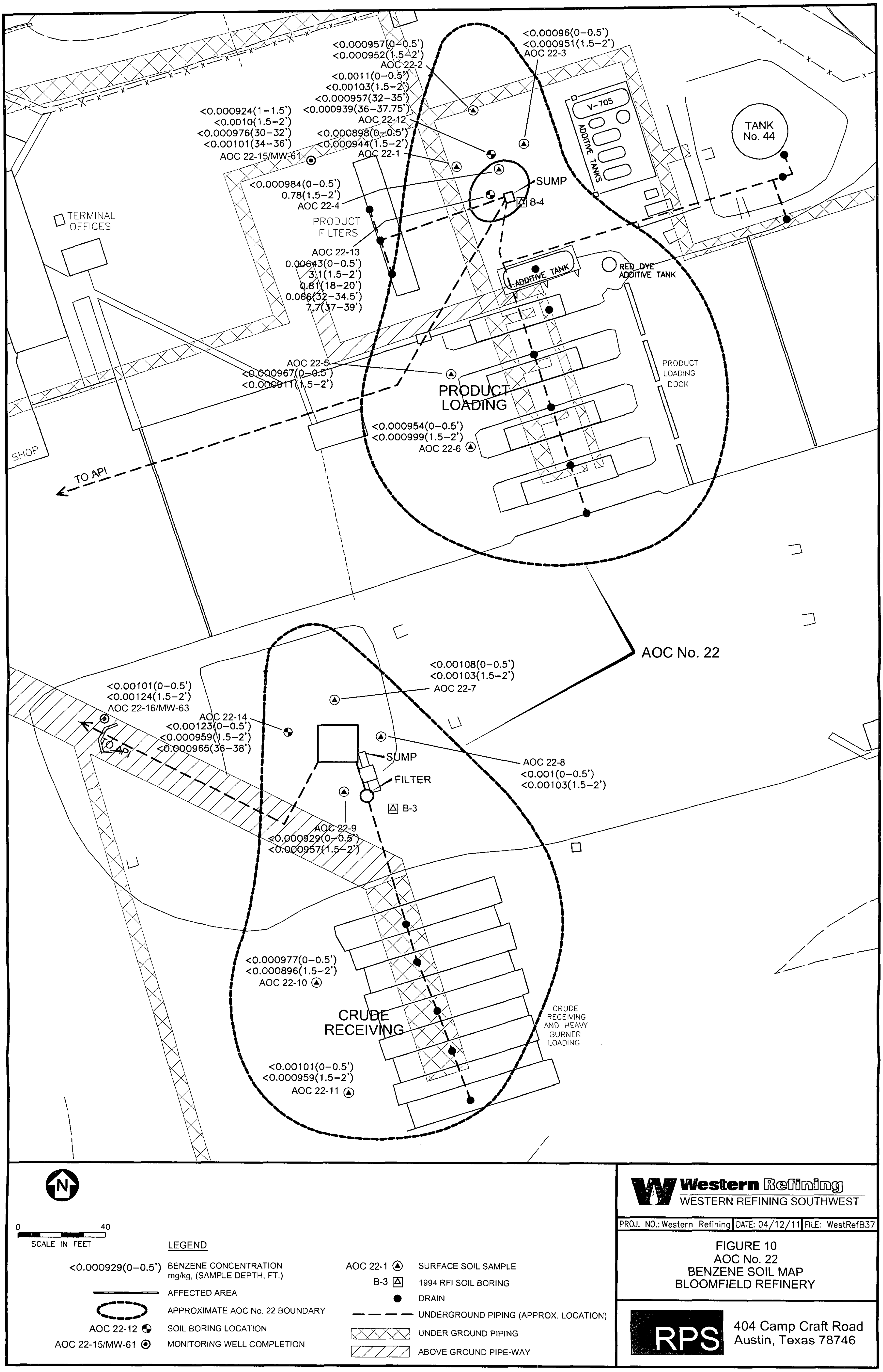


Western Refining
WESTERN REFINING SOUTHWEST

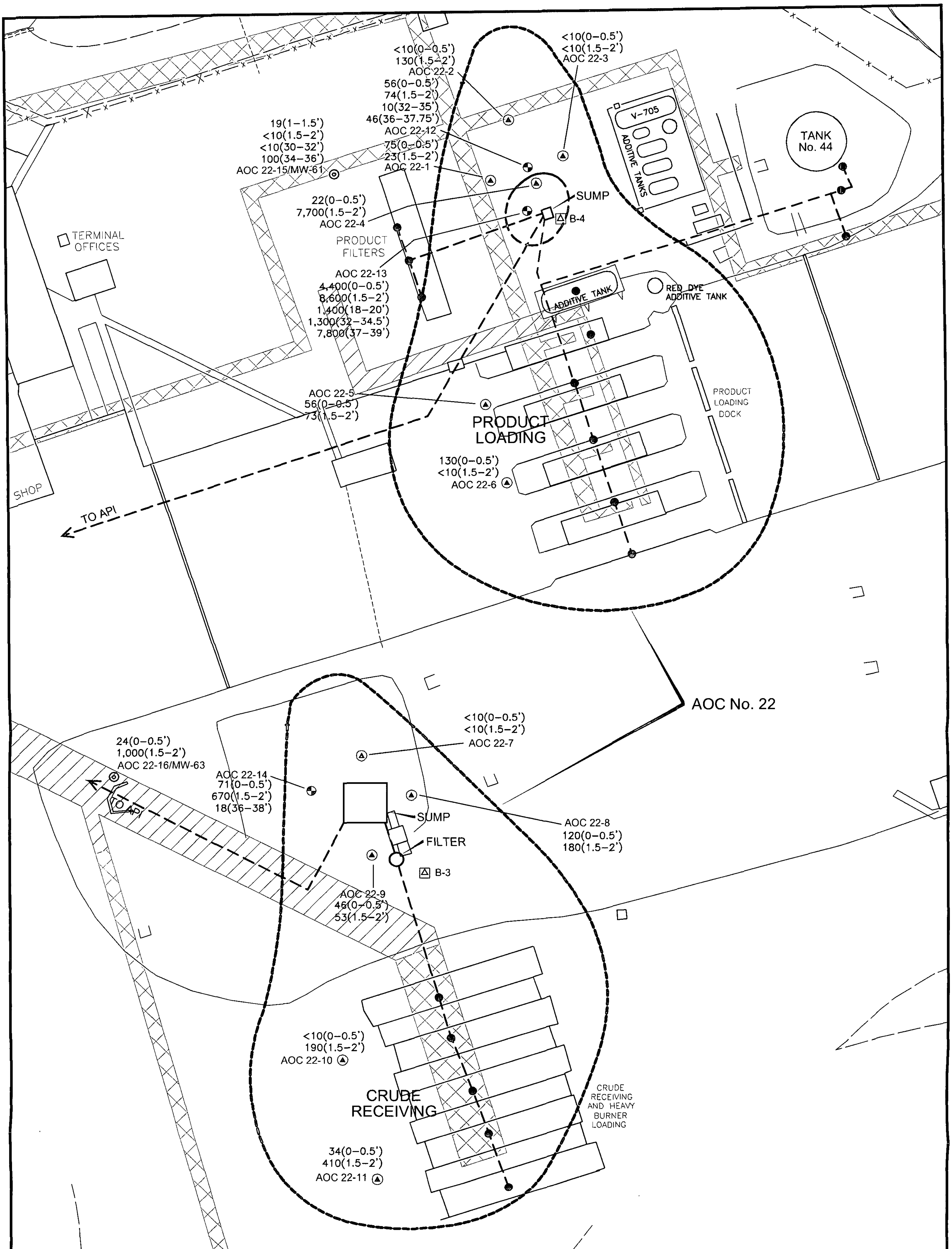
PROJ. NO.: Western Refining	DATE: 04/12/11	FILE: WestRefB37

FIGURE 9
AOC No. 22
1,3,5-TRIMETHYLBENZENE SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



<0.00096(0–0.5')
<0.000951(1.5–2')
AOC 22-3
<0.000957(0–0.5')
<0.000952(1.5–2')
AOC 22-2
<0.0011(0–0.5')
<0.00103(1.5–2')
<0.000957(32–35')
<0.000939(36–37.75')
AOC 22-12
<0.000924(1–1.5')
<0.0010(1.5–2')
<0.000976(30–32')
<0.00101(34–36')
AOC 22-15/MW-61
<0.000898(0–0.5')
<0.000944(1.5–2')
AOC 22-1
V-705
ADDITIVE TANKS
TANK No. 44
<0.000984(0–0.5')
0.78(1.5–2')
AOC 22-4
SUMP
B-4
TERMINAL OFFICES
PRODUCT FILTERS
AOC 22-13
0.00643(0–0.5')
3.1(1.5–2')
0.81(18–20')
0.066(32–34.5')
7.7(37–39')
ADDITIVE TANK
RED DYE ADDITIVE TANK
AOC 22-5
<0.000967(0–0.5')
<0.000911(1.5–2')
PRODUCT LOADING
PRODUCT LOADING DOCK
<0.000954(0–0.5')
<0.000999(1.5–2')
AOC 22-6
SHOP
TO API
AOC No. 22
<0.00108(0–0.5')
<0.00103(1.5–2')
AOC 22-7
<0.00101(0–0.5')
<0.00124(1.5–2')
AOC 22-16/MW-63
AOC 22-14
<0.00123(0–0.5')
<0.000959(1.5–2')
<0.000965(36–38')
TO API
SUMP
FILTER
AOC 22-8
<0.001(0–0.5')
<0.00103(1.5–2')
B-3
AOC 22-9
<0.000929(0–0.5')
<0.000957(1.5–2')
<0.000977(0–0.5')
<0.000896(1.5–2')
AOC 22-10
CRUDE RECEIVING
CRUDE RECEIVING AND HEAVY BURNER LOADING
<0.00101(0–0.5')
<0.000959(1.5–2')
AOC 22-11
N
0 40
SCALE IN FEET
LEGEND
<0.000929(0–0.5') BENZENE CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)
AFFECTED AREA
APPROXIMATE AOC No. 22 BOUNDARY
AOC 22-12 SOIL BORING LOCATION
AOC 22-15/MW-61 MONITORING WELL COMPLETION
AOC 22-1 SURFACE SOIL SAMPLE
B-3 1994 RFI SOIL BORING
DRAIN
UNDERGROUND PIPING (APPROX. LOCATION)
UNDER GROUND PIPING
ABOVE GROUND PIPE-WAY
Western Refining
WESTERN REFINING SOUTHWEST
PROJ. NO.: Western Refining
DATE: 04/12/11
FILE: WestRefB37
FIGURE 10
AOC No. 22
BENZENE SOIL MAP
BLOOMFIELD REFINERY
RPS
404 Camp Craft Road
Austin, Texas 78746



N

0 40
SCALE IN FEET

LEGEND

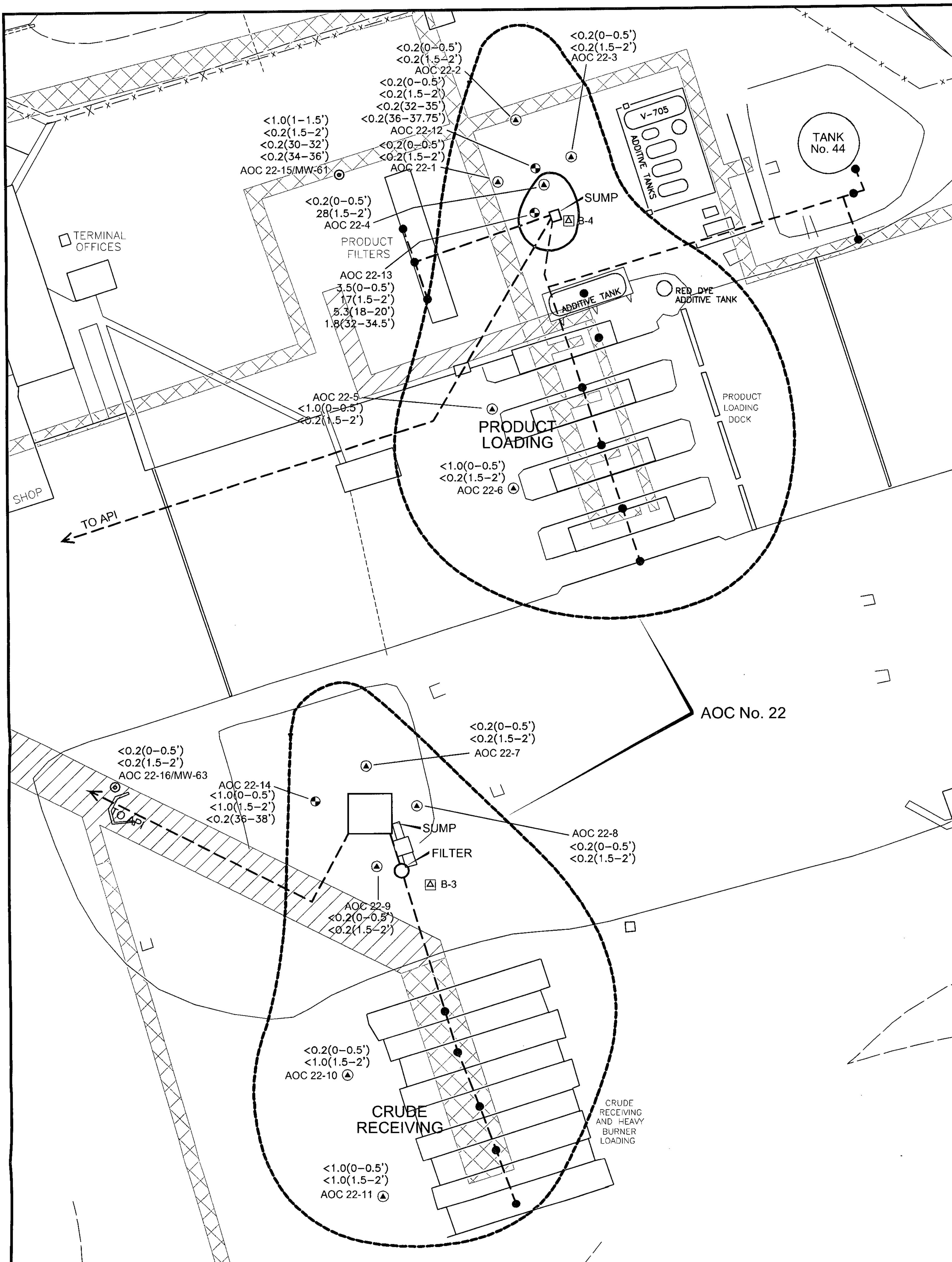
120(0–0.5')	DIESEL RANGE ORGANICS (DRO) CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)
	AFFECTED AREA
	APPROXIMATE AOC No. 22 BOUNDARY
AOC 22-12	SOIL BORING LOCATION
AOC 22-15/MW-61	MONITORING WELL COMPLETION
AOC 22-1	SURFACE SOIL SAMPLE
B-3	1994 RFI SOIL BORING
	DRAIN
	UNDERGROUND PIPING (APPROX. LOCATION)
	UNDER GROUND PIPING
	ABOVE GROUND PIPE-WAY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/12/11 | FILE: WestRefB37

FIGURE 11
AOC No. 22
DIESEL RANGE ORGANICS SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



N

0 40
SCALE IN FEET

LEGEND

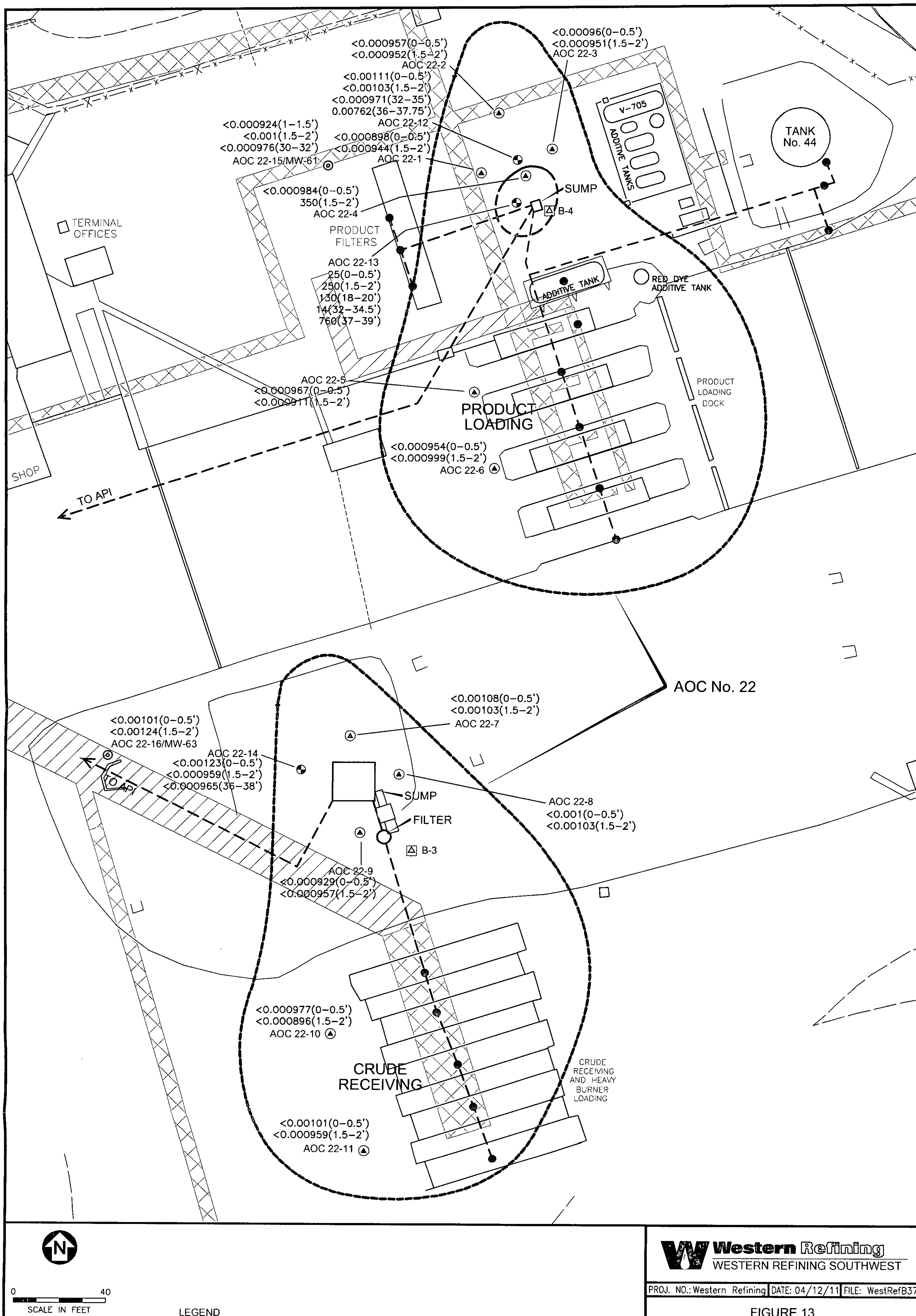
<0.2(0-0.5')	NAPHTHALENE CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)	AOC 22-1	SURFACE SOIL SAMPLE
	AFFECTED AREA	B-3	1994 RFI SOIL BORING
	APPROXIMATE AOC No. 22 BOUNDARY		DRAIN
AOC 22-12	SOIL BORING LOCATION		UNDERGROUND PIPING (APPROX. LOCATION)
AOC 22-15/MW-61	MONITORING WELL COMPLETION		UNDER GROUND PIPING
			ABOVE GROUND PIPE-WAY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/12/11 | FILE: WestRefB37

FIGURE 12
AOC No. 22
NAPHTHALENE SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

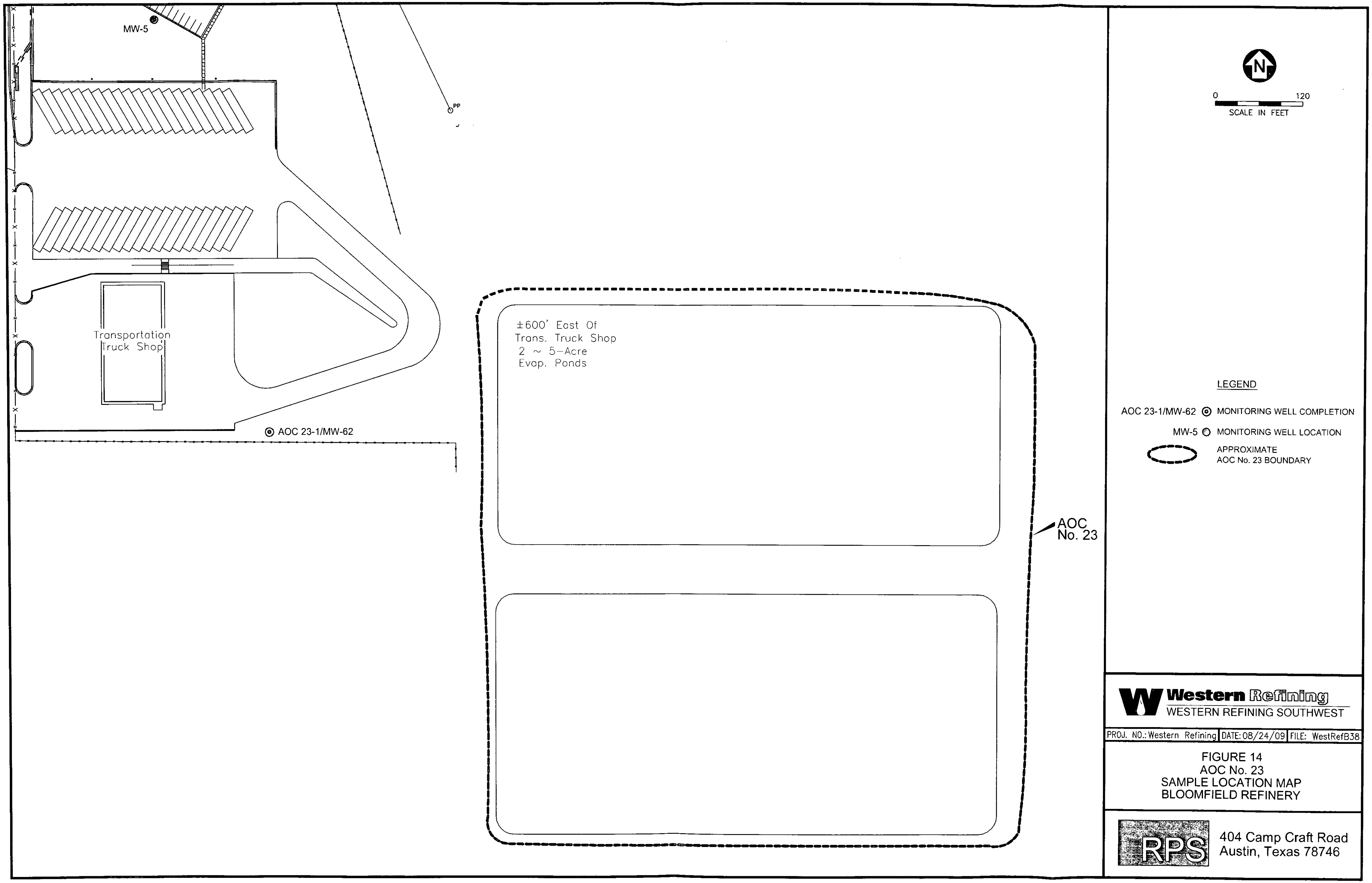
<0.000929(0–0.5')	XYLENES CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)
	AFFECTED AREA
	APPROXIMATE AOC No. 22 BOUNDARY
AOC 22-12	SOIL BORING LOCATION
AOC 22-15/MW-61	MONITORING WELL COMPLETION
AOC 22-1	SURFACE SOIL SAMPLE
B-3	1994 RFI SOIL BORING
	DRAIN
	UNDERGROUND PIPING (APPROX. LOCATION)
	UNDER GROUND PIPING
	ABOVE GROUND PIPE-WAY

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/12/11 | FILE: WestRefB37

FIGURE 13
AOC No. 22
XYLENES SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

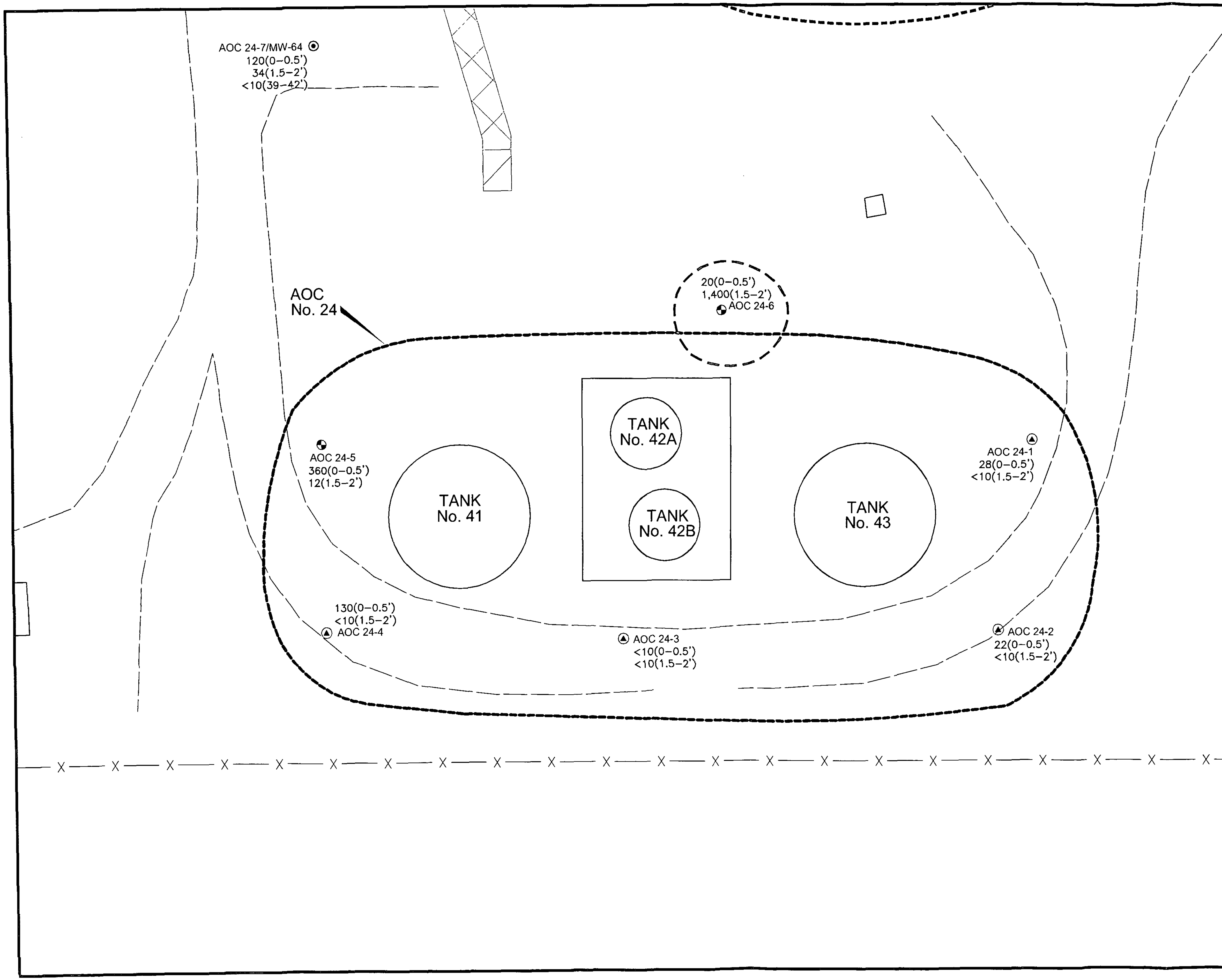


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 08/24/09	FILE: WestRefB38

FIGURE 14
AOC No. 23
SAMPLE LOCATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

20(0–0.5') DIESEL RANGE ORGANICS (DRO) SOIL CONCENTRATION mg/kg, (SAMPLE DEPTH, FT.)

AFFECTED AREA

APPROXIMATE AOC No. 24 BOUNDARY

AOC 24-5 SOIL BORING LOCATION

AOC 24-7/MW-64 MONITORING WELL COMPLETION

AOC 24-1 SURFACE SOIL SAMPLE

UNDER GROUND PIPING

ABOVE GROUND PIPE-WAY

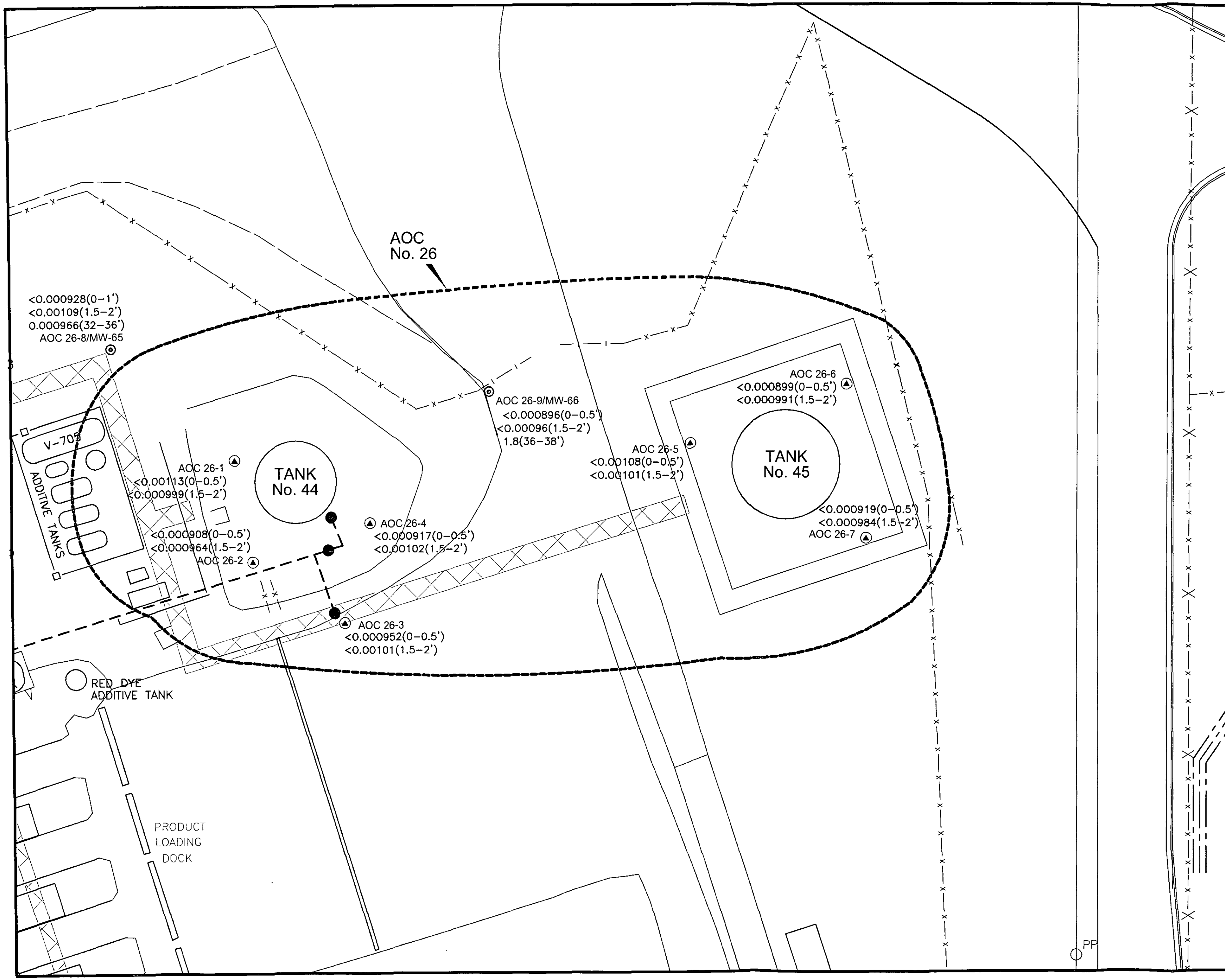
— X — X — FENCE

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/12/11	FILE: WestRefB37

FIGURE 15
AOC No. 24
DIESEL RANGE ORGANICS SOIL MAP
BLOOMFIELD REFINERY

RPS 404 Camp Craft Road
Austin, Texas 78746

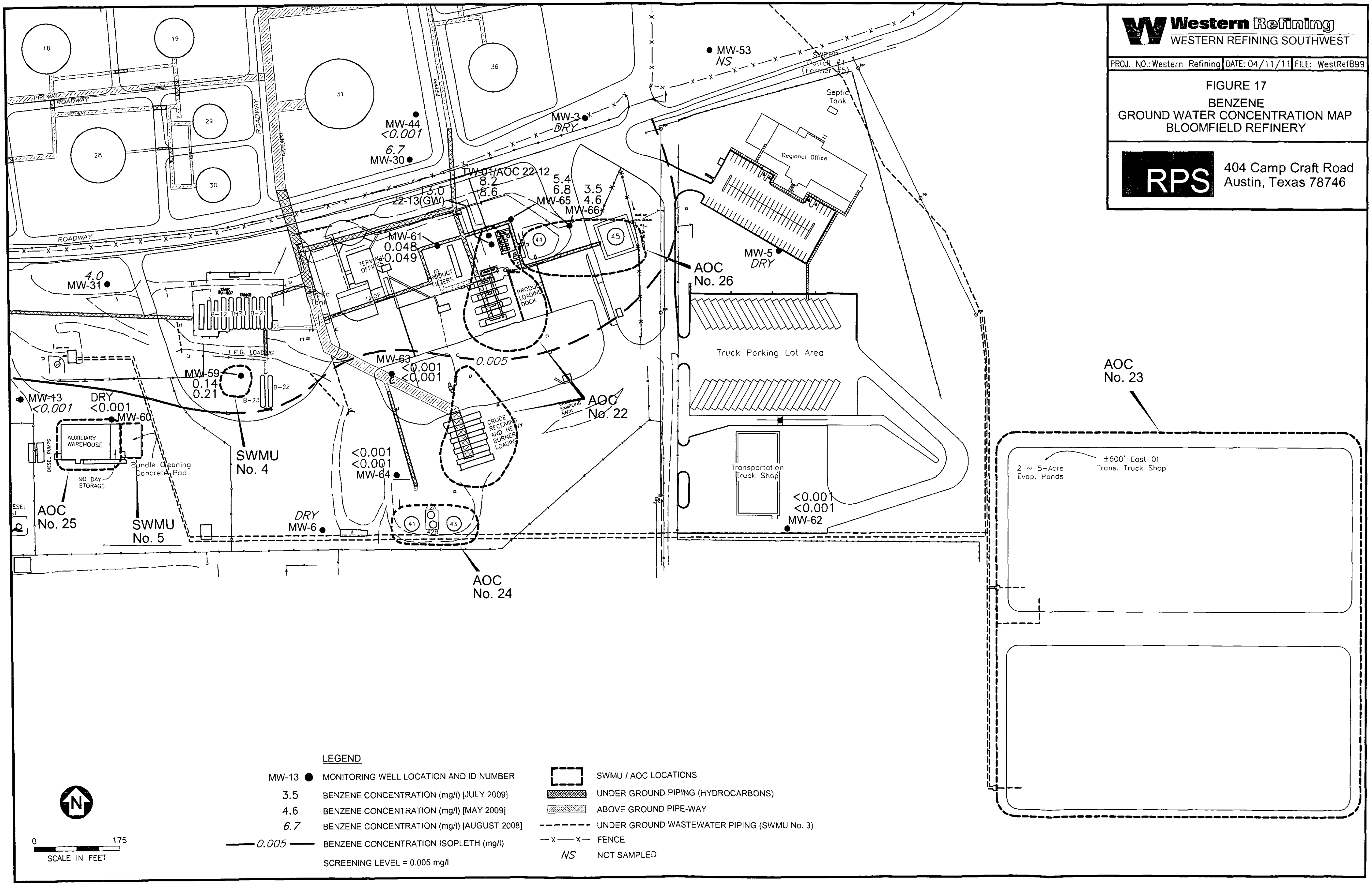


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/17/11	FILE: WestRefB37

FIGURE 16
AOC No. 26
BENZENE SOIL MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

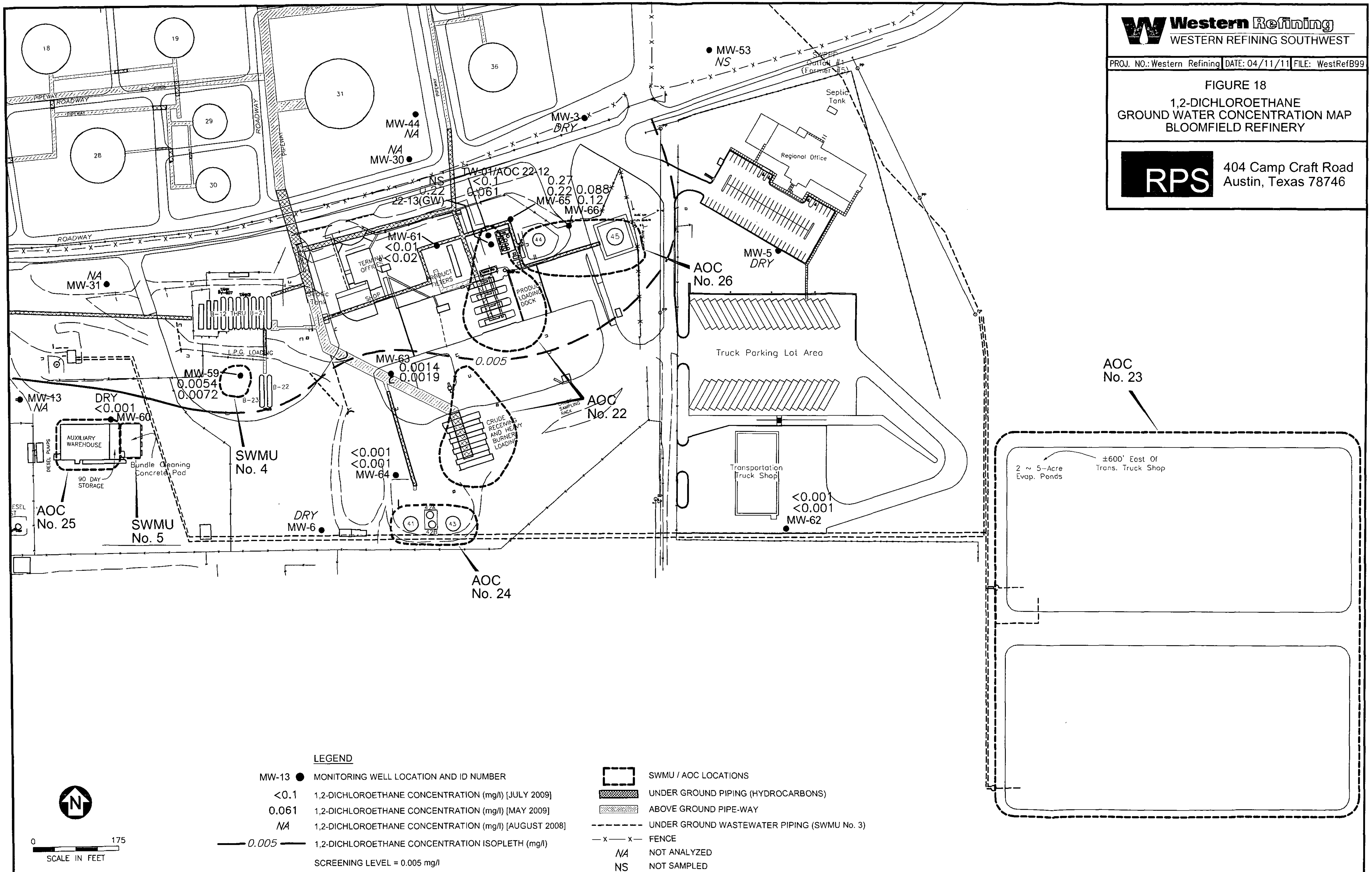


Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB99

FIGURE 17
BENZENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB99

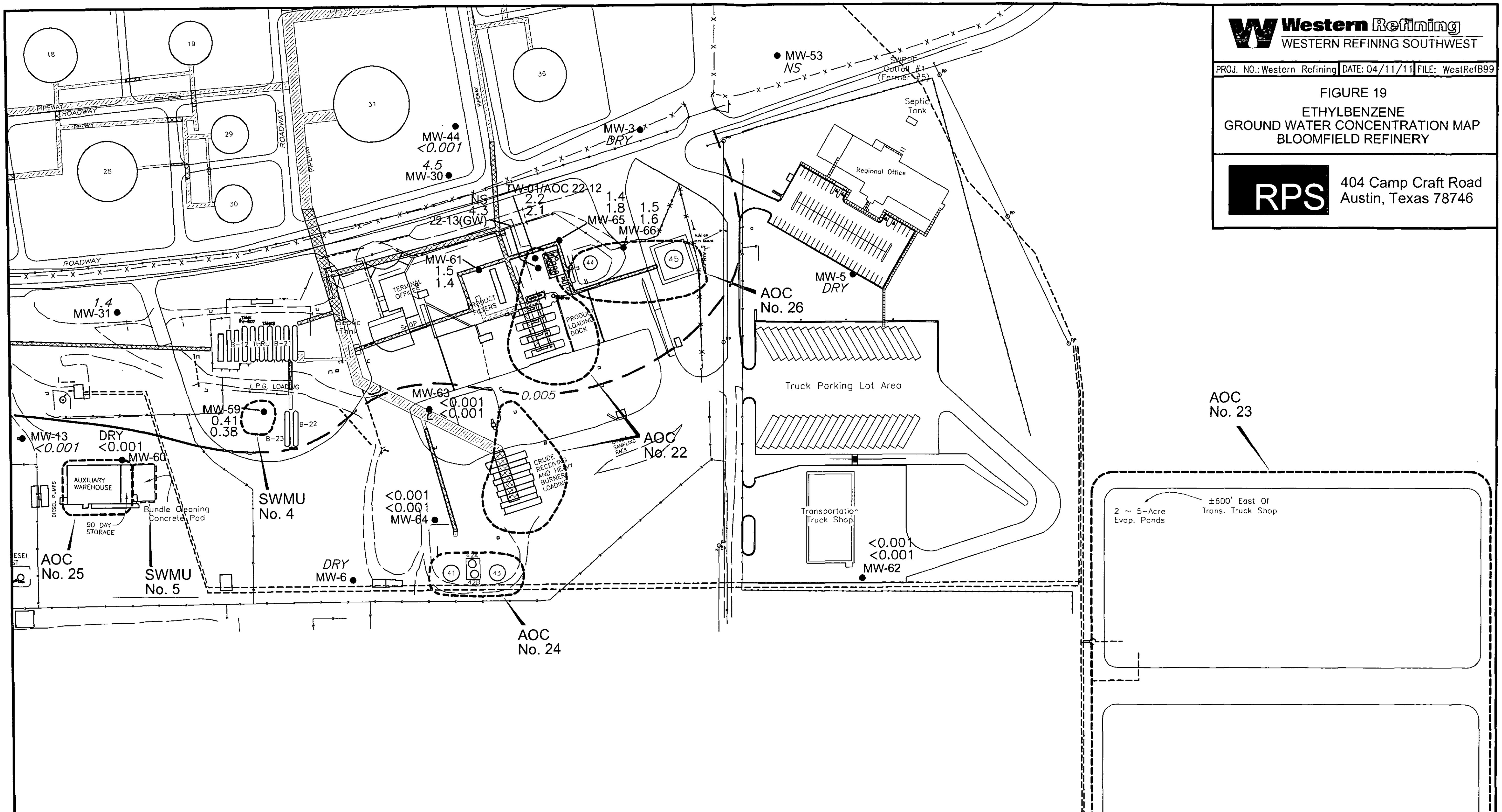
FIGURE 18
1,2-DICHLOROETHANE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
<0.1 1,2-DICHLOROETHANE CONCENTRATION (mg/l) [JULY 2009]
0.061 1,2-DICHLOROETHANE CONCENTRATION (mg/l) [MAY 2009]
NA 1,2-DICHLOROETHANE CONCENTRATION (mg/l) [AUGUST 2008]
— 0.005 — 1,2-DICHLOROETHANE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 0.005 mg/l

SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NA NOT ANALYZED
NS NOT SAMPLED



LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER

3.5 ETHYLBENZENE CONCENTRATION (mg/l) [JULY 2009]

0.41 ETHYLBENZENE CONCENTRATION (mg/l) [MAY 2009]

4.5 ETHYLBENZENE CONCENTRATION (mg/l) [AUGUST 2008]

—*0.005*— ETHYLBENZENE CONCENTRATION ISOPLETH (mg/l)

SCREENING LEVEL = 0.7 mg/l

SWMU / AOC LOCATIONS

UNDER GROUND PIPING (HYDROCARBONS)

ABOVE GROUND PIPE-WAY

UNDER GROUND WASTEWATER PIPING (SWMU No. 3)

—x—x— FENCE

NS NOT SAMPLED

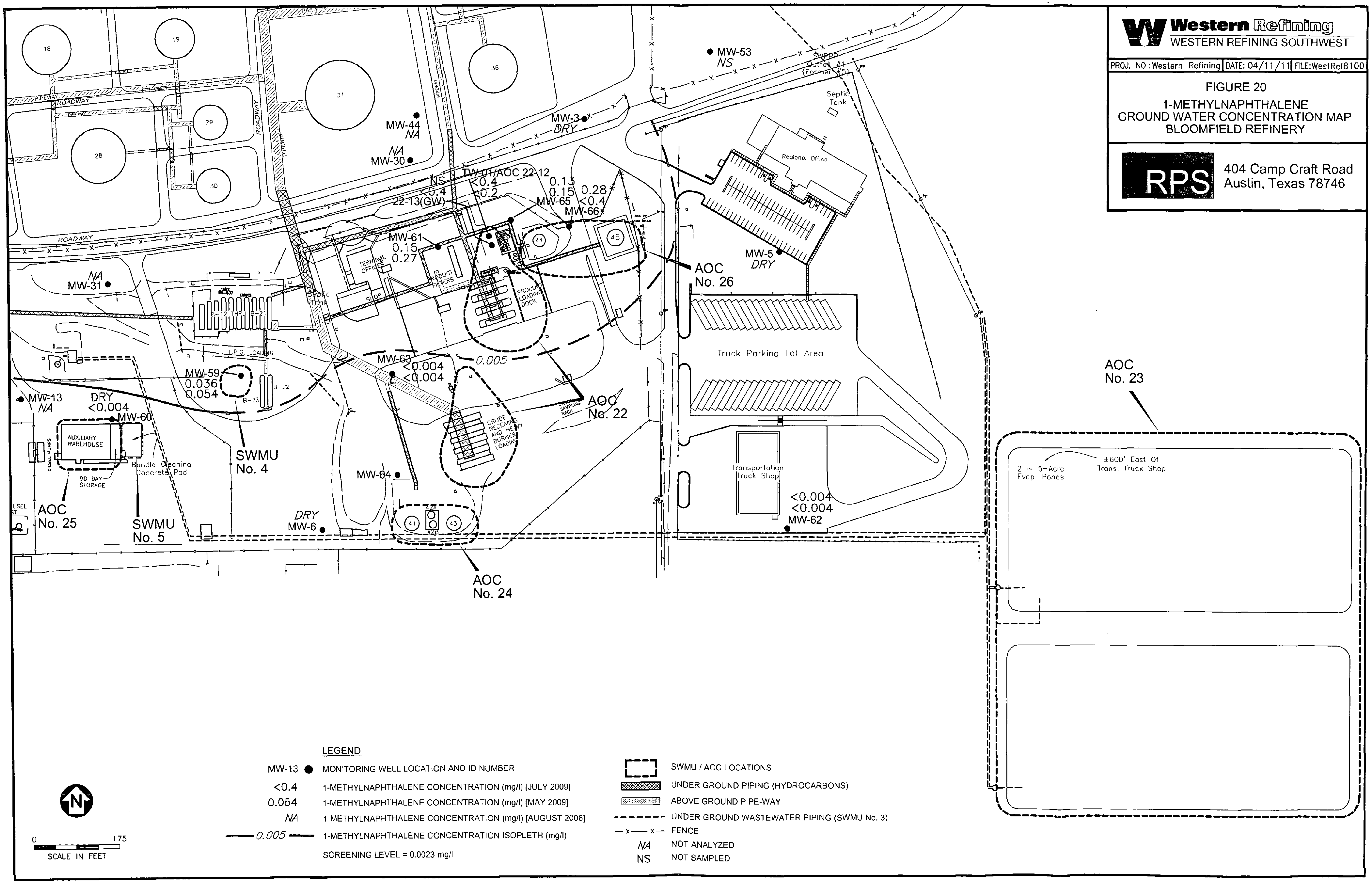
0 175
SCALE IN FEET

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB99

FIGURE 19
ETHYLBENZENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB100

FIGURE 20
1-METHYLNAPHTHALENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

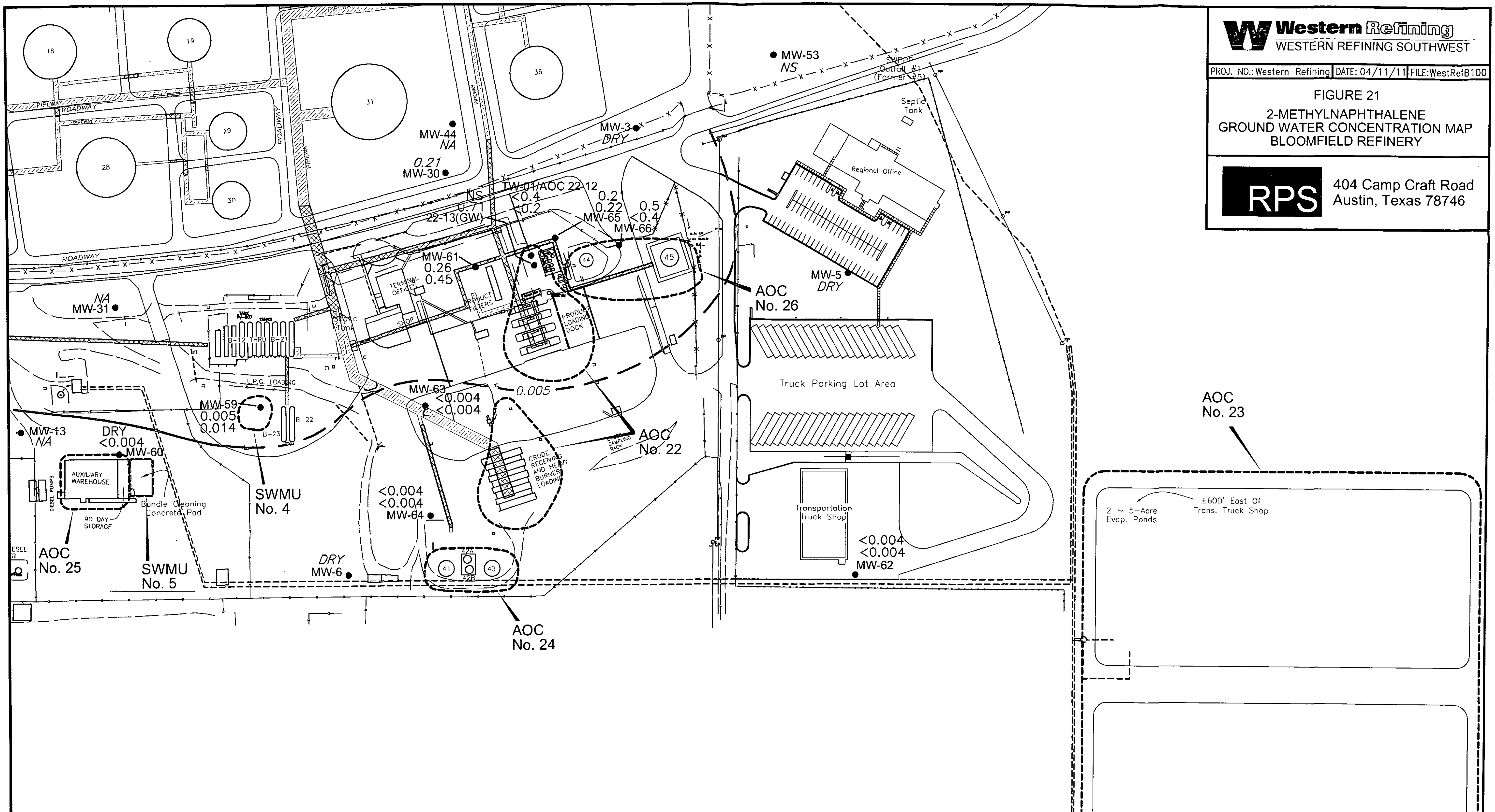
MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
<0.4	1-METHYLNAPHTHALENE CONCENTRATION (mg/l) [JULY 2009]
0.054	1-METHYLNAPHTHALENE CONCENTRATION (mg/l) [MAY 2009]
NA	1-METHYLNAPHTHALENE CONCENTRATION (mg/l) [AUGUST 2008]
0.005	1-METHYLNAPHTHALENE CONCENTRATION ISOPLETH (mg/l)
	SCREENING LEVEL = 0.0023 mg/l
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x—	FENCE
NA	NOT ANALYZED
NS	NOT SAMPLED

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB100

FIGURE 21
2-METHYLNAPHTHALENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

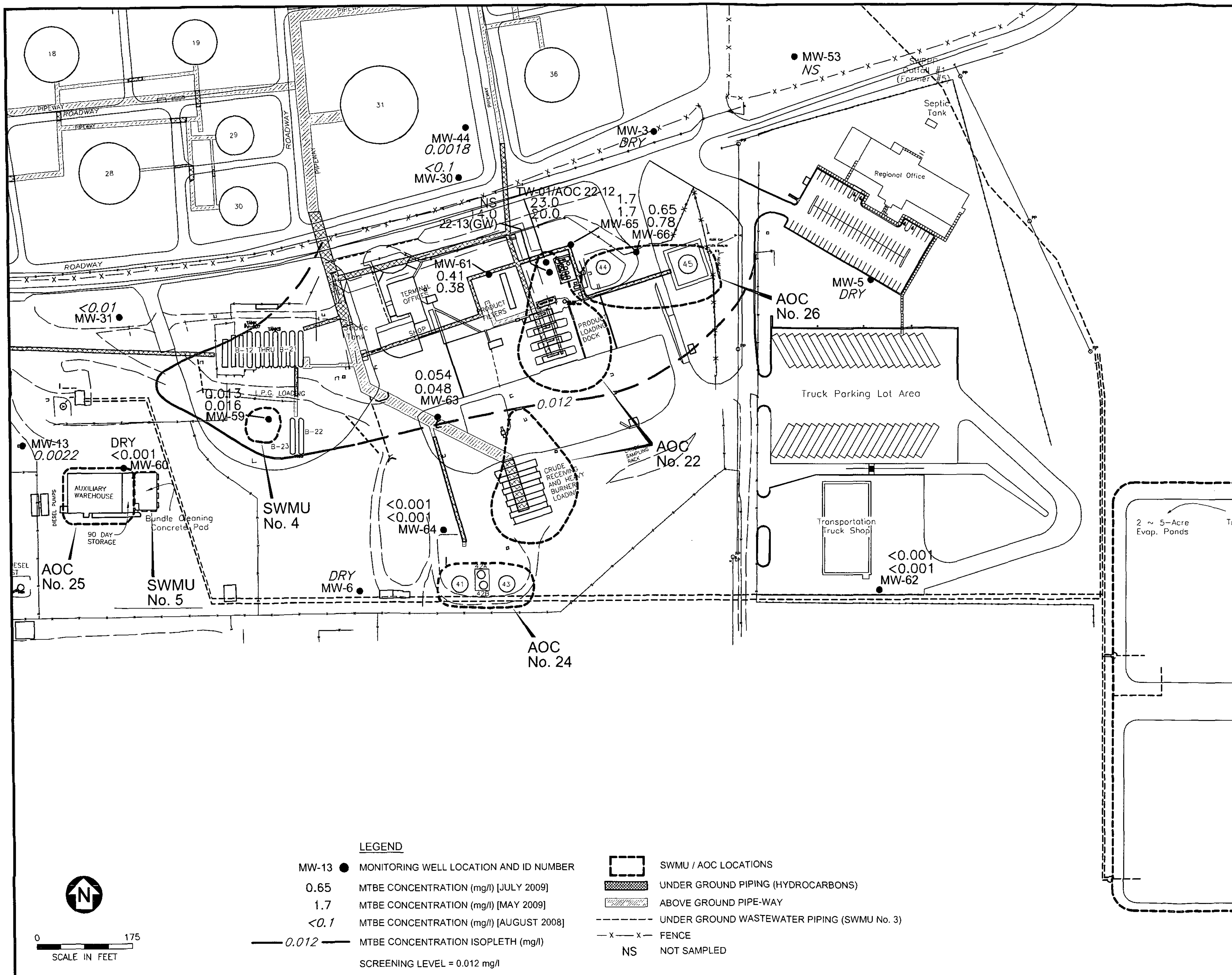
RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
<0.2	2-METHYLNAPHTHALENE CONCENTRATION (mg/l) [JULY 2009]
0.014	2-METHYLNAPHTHALENE CONCENTRATION (mg/l) [MAY 2009]
0.21	2-METHYLNAPHTHALENE CONCENTRATION (mg/l) [AUGUST 2008]
— *0.005* —	2-METHYLNAPHTHALENE CONCENTRATION ISOPLETH (mg/l)
	SCREENING LEVEL = 0.15 mg/l
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
- - - - - -	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x——x—	FENCE
NA	NOT ANALYZED
NS	NOT SAMPLED

0 175
SCALE IN FEET



LEGEND

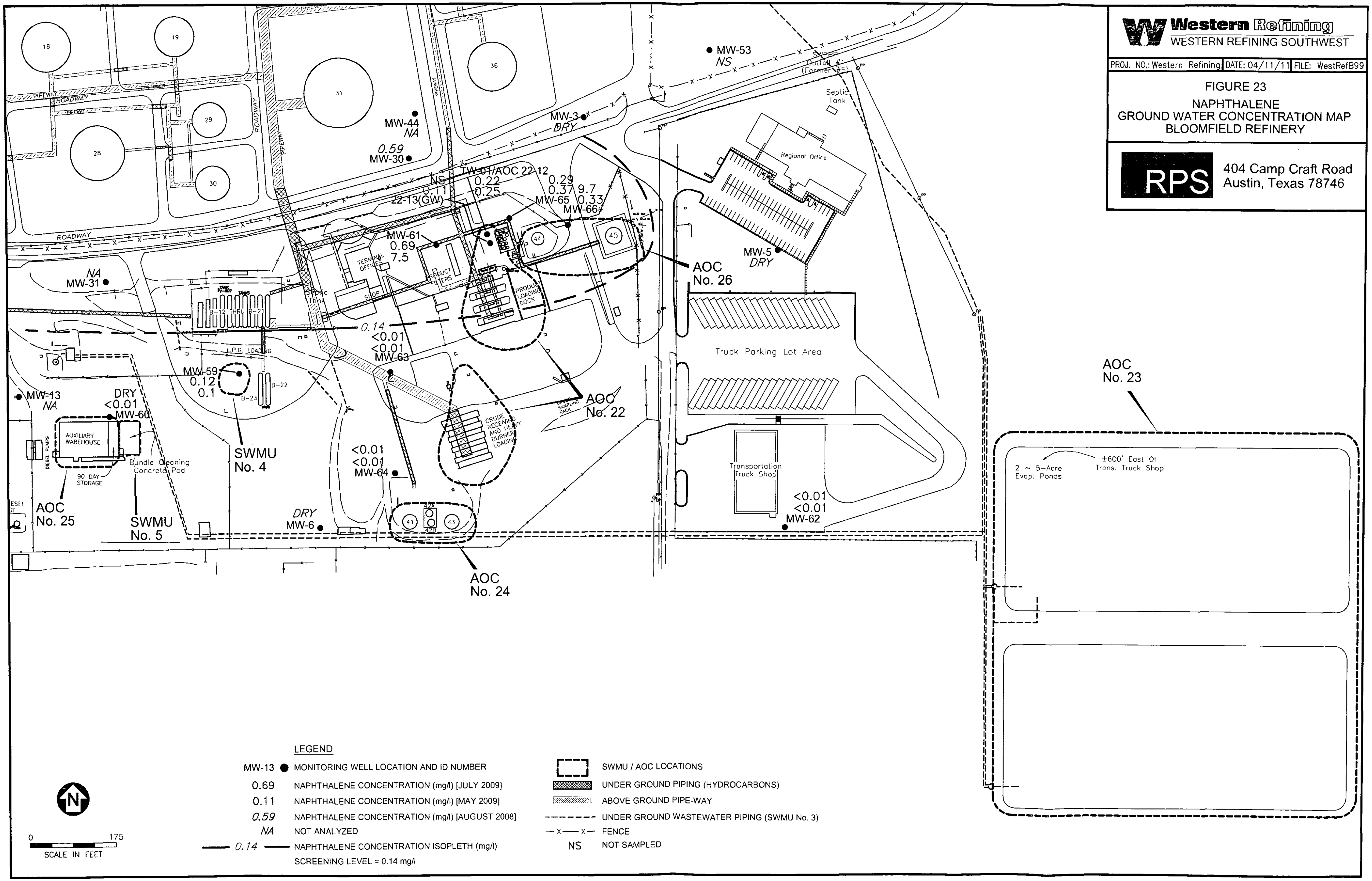
MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
0.65	MTBE CONCENTRATION (mg/l) [JULY 2009]
1.7	MTBE CONCENTRATION (mg/l) [MAY 2009]
<0.1	MTBE CONCENTRATION (mg/l) [AUGUST 2008]
— *0.012* —	MTBE CONCENTRATION ISOPLETH (mg/l)
	SCREENING LEVEL = 0.012 mg/l
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
- - - - -	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x—	FENCE
NS	NOT SAMPLED

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB99

FIGURE 22
MTBE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB99

FIGURE 23
NAPHTHALENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

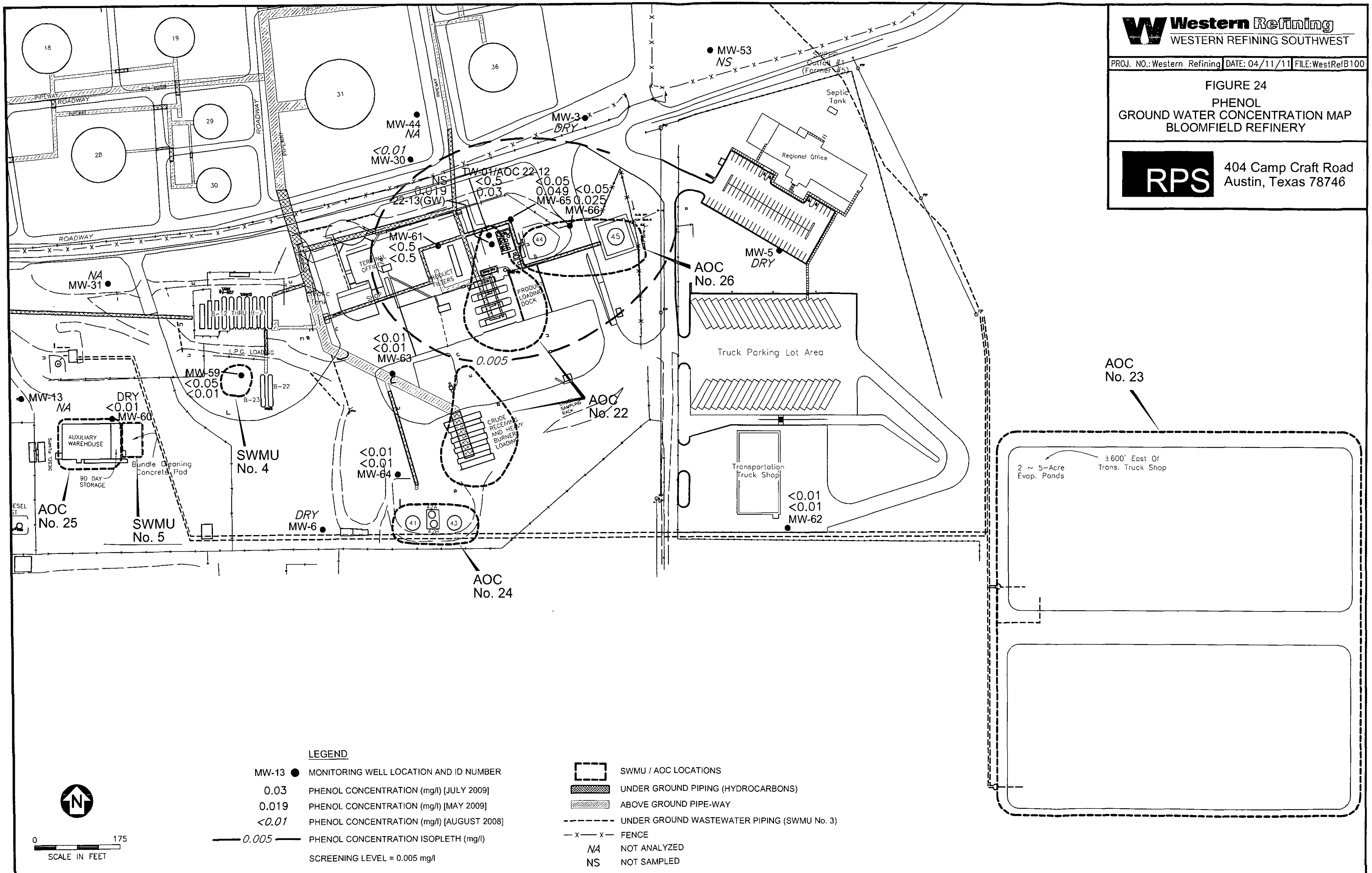
LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
0.69 NAPHTHALENE CONCENTRATION (mg/l) [JULY 2009]
0.11 NAPHTHALENE CONCENTRATION (mg/l) [MAY 2009]
0.59 NAPHTHALENE CONCENTRATION (mg/l) [AUGUST 2008]
NA NOT ANALYZED
— *0.14* — NAPHTHALENE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 0.14 mg/l

SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
------- UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NS NOT SAMPLED

0 175
SCALE IN FEET

N



Western Refining
WESTERN REFINING SOUTHWEST

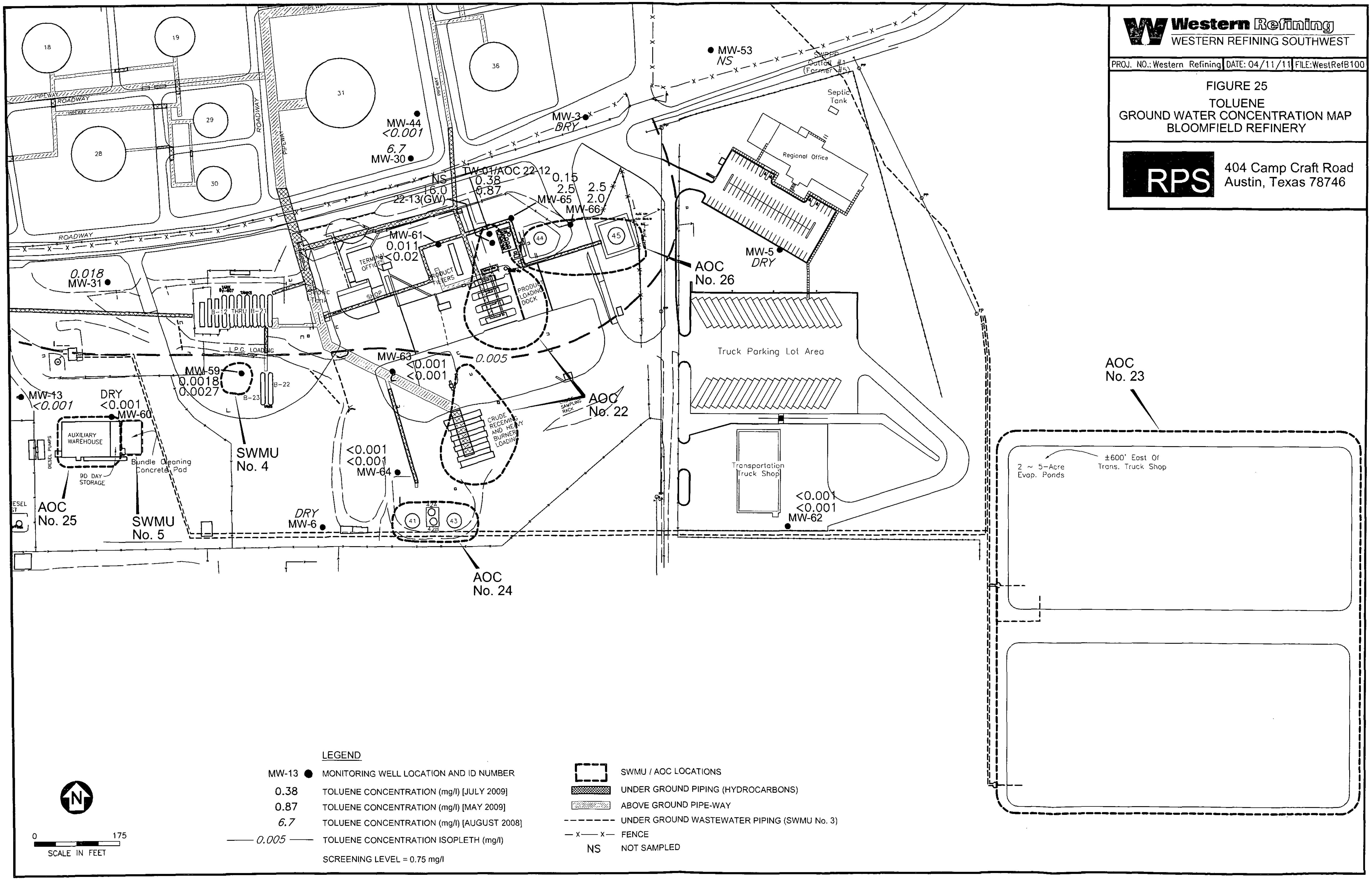
PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB100

FIGURE 24
PHENOL
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
0.03	PHENOL CONCENTRATION (mg/l) [JULY 2009]
0.019	PHENOL CONCENTRATION (mg/l) [MAY 2009]
<0.01	PHENOL CONCENTRATION (mg/l) [AUGUST 2008]
— 0.005 —	PHENOL CONCENTRATION ISOPLETH (mg/l)
	SCREENING LEVEL = 0.005 mg/l
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
------	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x—	FENCE
NA	NOT ANALYZED
NS	NOT SAMPLED



Western Refining
WESTERN REFINING SOUTHWEST

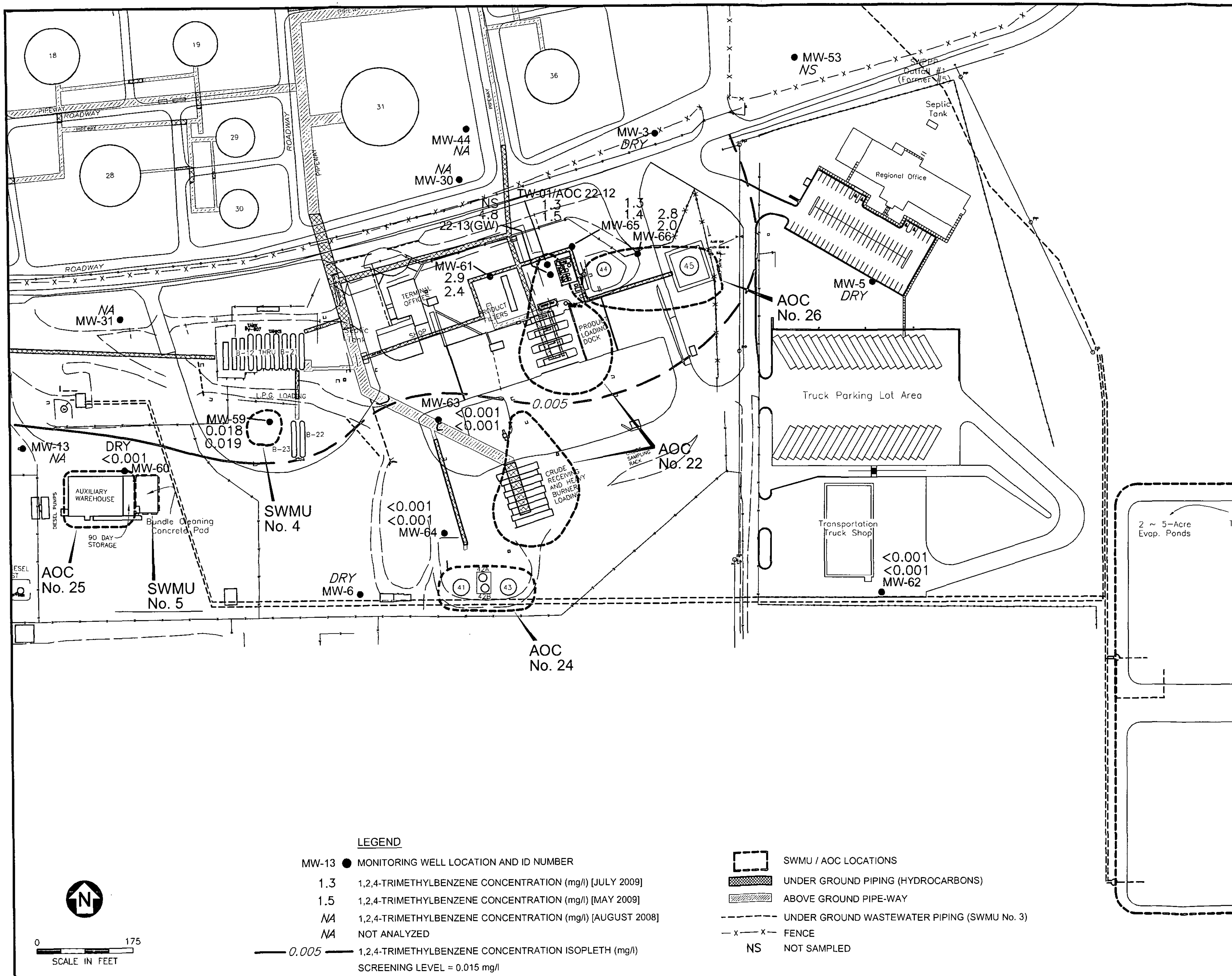
PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB100

FIGURE 25
TOLUENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
0.38	TOLUENE CONCENTRATION (mg/l) [JULY 2009]
0.87	TOLUENE CONCENTRATION (mg/l) [MAY 2009]
6.7	TOLUENE CONCENTRATION (mg/l) [AUGUST 2008]
0.005	TOLUENE CONCENTRATION ISOPLETH (mg/l)
	SCREENING LEVEL = 0.75 mg/l
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x—	FENCE
NS	NOT SAMPLED



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB100

FIGURE 26
1,2,4-TRIMETHYLBENZENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
1.3 1,2,4-TRIMETHYLBENZENE CONCENTRATION (mg/l) [JULY 2009]
1.5 1,2,4-TRIMETHYLBENZENE CONCENTRATION (mg/l) [MAY 2009]
NA 1,2,4-TRIMETHYLBENZENE CONCENTRATION (mg/l) [AUGUST 2008]
NA NOT ANALYZED
— *0.005* — 1,2,4-TRIMETHYLBENZENE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 0.015 mg/l

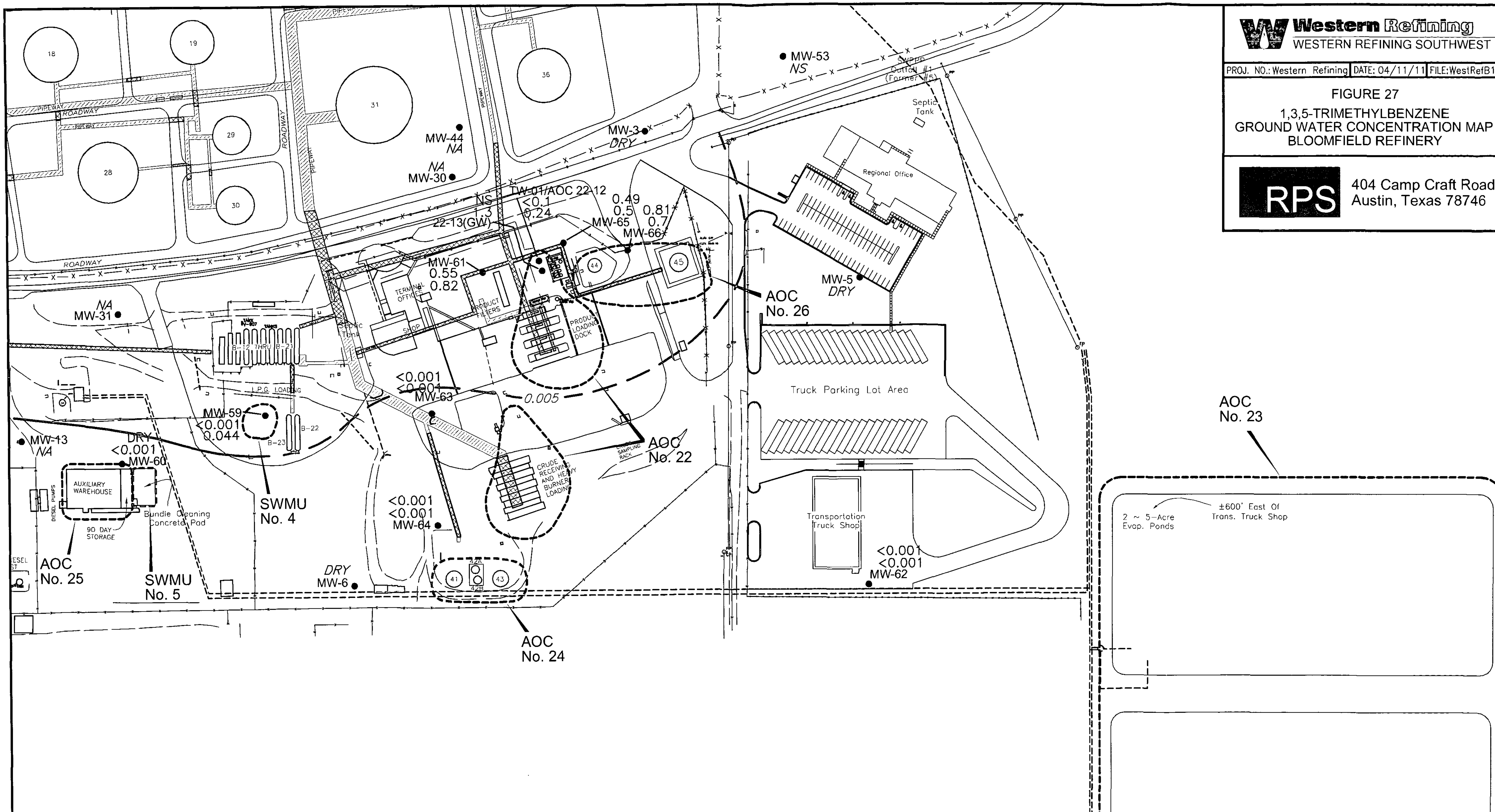
SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NS NOT SAMPLED

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB100

FIGURE 27
1,3,5-TRIMETHYLBENZENE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

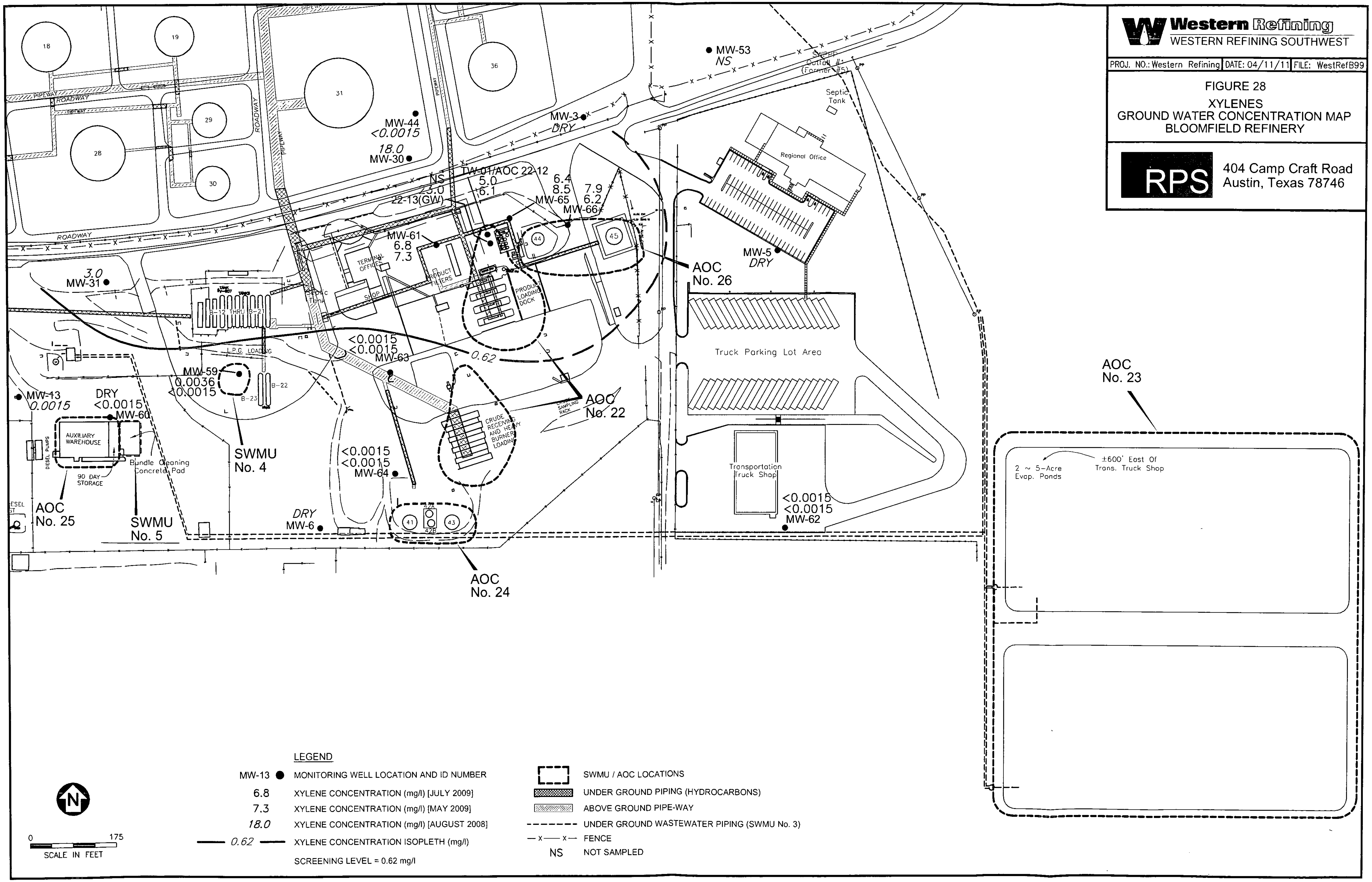


LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
<0.1 1,3,5-TRIMETHYLBENZENE CONCENTRATION (mg/l) [JULY 2009]
0.82 1,3,5-TRIMETHYLBENZENE CONCENTRATION (mg/l) [MAY 2009]
NA 1,3,5-TRIMETHYLBENZENE CONCENTRATION (mg/l) [AUGUST 2008]
— *0.005* — 1,3,5-TRIMETHYLBENZENE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 0.012 mg/l

SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NA NOT ANALYZED
NS NOT SAMPLED

0 175
SCALE IN FEET



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB99

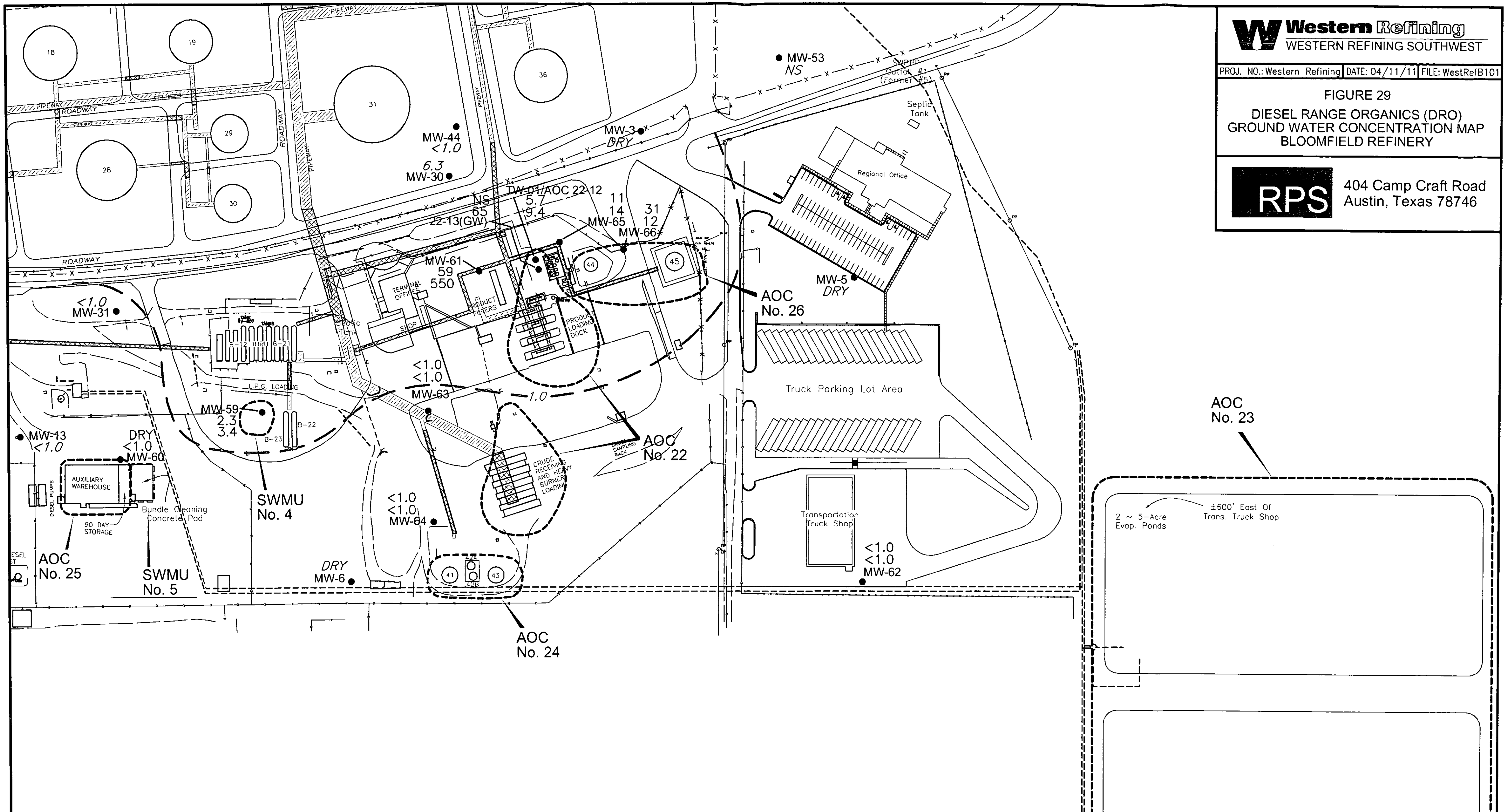
FIGURE 28
XYLENES
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
6.8 XYLENE CONCENTRATION (mg/l) [JULY 2009]
7.3 XYLENE CONCENTRATION (mg/l) [MAY 2009]
18.0 XYLENE CONCENTRATION (mg/l) [AUGUST 2008]
— *0.62* — XYLENE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 0.62 mg/l

SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NS NOT SAMPLED



Western Refining
WESTERN REFINING SOUTHWEST

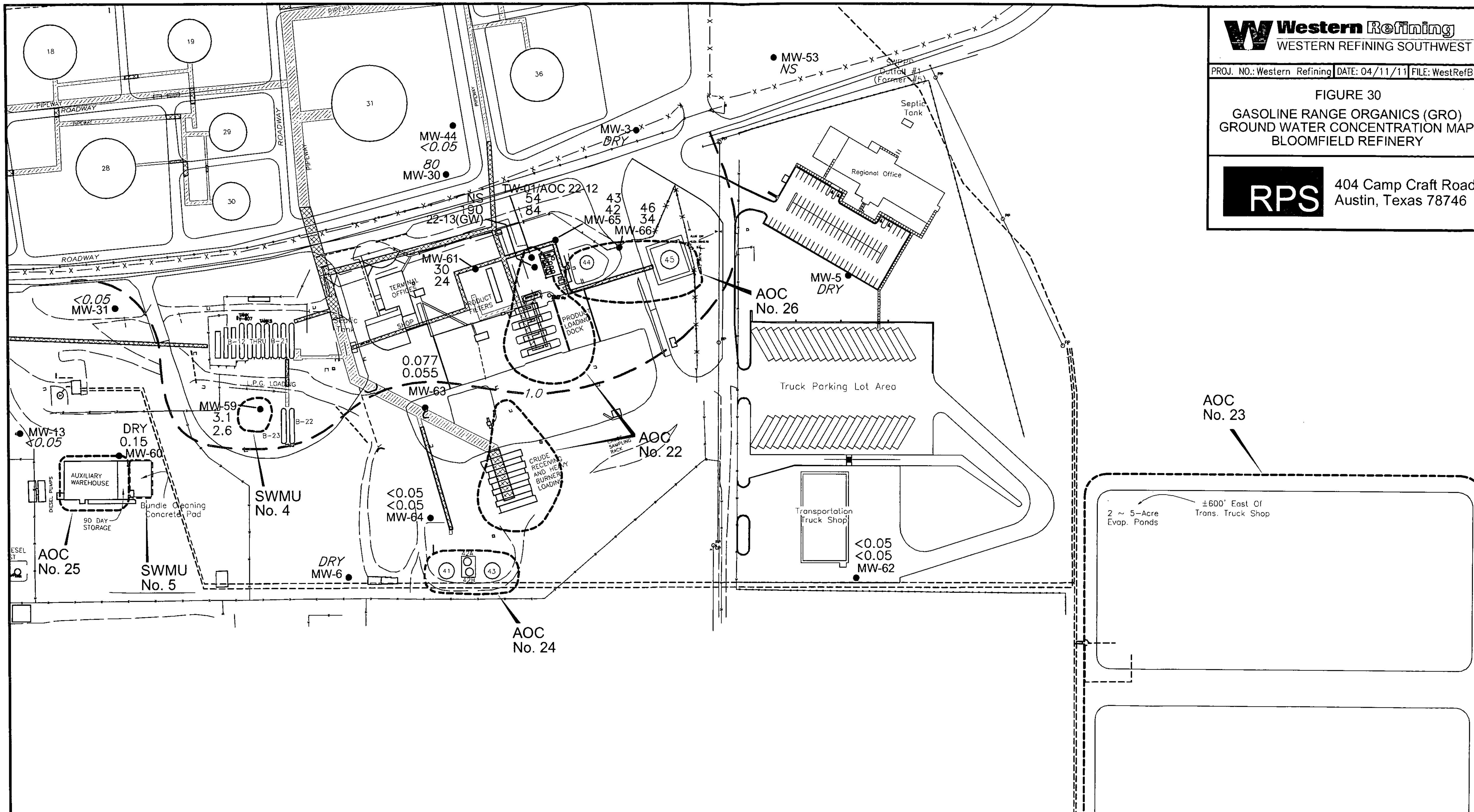
PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB101

FIGURE 29
DIESEL RANGE ORGANICS (DRO)
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

LEGEND

- MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
- 5.7 DIESEL RANGE ORGANICS (DRO) CONCENTRATION (mg/l) [JULY 2009]
- 9.4 DIESEL RANGE ORGANICS (DRO) CONCENTRATION (mg/l) [MAY 2009]
- *6.3* DIESEL RANGE ORGANICS (DRO) CONCENTRATION (mg/l) [AUGUST 2008]
- 1.0 DIESEL RANGE ORGANICS (DRO) CONCENTRATION ISOPLETH (mg/l)
- SCREENING LEVEL = 1.34 mg/l
- SWMU / AOC LOCATIONS
- UNDER GROUND PIPING (HYDROCARBONS)
- ABOVE GROUND PIPE-WAY
- UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
- —x—x— FENCE
- NS NOT SAMPLED



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB101

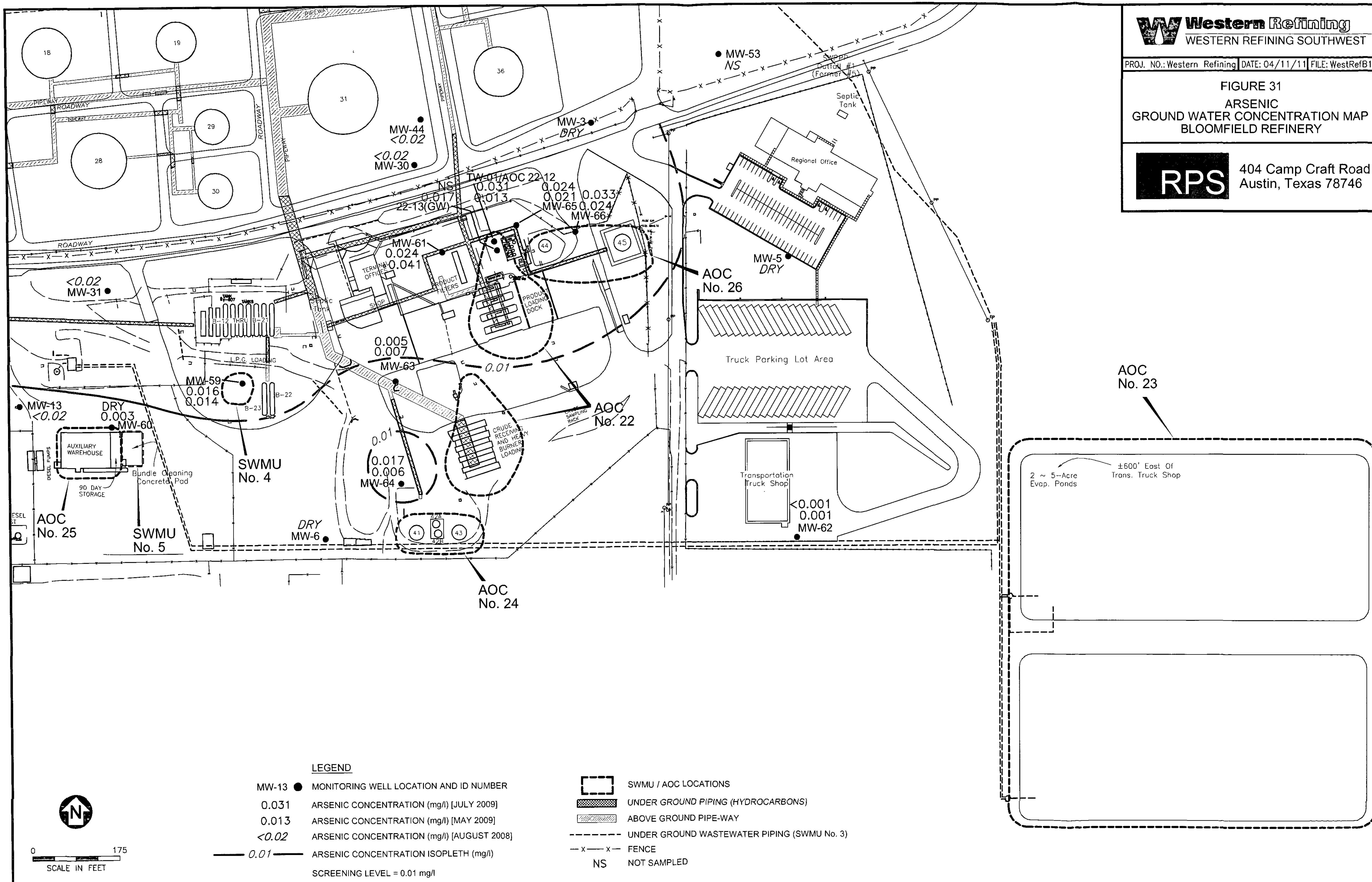
FIGURE 30

GASOLINE RANGE ORGANICS (GRO)
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS 404 Camp Craft Road
Austin, Texas 78746

LEGEND

MW-13 ●	MONITORING WELL LOCATION AND ID NUMBER
<5.0	GASOLINE RANGE ORGANICS (GRO) CONCENTRATION (mg/l) [JULY 2009]
24	GASOLINE RANGE ORGANICS (GRO) CONCENTRATION (mg/l) [MAY 2009]
80	GASOLINE RANGE ORGANICS (GRO) CONCENTRATION (mg/l) [AUGUST 2008]
— *1.0* —	GASOLINE RANGE ORGANICS (GRO) CONCENTRATION ISOPLETH (mg/l)
	SWMU / AOC LOCATIONS
	UNDER GROUND PIPING (HYDROCARBONS)
	ABOVE GROUND PIPE-WAY
- - - - - -	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x—	FENCE
NS	NOT SAMPLED



LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER

0.031 ARSENIC CONCENTRATION (mg/l) [JULY 2009]

0.013 ARSENIC CONCENTRATION (mg/l) [MAY 2009]

<0.02 ARSENIC CONCENTRATION (mg/l) [AUGUST 2008]

— 0.01 — ARSENIC CONCENTRATION ISOPLETH (mg/l)

SCREENING LEVEL = 0.01 mg/l

SWMU / AOC LOCATIONS

UNDER GROUND PIPING (HYDROCARBONS)

ABOVE GROUND PIPE-WAY

UNDER GROUND WASTEWATER PIPING (SWMU No. 3)

—x—x— FENCE

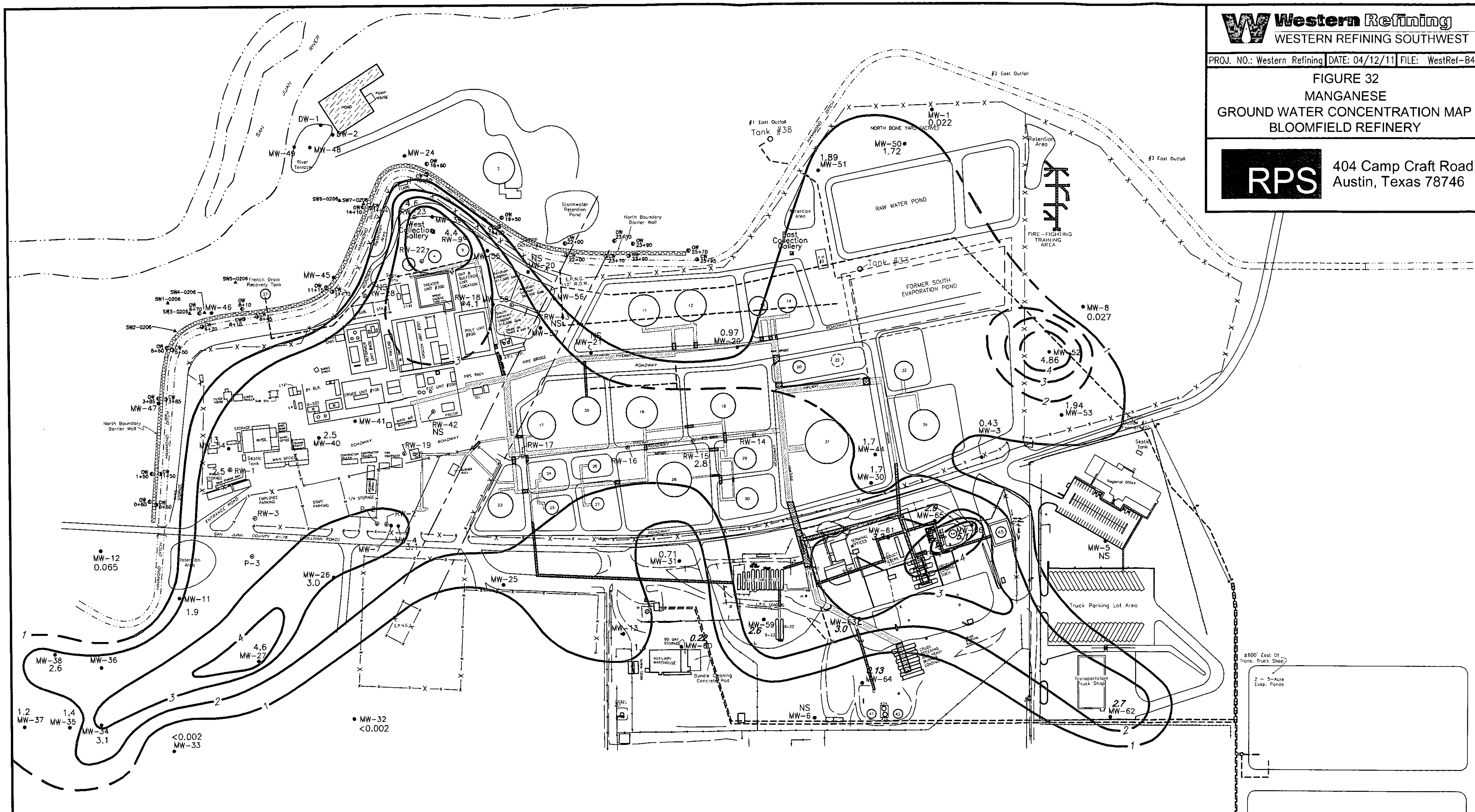
NS NOT SAMPLED

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB101

FIGURE 31
ARSENIC
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



LEGEND

MW-1 ●	MONITORING WELL LOCATION AND IDENTIFICATION NUMBER
RW-1 ⊚	RECOVERY 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
P-2	PIEZOMETER IDENTIFICATION
—— 1 ——	CONTOUR OF MANGANESE CONCENTRATION (mg/l) CONTOUR INTERVAL = 1.0 mg/l
1.7	MANGANESE CONCENTRATION (mg/l) (AUGUST - OCTOBER 2008 DATA WHERE AVAILABLE, OTHERWISE HISTORIC DATA, SEE TABLE 3)
2.7	MANGANESE CONCENTRATION (mg/l) (MAY 2009)
NS	NOT SAMPLED
	UNDER GROUND PIPE-WAY
	ABOVE GROUND PIPE-WAY
	SLURRY BARRIER WALL
	FORMER TANK LOCATION
—x—x—	FENCE
- - - - -	ABANDONED UNDERGROUND PIPING (SWMU No. 6)
- - - - -	UNDER GROUND WASTEWATER PIPING (SWMU No. 3)

0 300
SCALE IN FEET

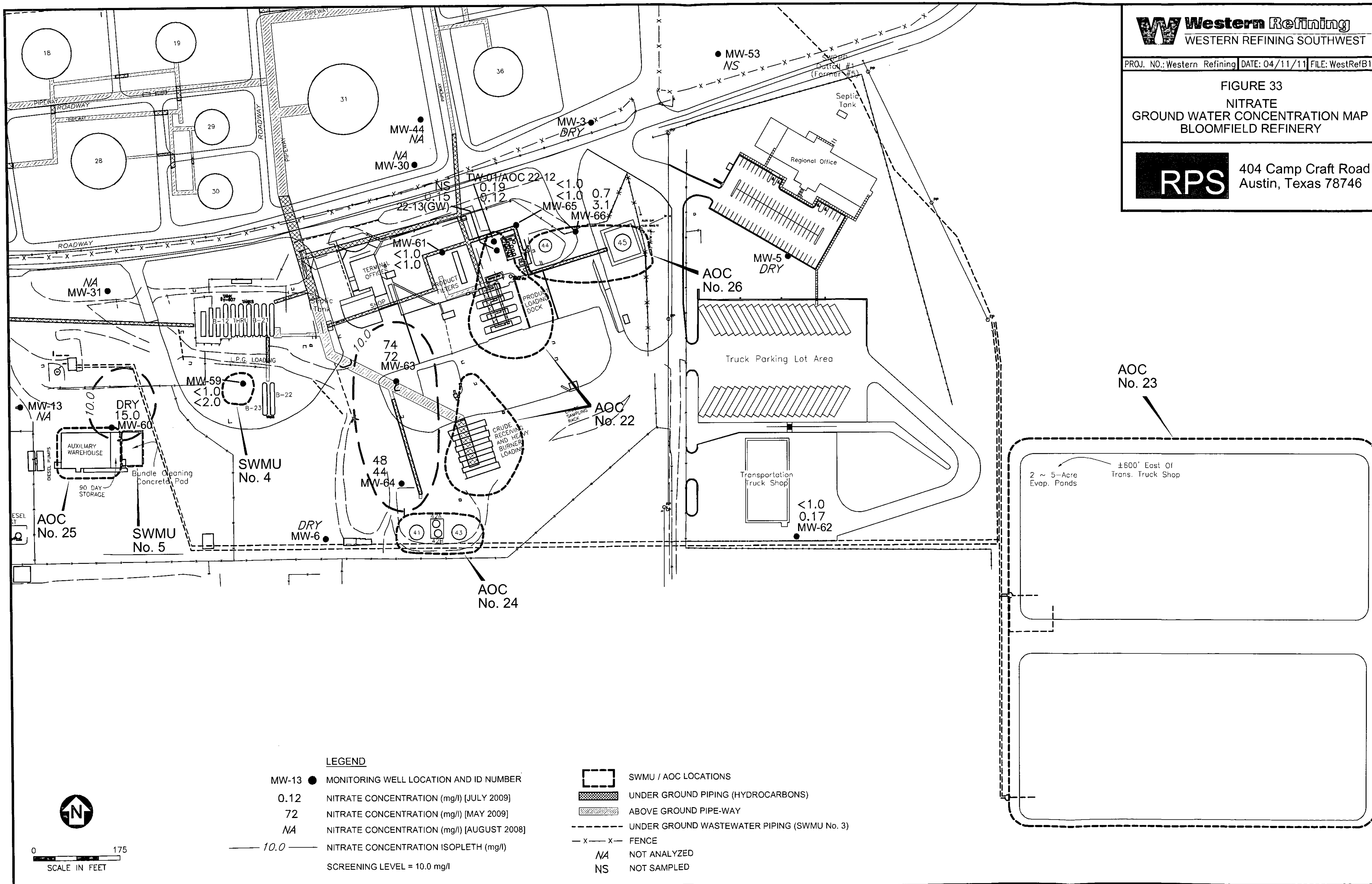
NOTE:
MW-54 NOT INCLUDED IN CONTOURS

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/12/11 | FILE: WestRef-B44

FIGURE 32
MANGANESE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746



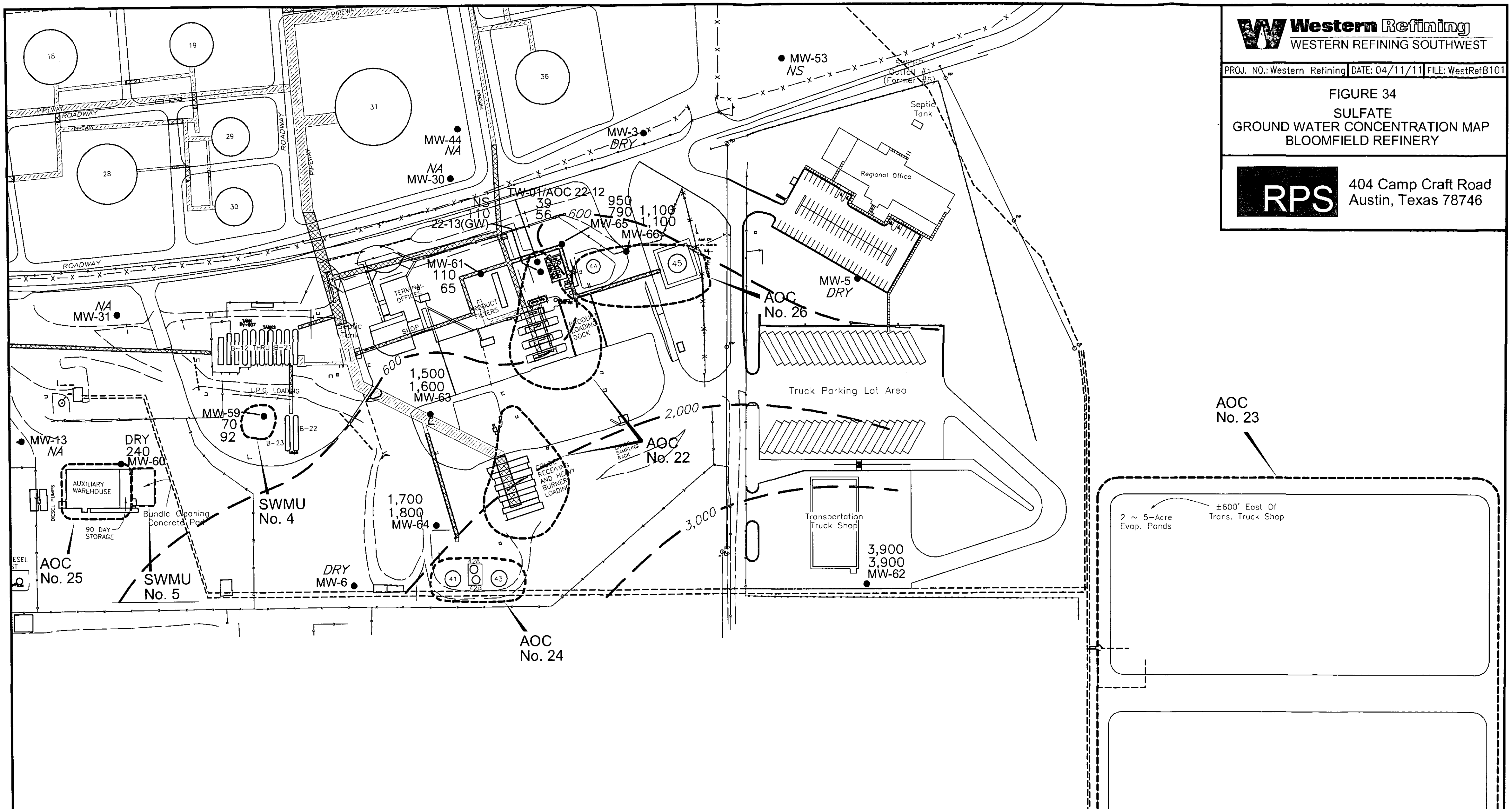
Western Refining
WESTERN REFINING SOUTHWEST
PROJ. NO.: Western Refining
DATE: 04/11/11
FILE: WestRefB101
FIGURE 33
NITRATE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY
RPS
404 Camp Craft Road
Austin, Texas 78746
MW-53
NS
MW-44
NA
NA
MW-30
MW-3
DRY
NA
MW-31
TW-01/AOC 22-12
0.19
0.12
NS
0.15
22-13(GW)
<1.0
<1.0
0.7
3.1
MW-65
MW-66
MW-61
<1.0
<1.0
MW-5
DRY
AOC
No. 26
74
72
MW-63
10.0
MW-59
<1.0
<2.0
MW-13
NA
DRY
15.0
MW-60
10.0
48
44
MW-64
DRY
MW-6
<1.0
0.17
MW-62
AOC
No. 22
AOC
No. 23
AOC
No. 24
AOC
No. 25
SWMU
No. 4
SWMU
No. 5
ROADWAY
PIPEWAY
AUXILIARY WAREHOUSE
90 DAY STORAGE
DIESEL PUMPS
Bundle Cleaning Concrete Pad
L.P.G. LOADING
B-12 THRU B-21
B-22
B-23
TERMINAL OFFICES
SHOP
PRODUCT FILTERS
PRODUCT LOADING DOCK
CRUDE RECEIVING AND HEAVY BURNER LOADING
SAMPLING RACK
Septic Tank
Outfall #1 (Former #5)
Regional Office
Truck Parking Lot Area
Transportation Truck Shop
2 ~ 5-Acre Evap. Ponds
±600' East Of Trans. Truck Shop
LEGEND
MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
0.12 NITRATE CONCENTRATION (mg/l) [JULY 2009]
72 NITRATE CONCENTRATION (mg/l) [MAY 2009]
NA NITRATE CONCENTRATION (mg/l) [AUGUST 2008]
10.0 NITRATE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 10.0 mg/l
SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
—x—x— FENCE
NA NOT ANALYZED
NS NOT SAMPLED
0
175
SCALE IN FEET
N

Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining | DATE: 04/11/11 | FILE: WestRefB101

FIGURE 34
SULFATE
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

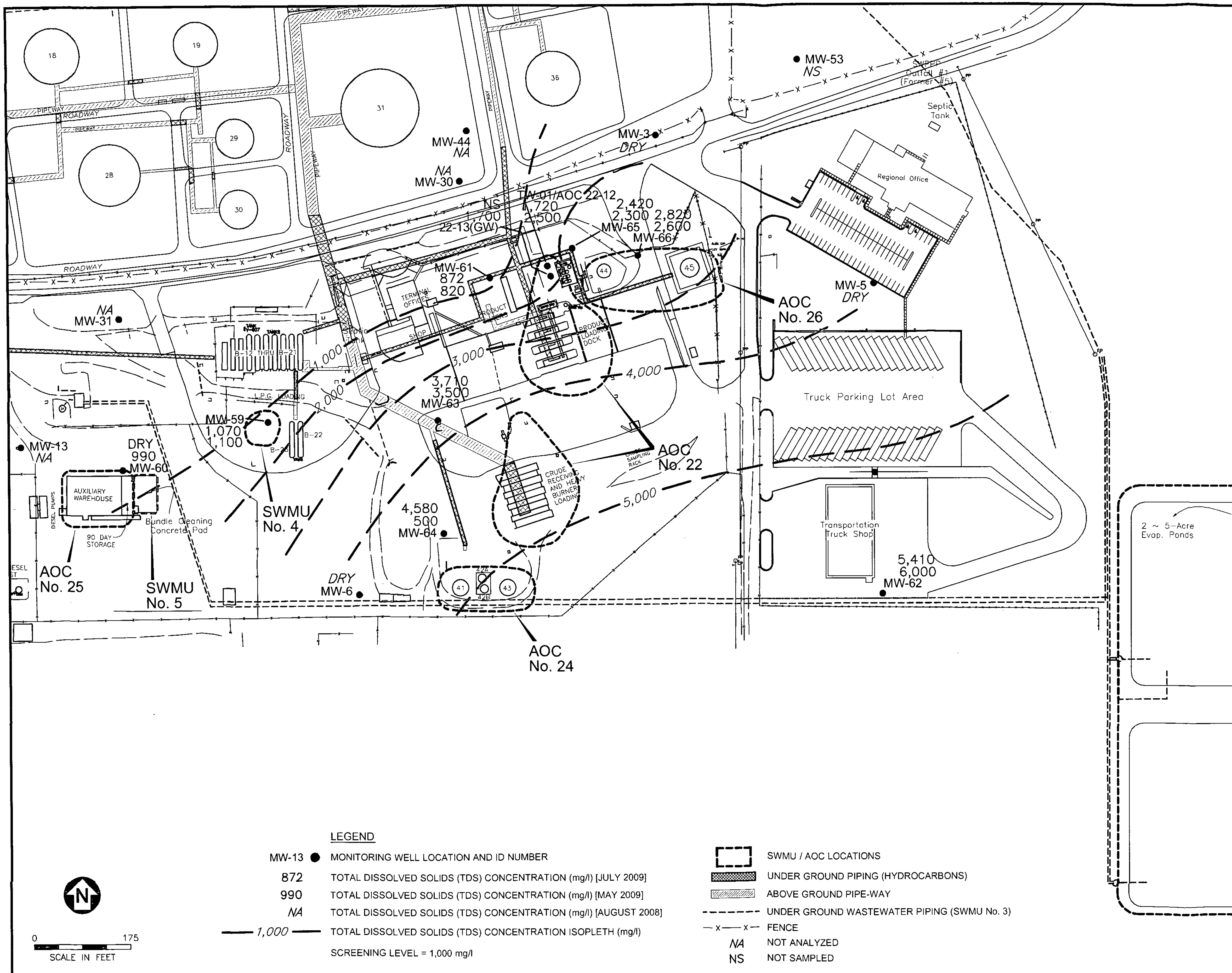


LEGEND

MW-13 ● MONITORING WELL LOCATION AND ID NUMBER
70 SULFATE CONCENTRATION (mg/l) [JULY 2009]
65 SULFATE CONCENTRATION (mg/l) [MAY 2009]
NA SULFATE CONCENTRATION (mg/l) [AUGUST 2008]
NA NOT ANALYZED
600 SULFATE CONCENTRATION ISOPLETH (mg/l)
SCREENING LEVEL = 600 mg/l

SWMU / AOC LOCATIONS
UNDER GROUND PIPING (HYDROCARBONS)
ABOVE GROUND PIPE-WAY
UNDER GROUND WASTEWATER PIPING (SWMU No. 3)
FENCE
NS NOT SAMPLED

0 175
SCALE IN FEET



Western Refining
WESTERN REFINING SOUTHWEST

PROJ. NO.: Western Refining	DATE: 04/11/11	FILE: WestRefB101

FIGURE 35
TOTAL DISSOLVED SOLIDS (TDS)
GROUND WATER CONCENTRATION MAP
BLOOMFIELD REFINERY

RPS
404 Camp Craft Road
Austin, Texas 78746

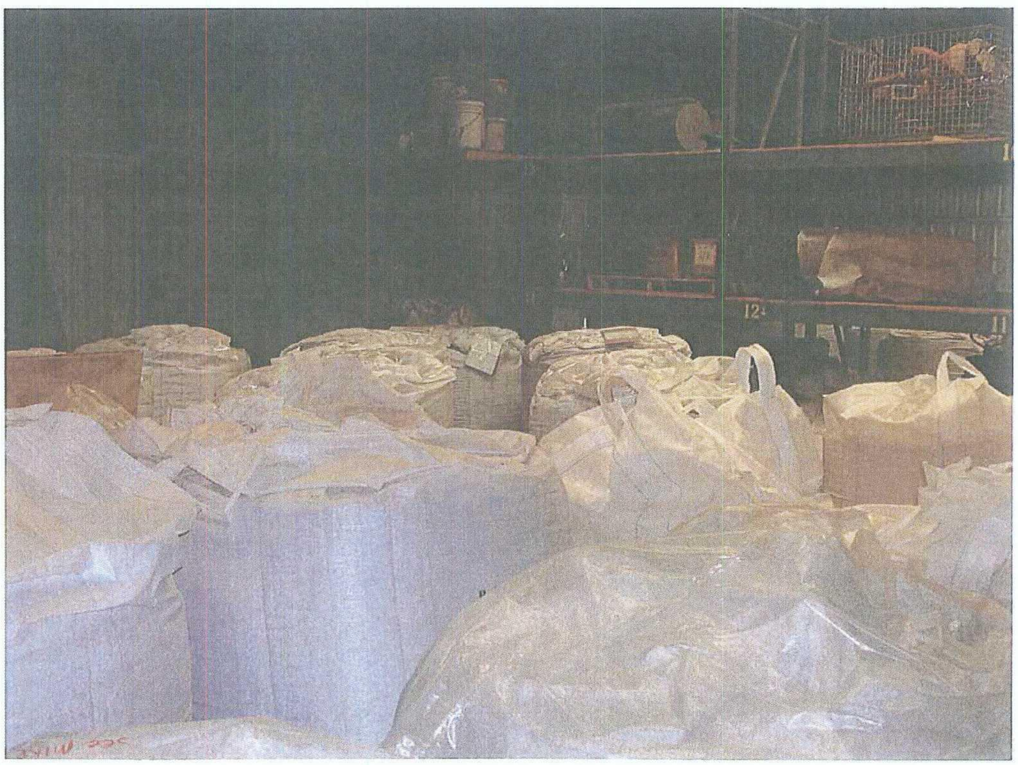
Appendix A

Photographs

Photograph 1
Solid Waste Management Unit #4, looking east across location of former sump.

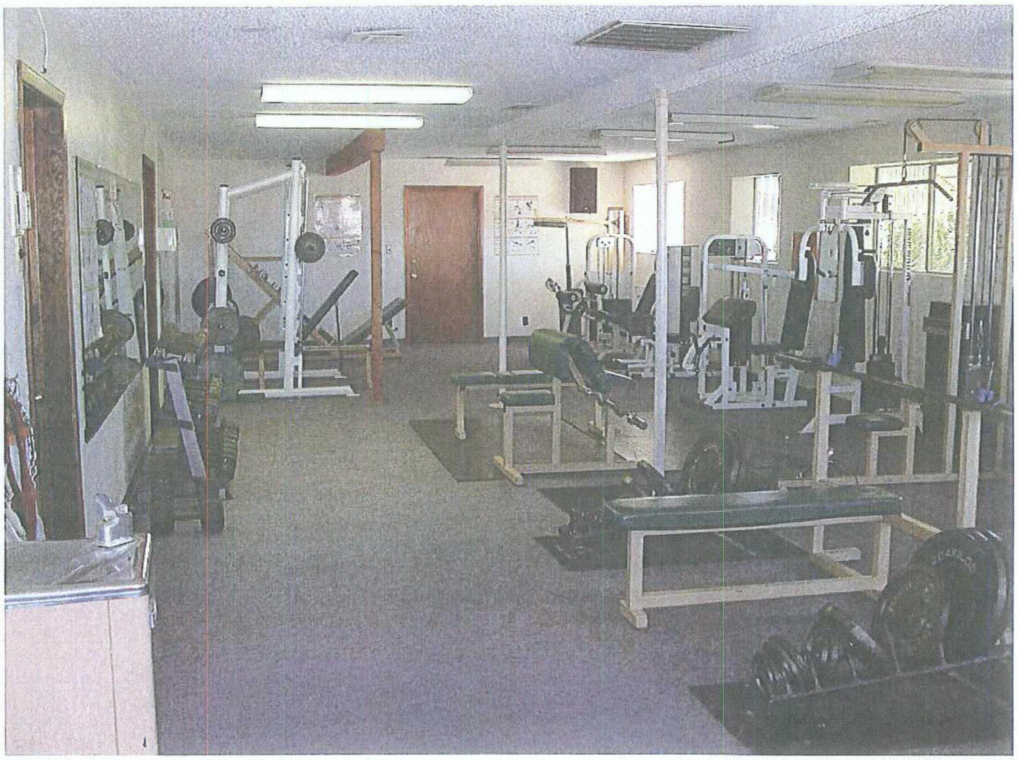
Photograph 2
Solid Waste Management Unit #5, facing west and looking across bundle cleaning pad at east end of warehouse building/90-storage area (AOC No. 25).

Photograph 3
Solid Waste Management Unit #5, looking northwest across bundle cleaing pad.



Photograph 4
Area of Concern 25. Picture taken inside warehouse buliding, looking at dry materials (e.g., catalyst) stored inside.

Photograph 5
Area of Concern 25. Picture of materials stored inside warehouse.



Photograph 6
Area of Concern 25. Picture of employee exercise area in west end of warehouse building.

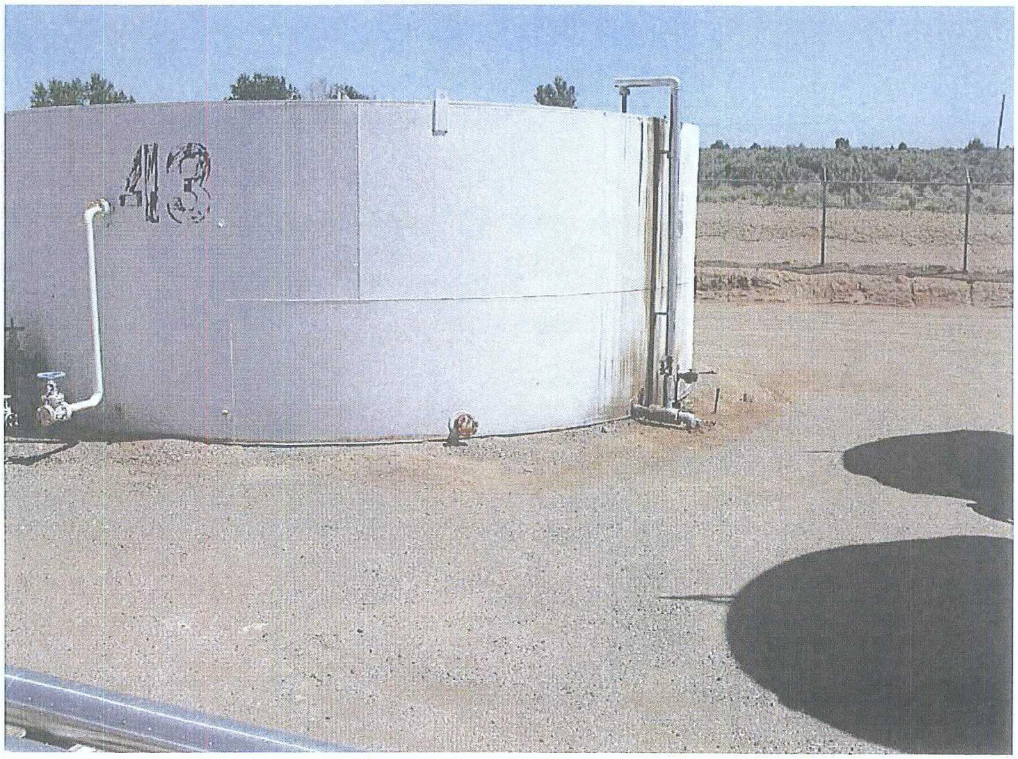
Photograph 7
Area of Concern 25 Looking southwest from northeast corner of warehouse building/90-day storage area. The 90-day storage area is located inside open door way.

Photograph 8
Area of Concern 22 Looking east from west end of crude receiving rack facilities sump, location of new MW-63.

Photograph 9
Area of Concern 22 Looking south from northern portion of crude receiving rack.

Photograph 10
Area of Concern 22 Looking southeast from western portion of crude receiving rack facilities area.

Photograph 11
Area of Concern 24 Looking southeast toward Tanks 40 and 42, Tank 43 in background.



Photograph 12
Area of Concern 24 Looking southeast at Tank 43 from northern edge of containment area.

Photograph 13
Area of Concern 22 Looking east at product loading racks.

Photograph 14
Area of Concern 22 From northwest corner of product loading rack, looking east at Tanks 44 and 45 in background, center.

Photograph 15
Area of Concern 22 From northwest corner of product loading rack, looking northwest at product filters. Tanks in background are located on north side of County Rd 4990.

Photograph 16
Area of Concern 26 From south side of Tank 44, looking east at Tank 45.

Photograph 17
Area of Concern 26 From northwest corner of Tank 45, looking southeast.

Photograph 18
Area of Concern 27 From northwest corner of holding pond,
looking east-southeast.

Photograph 19
Area of Concern 25 Drums stored inside 90-day storage area, concrete sump in center with metal cover.

Appendix B

Correspondence

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

RON CURRY
Secretary

JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 27, 2009

Mr. Randy Schmaltz
Environmental Manager
Western Refining, Bloomfield Refinery
P.O. Box 159
Bloomfield, New Mexico 87413

RE: EXTENSION REQUEST APPROVAL
FOR THE SUBMITTAL OF THE GROUP 3 INVESTIGATION REPORT
WESTERN REFINING SOUTHWEST INC., BLOOMFIELD REFINERY
EPA ID# NMD089416416
HWB-GRCB-08-004

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) received Western Refining Southwest Inc., Bloomfield Refinery's (Western) *Group 3 Investigation Report Extension Request* letter, dated October 15, 2009. Western is requesting a sixty day extension from the October 19, 2009 due date for the submittal of the Group 3 Investigation Report. Western has made this request because of delays in receipt of sample analytical data from the contract laboratory. NMED hereby approves this 60 day extension; the Group 3 Investigation Report is due to NMED on or before December 21, 2009.

If you have any questions regarding this letter, please contact Hope Monzeglio of my staff at (505) 476-6045.

Sincerely,

John E. Kieling
Program Manager
Permits Management Program
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
H. Monzeglio, NMED HWB
File: GRCB 2009 and Reading
HWB-GRCB-08-004

Western Refining

OOMFIELD REFINERY

WNR LISTED NYSE

Fed Ex Priority Overnight # 8709 9688 0454

October 15, 2009

Ms. Hope Monzeglio
State of New Mexico Environmental Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Re: Giant Refining Company, Bloomfield Refinery (currently known as Western Refining Southwest, Inc. – Bloomfield Refinery) Order No. HWB 07-34 (CO) Group 3 Investigation Report Submittal Extension Request

Dear Ms. Monzeglio:

During review Western Refining Southwest, Inc. – Bloomfield Refining discovered that we had not received all the analytical data from the contract laboratory for sampling that had taken place during the Group 3 Investigation. Western has been working with the lab and the missing reporting is forth coming. As of Wednesday October 14, 2009 there is still some outstanding data which Western is anticipating by weeks end.

Given this information and the need to process this information, Western requests a sixty day extension of the October 19, 2009 deadline for submittal of the Group 3 Investigation Report.

Your consideration in this matter is greatly appreciated!

Sincerely,

James R. Schmaltz
Environmental Manager

Scott Crouch

From: Monzeglio, Hope, NMENV [hope.monzeglio@state.nm.us]
Sent: Friday, March 27, 2009 12:26 PM
To: Robinson, Kelly
Cc: Schmaltz, Randy; Scott Crouch; Cobrain, Dave, NMENV
Subject: RE: RCRA Investigation Group 3- Proposed Revised Boring Locations

Kelly

The proposed locations are fine.

Hope

From: Robinson, Kelly [mailto:Kelly.Robinson@wnr.com]
Sent: Friday, March 27, 2009 10:34 AM
To: Monzeglio, Hope, NMENV
Cc: Schmaltz, Randy; Scott Crouch
Subject: RCRA Investigation Group 3- Proposed Revised Boring Locations

Good Morning Hope,

Thank you for talking with Randy and I yesterday afternoon. As we had briefly mentioned to you during our phone discussion yesterday, we would like to propose slightly adjusted locations for two monitoring wells and one soil boring that pertain to the Group 3 Investigation activities at the Bloomfield Refinery.

Over the past few days, we have conducted extensive efforts to identify underground utility and process piping within all proposed drilling locations for Group 3. As a result of those efforts, we have identified three areas in particular where we would like to modify the location of the respective borings to avoid damaging underground piping and provide safer clearance from exiting underground utilities.

The attached map is a mark-up of the original Figure 8 included in the approved Group 3 Work Plan. The originally approved boring locations shaded in yellow are areas where underground utility and process piping has been identified. The adjacent yellow circles represent Western's proposed "alternative" drilling location for each area.

We would like NMED's approval of the proposed modified locations. If you have any questions or need any additional information, please don't hesitate to contact either Randy or myself at your convenience.

Thank you for your time!

Sincerely,

Kelly R. Robinson
Environmental Engineer

Western Refining Southwest, Inc. - Bloomfield Refinery
P.O. Box 159
50 Road 4990
Bloomfield, NM87413

office: (505) 632-4166
cell: (602) 908-6617
fax: (505) 632-3911

AO
No
W
W
B-4
W
AOC
No. 22
B-3
W
AOC
No. 24

Appendix C

Analytical Data Reports

COC 1 of 2

Chain-of-Custody Record

Client: Western Refining Southwest Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ethanol	NO_2 / NO_3	Cyanide	Gen Chemistry	Air Bubbles (Y or N)
4/5/9	1515	GW	EBS-040509	(1) Poly	NaOH	-1														X		
↓	↓	↓	↓	(1) Poly	HNO_3	-1							X									
				(5) VOAs	HCl	-1										X						
				(1) VOA	None	-1				X												
4/5/9	1645	Soil	AOC 25-2 (0-0.5')	(3) Jars	None	-2				X			X				X			X		
↓	↓	↓	↓	(2) Encores	None	-2										X						
				(2) Vials	MeOH	-2										X						
4/5/9	1645	Soil	AOC 25-2 (0-0.5')-DUP	(3) Jars	None	-3				X			X				X			X		
↓	↓	↓	↓	(2) Encores	None	-3										X						
				(2) Vials	~~None~~ MeOH	-3										X						
—	—	GW	MeOH Blank	(2) Vials	MeOH	-4										X						
—	—	GW	Trip Blank	(2) VOAs	HCl	-5										X						

Date: 4/6/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: FedEx Date Time

Date: Time: Relinquished by:
Received by: [signature] Date Time 4/7/09 1000

Remarks: * See attached analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 of 2

Chain-of-Custody Record

Client: Western Refining Southwest, Inc — Bloomfield Refinery

Mailing Address: 50 Road 4990, Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

[illegible]

[illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, MRO, GRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen. Chemistry	NO_2/NO_3	Cyanide	Ethanol	Air Bubbles (Y or N)
4/5/9	1715	Soil	AOC 25-2 (36-38')	(3) Jars	None	-6				X			X				X			X		
↓	↓	↓	↓	(2) Encores	None	-6										X						
↓	↓	↓	↓	(2) Vials	MeOH	-6										X						
4/5/9	1700	Soil	AOC 25-2 (1.5-2.0')	(3) Jars	None	-7				X			X				X			X		
↓	↓	↓	↓	(2) Encores	None	-7										X						
↓	↓	↓	↓	(2) Vials	MeOH	-7										X						
4/5/9	1500	GW ~~H2O~~	FB-040509	(1) Poly	NaOH	-8														X		
↓	↓	↓	↓	(1) Poly	HNO_3	-8							X									
↓	↓	↓	↓	(5) Voas	HCl	-8										X						
↓	↓	↓	↓	(1) Voa	None	-8			-	X												
↓	↓	↓	↓	(1) Amber	None	-8											X					
4/5/9	1515	GW	EBS-040509	(1) Amber	None	-1-8											X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/6/9	1500	Kelly Robinson	Fed Ex		
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]	4/7/09	1000

Remarks:
* See attached analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Westen Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM 87413
Phone #: (505) 632-4166
email or Fax#: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation Group 3
Project #:
Project Manager: Kelly Robinson
Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	~~EDB (Method 504.1)~~ Dissolved Metals	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	NO_2 / NO_3	Cyanide	Gen Chemistry	Ethanol	Air Bubbles (Y or N)
4/6/9	845	Soil	SWMU 4-1 (0-0.5')	(2) Encore		-1										X						
↓	↓	↓	↓	(2) VIALS		-1										X						
↓	↓	↓	↓	(3) Jars		-1				X			X				X		X			
4/6/9	930	Soil	SWMU 4-1 (1.5-2.0')	(2) Encore		-2										X						
↓	↓	↓	↓	(2) VIALS		-2										X						
↓	↓	↓	↓	(3) Jars		-2				X			X				X		X			
4/6/9	1130	Soil	SWMU 4-1 (6-8')	(2) Encore		-3										X						
↓	↓	↓	↓	(2) VIALS		-3										X						
↓	↓	↓	↓	(3) Jars		-3				X			X				X		X			
—	—	Aq	MeOH Blank	MeOH		-4										X						
—	—	Aq	Trip Blank	(2) VOAs		-5										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/6/9	1500	Kelly Robinson	FedEx		
Date:	Time:	Relinquished by:	Received by: [signature]	4/7/09	1000

Remarks:
* See attached analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ___
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method ~~418.1~~) DRO, ORO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen Chemistry *	Cyanide	NO_2/NO_3	Ethane	Air Bubbles (Y or N)
4/6/9	1200	Aq	FB-040609	(5) VOAs	HCl	-6										X						
				(1) VOA	None	-6				X												
				(1) Amber	None	-6											X					
				(1) Poly	HNO_3	-6							X									
				(1) Poly	NaOH	-6													X			
4/6/9	1215	Aq	EBS-040609	(5) VOAs	HCl	-7										X						
				(1) VOA	None	-7				X												
				(1) Amber	None	-7											X					
				(1) Poly	HNO_3	-7							X									
				(1) Poly	NaOH	-7													X			

Date	Time	Relinquished by	Received by	Date	Time
4/6/9	1500	Kelly Robinson	Fed Ex		
			[illegible signature]	4/7/09	1000

Remarks:
* See attached for analyte list.

Chain-of-Custody Record

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice:

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	~~EDB (Method 504.1)~~ Dissolved Metals *	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (~~VOA~~)	8270 (Semi-VOA)	Gen. Chemistry *	NO_2/NO_3	Cyanide	Ethanol	Air Bubbles (Y or N)
4/6/9	1700	Soil	SWMU 4-1(36-38')	(3) Jars	None	1				X			X				X			X		
↓	↓	↓	↓	(2) Encore	None	1										X						
↓	↓	↓	↓	(2) Vials	MeOH	1										X						
4/7/9	1130	Soil	AOC 24-7(0-0.5')	(3) Jars	None	2				X			X				X			X		
↓	↓	↓	↓	(2) Encore	None	2										X						
↓	↓	↓	↓	(2) Vials	MeOH	2										X						
4/7/9	1145	Soil	AOC 24-7(1.5-2.0')	(3) Jars	None	3				X			X				X			X		
↓	↓	↓	↓	(2) Encore	None	3										X						
↓	↓	↓	↓	(2) Vials	MeOH	3										X						
4/7/9	1200	Aq	FB-040709	(5) VOAs	HCl	4										X						
↓	↓	↓	↓	(1) VOA	None	4				X												
↓	↓	↓	↓	(1) Amber	None	4											X					

Date: 4/7/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: FedEx Date Time

Date: Time: Relinquished by:
Received by: [signature] Date 4/8/09 Time 1005

Remarks: * Refer to attached for analyte list.

COC 292

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

[illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. [illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO, GRO, MRO	~~EDB (Method 504.1)~~ Dissolved Metals	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	~~8081 Pesticides / 8082 PCB's~~	8260B (VOA)	8270 (Semi-VOA)	General Chemistry *	NO_2/NO_3	Cyanide	Ethanol	Air Bubbles (Y or N)
4/7/9	1200	Aq	FB-040709	(1) Poly	HNO_3	4							X									
↓	↓	↓	↓	(1) Poly	NaOH	TJ 4														X		
4/7/9	1215	Aq	EBS-040709	(5) VOAs	HCl	5										X						
				(1) VOA	None	5				X												
				(1) Amber	None	5											X					
				(1) Poly	HNO_3	5							X									
↓	↓	↓	↓	(1) Poly	NaOH	5														X		
—	—	Aq	MeOH Blank	(2) Vials	MeOH	6										X						
—	—	↓	Trip Blank	(2) VOAs	HCl	7										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/7/9	1500	Kelly Robinson	Fed Ex		
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]	4/8/09	1025

Remarks:
* Refer to attached for analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 2

Chain-of-Custody Record

Client: Western Refining Southwest Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: 0

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Gen Chemistry	Cyanide	NO_2/NO_3	Dissolved Metals	Air Bubbles (Y or N)
4/7/9	1815	SOIL	AOC 24-7 (37-42')	(3) Jars		-1				X			X				X		X			
↓	↓	↓	↓	(2) Encores		-1										X						
↓	↓	↓	↓	(2) VIALS		-1										X						
4/8/9	1100	Soil	AOC 24-5 (0-0.5')	(3) Jars		-2				X			X				X		X			
↓	↓	↓	↓	(2) Encores		-2										X						
↓	↓	↓	↓	(2) Vials		-2										X						
4/8/9	1100	Soil	AOC 24-5 (0-0.5') DUP	(3) Jars		-3				X			X				X		X			
↓	↓	↓	↓	(2) Encores		-3										X						
↓	↓	↓	↓	(2) Vials		-3										X						
4/8/9	1200		AOC 24-5 (1.5-2.0')	(3) Jars		-4				X			X				X		X			
↓	↓	↓	↓	(2) VIALS		-4										X						
↓	↓	↓		(2) Encores		-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/8/9	1500	Kelly Robinson	Fed Ex		
			[signature]	4/9/09	1015

Remarks:
* Refer to attached analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC282

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email or Fax#: Kelly.robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

[illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) MRO, DRO, GRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen. Chemistry	Dissolved Metals	NO_2/NO_3	Cyanide	Air Bubbles (Y or N)
4/8/9	—	Aq	MeOH Blank	(2) Vials	MeOH	-5										X						
4/8/9	1233 ~~855~~	Soil	AOC 24-6 (0-0.5')	(2) VIALS	MeOH	-6										X						
↓	↓	↓	↓	(2) Encores	None	-6										X						
↓	↓	↓	↓	(3) Jars	↓	-6				X			X				X				X	
↓	1315	Soil	AOC 24-6 (1.5-2.0')	(2) Encore	None	-7										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-7										X						
↓	↓	↓	↓	(3) Jars	None	-7				X			X				X				X	

Date	Time	Relinquished by	Received by	Date	Time
4/8/9	1500	Kelly Robinson	FedEx		
			[signature]	4/9/09	1015

Remarks: * Refer to attached analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

CoC 1 of 2

Chain-of-Custody Record

Client: Western Refining Southwest Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ________
☑ EDD (Type) ________

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

On Ice:

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO DRO ORO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/8/9	1420	Soil	AOC 22-14 (1.5-2.0')	(3) Jars	None	-1				X			X				X	X				
				(2) Vials	MeOH	-1										X						
				(2) Encores	None	-1										X						
4/8/9	1410	Soil	AOC 22-14 (0-0.5')	(3) Jars	None	-2				X			X				X	X				
				(2) Encores	None	-2										X						
				(2) Vials	MeOH	-2										X						
4/8/9	1840	Aq	FB 040809	(5) VOAs	HCl	-3										X						
				(1) VOA	None	-3				X												
				(1) Poly	HNO_3	-3							X									
				(1) Poly	NaOH	-3												X				
				(1) Amber	None	-3											X					
—	—	Aq	MeOH Blank	(2) Vials	MeOH	-4										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/9/9	1200	Kelly Robinson	[signature]	4/9/09	14:40
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* See attached analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 292
5

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation-Gap 3

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (~~VOA~~)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/8/9	1030	Aq	EBS-040809	(5) VOAs	HCl	-5										X						
↓	↓	↓	↓	(1) VOA	None	-5				X												
				(1) Poly	NaOH	-5												X				
				(1) Poly	HNO_3	-5							X									
				(1) Amber	None	-5											X					
			Trip Blank Added			-6				x						x	x					

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/9/9	1200	Kelly Robinson	[signature]	4/9/09	14:40
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
See previous Remarks.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 3

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr...

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time (military)	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	~~EDB (Method 504.1)~~ Dissolved Metals	~~8310 (PNA or PAH)~~ NO_2/NO_3	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (~~VOA~~)	8270 (Semi-VOA)	Gen Chemistry	Cyanide	Ethanol		Air Bubbles (Y or N)
4/8/9	~~4/8/9~~	Soil	AOC 22-13 (15-2.0')	(3) Jars		-1				X			X				X		X			
↓	↓	↓	↓	(2) VOA		-1										X						
↓	↓	↓	↓	(2) Encore		-1										X						
4/8/9	1810	Soil	AOC 22-13 (32-34.5')	(3) Jars		-2				X			X				X		X			
↓	↓	↓	↓	(2) VOAs		-2										X						
↓	↓	↓	↓	(2) Encore		-2										X						
4/8/9	1800	Soil	AOC 22-13 (18-20')	(3) Jars		-3				X			X				X		X			
↓	↓	↓	↓	(2) VIALS		-3										X						
↓	↓	↓	↓	(2) Encores		-3										X						
4/8/9	1820	Soil	AOC 22-13 (37-39')	(2) VIALS		-4										X						
↓	↓	↓	↓	(1) Jar		-4				X												
—	—	Aq	MeOH Blank	(2) VIALS		-5										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/9/9	1200	Kelly Robinson	[signature]	14:50	4/9/09
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * See Attached Analyte List + Work Plan.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

CoC: 2 of 2.

Chain-of-Custody Record

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION- Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	~~TPH (Method 418.1)~~ ORO/GRO	~~EDB (Method 504.1)~~ Dissolved Metals	~~8310 (PNA or PAH)~~ NO_3/NO_2	~~RCRA 8 Metals~~ Metals*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen Chemistry	Cyanide	Ethanol	TPH-GRO, DRO, MRO	Air Bubbles (Y or N)
4/9/9	0810	Aq	AOC 22-13 (GW)	(1) Amber	None	-6											X					
				(3) VOAs	HCl	-6										X						
				(1) VOA	None	-6															X	
				(1) Poly	None	-6												X				
				(1) Poly	HNO_3	-6							X									
				(1) Poly	NaOH	-6													X			
				(1) Poly	HNO_3	-6					X											
				(1) Poly	H_2SO_4	-6						X										
4/8/9	1540	Soil	AOC 22-13 (0-0.5')	(3) Jars	None	-7							X				X		X		X	
				(2) VIALS	MeOH	-7										X						
				(2) Encor	None	-7										X						
—	—	Aq	Trip Blank	(3) VOAs	HCl	-8										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/9/9	1200	Kelly Robinson	[signature]	4/9/09	14:50
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * See Attached analyte list for Metals.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 383

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package: ☐ Standard ☑ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

[illegible]

[illegible]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO MRO GRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Gen Chemistry	NO_2 / NO_3	Dissolved Metals	Cyanide	Air Bubbles (Y or N)
4/9/9	0935	Aq	FB-040909	(5) VOAS	HCl	-9										X						
				(1) VOA	None	-9				X												
				(1) Poly	None	-9												X				
				(1) Poly	HNO_3	-9							X									
				(1) Poly	H_2SO_4	-9													X			
				(1) Poly	HNO_3	-9														X		
				(1) Amber	None	-9											X					
				(1) Poly	NaOH	-9															X	

Date	Time	Relinquished by	Received by	Date	Time
4/9/9	1700	Kelly Robinson	[signature]	4/9/09	14:40

Remarks: See previous COC

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 OF 2

Chain of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH) ~~4/14/09~~	~~RCRA 8 Metals~~ * + Cyanide	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)					Air Bubbles (Y or N)
4/13/9	0915	SOIL	AOC 22-12 (0-0.5')	(3) Jar	None	-1				X			X				X					
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
4/13/9	0915	SOIL	AOC 22-12 (0-0.5') DUP	(3) Jar	None	-2				X			X				X					
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
4/13/9	0930	Soil	AOC 22-12 (1.5-2.0')	(3) Jar	None	-3				X			X				X					
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
4/13/9	1150	Soil	AOC 22-12 (3.2-3.5')	(3) Jar	None	-4				X			X				X					
↓	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) Vials	MeOH	-4										X						

Date: 4/13/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date Time

Date: Time: Relinquished by:
Received by: [signature] Date 4/14/09 Time 1015

Remarks: * See Work Plan for analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 OF ~~X~~

Chain of Custody Record

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505.632.4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO/DRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ See Metals List	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Total Cyanide				Air Bubbles (Y or N)
4/13/9	1210	Soil	AOC 22-12 (36-37.75')	(2) Vials	MeOH	-5										X						
↓	↓	↓	↓	(2) Encores	None	-5										X						
↓	↓	↓	↓	(1) Jar	None	-5				X			X				X					
—	—	Aq	MeOH Blank	(2) VIALS	MeOH	-6										X						
—	—	Aq	Trip Blank	(3) VOAs	HCl	-7										X						
4/13/9	1240	Aq	EBS-041309	(5) VOAs	HCl	-8				X						X						
↓	↓	↓	↓	(1) VOAs	None	-8				X												
↓	↓	↓	↓	(1) Amber	None	-8											X					
↓	↓	↓	↓	(2) Poly	HNO_3/NaOH	-8							X					X				
			~~EB-041309~~																			

Date: 4/13/9 Time: 1500 Relinquished by: [signature] Received by: [signature] Date 4/14/09 Time 1015
Date: Time: Relinquished by: Received by: Date Time

Remarks: See previous COC

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

COC ~~1~~ 1 OF ~~3~~ 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/13/9	1250	Aq	FB-041309	(5) VOAS	HCl	-1										X						
↓	↓	↓	↓	(1) VOA	None	-1				X												
↓	↓	↓	↓	(1) Poly	NaOH	-1												X				
↓	↓	↓	↓	(1) Poly	HNO_3	-1							X									
↓	↓	↓	↓	(1) Amber	None	-1											X					
4/13/9	1325	Soil	AOC 22-16 (0-0.5')	(3) Jar	None	-2				X			X				X	X				
↓	↓	↓	↓	(2) Encore	None	-2										X						
↓	↓	↓	↓	(2) Vials	MeOH	-2										X						
4/13/9	1335	Soil	AOC 22-16 (1.5-2.0')	(3) Jar	None	-3				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) Vial	MeOH	-3										X						
—	—	Aq	Trip Blank	(3) VOA	HCl	-4										X						

Date: 4/13/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date: 4/14/09 Time: 1012

Date: Time: Relinquished by:
Received by: [signature] Date Time

Remarks: * See previous COC.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

COC 2 OF 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type) EXCEL

Turn-Around Time:

- ☑ Standard
- ☐ Rush

Project Name: RCRA INVESTIGATION GROUP3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: [illegible]

Sample Temperature: [illegible]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
—	—	Aq	MeOH Blank	MeOH	MeOH	-5										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/13/09	1500	Kelly Robinson	[signature]	4/14/09	1012
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* See attached analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) EXCEL

Turn-Around Time:

☑ Standard ☐ Rush ______

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method [illegible]) GRO, DRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen. Chemistry	Dissolved Metals *	NO_2/NO_3	Cyanide	Air Bubbles (Y or N)
4/14/9	835	Aq	AOC 22-12 (GW)	(5) VOAs	HCl	-1										X						
↓	↓	↓	↓	(1) VOA	None	-1				X												
				(1) Amber	None	-1											X					
				(1) Poly	NaOH	-1															X	
				(1) Poly	H_2SO_4	-1														X		
				(1) Poly	HNO_3	-1							X									
				(1) Poly	HNO_3	-1													X			
				(1) Poly	~~NaOH~~ None	-1												X				
—	—	Aq	Trip Blank	(3) VOAs	HCl	-2										X						
4/14/9	1230	Soil	AOC 22-14 (36-38')	(3) Jars		-3				X			X				X				X	
↓	↓	↓	↓	(2) Encore		-3										X						
				(2) Vial		-3										X						

Date: 4/14/9 Time: 1500 Relinquished by: Kelly Robinson

Received by: [signature] Date 4/15/09 Time 10:00

Date: Time: Relinquished by:

Received by: Date Time

Remarks: * See Attached

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 OF 4

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: ——

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)						Air Bubbles (Y or N)
—	—	Aq	MeOH Blank	(2) VIALS		-4										X							

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/14	1530	Kelly Robinson	[signature]	4/15/09	1000
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 OF 2

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST, INC.
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals See Attached	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (~~VOA~~)	8270 (Semi-VOA)					Air Bubbles (Y or N)
4/13/9	1705	SOIL	AOC 22-9 (1.5-2.0')	(3) Jars	None	-5 -1				X			X				X					
↓	↓	↓	↓	(2) Encore	↓	-5 -										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-5 -										X						
4/13/09	1535	SOIL	AOC 22-7 (1.5-2.0)	(3) JARS	NONE	-6 -2				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-6 -2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-6 -2										X						
4/13/09	1525	SOIL	AOC 22-7 (0-0.5')	(3) JARS	NONE	-7 -3				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-7 -3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-7 -3										X						
4/13/09	1615	SOIL	AOC 22-8 (0-0.5')	(3) JARS	NONE	-8 -4				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-8 -4										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-8 -4										X						

Date: 4/14/9 Time: 1500 Relinquished by: Kelly Robinson Received by: [signature] 10:00 4/15/09

Date: Time: Relinquished by: Received by: Date Time

Remarks: See Attached list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

COC 1 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals See Attached	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)					Air Bubbles (Y or N)
4/13/09	1630	SOIL	ADC 22-8(1.5-2.0)	(3) JARS	NONE	-1				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-1										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
4/13/09	1630	SOIL	ADC22-8(1.5-2.0)DUP	(3) JARS	NONE	-2				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
4/13/09	1655	SOIL	ADC22-9(0-0.5)	(3) JARS	NONE	-3				X			X				X					
↓	↓	↓	↓	(2) ENCORE	↓	-3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
—	—	—	MeOH BLANK	(2) VIALS	MeOH	-4										X						

Date: 4/14/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] 10:00 4/15/09 Date Time

Date: Time: Relinquished by:
Received by: Date Time

Remarks:
* See Attached

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

COC # 1 OF 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO, DRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/14/9	1410	Soil	AOC 22-10 (0-0.5')	(3) Jars	None	-1				X			X				X	X				
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
↓	↓	↓	↓	(2) Encore	None	-1										X						
4/14/9	1425	Soil	AOC 22-10 (1.5'-2.0')	(3) Jars	None	-2				X			X				X	X				
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
↓	↓	↓	↓	(2) Encore	None	-2										X						
4/14/9	1440	Soil	AOC 22-11 (0-0.5')	(3) Jars	None	-3				X			X				X	X				
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
↓	↓	↓	↓	(2) Encore	None	-3										X						
4/14/9	1415	Soil	AOC 22-11 (1.5-2.0')	(3) Jars	None	-4				X			X				X	X				
↓	↓	↓	↓	(2) VIALS	MeOH	-4										X						
↓	↓	↓	↓	(2) Encore	None	-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/15/9	1500	Kelly Robinson	[signature]	4/16/09	930
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * See Attached Analyte list for metals.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC "2" OF 2

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505.632.4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
Cooler: [illegible]
Sample Temperature: [illegible]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/14/9	1335	Aq	FB-041409	(5) VOAs	HCl	-5										X						
↓	↓	↓	↓	(1) VOA	None	-5				X												
				(1) Amber	None	-5											X					
				(1) Poly	HNO_3	-5							X									
				(1) Poly	NaOH	-5												X				
4/14/9	1045	Aq	EBS-041409	(5) VOAs	HCl	-6										X						
↓	↓	↓	↓	(1) VOA	None	-6				X												
				(1) Amber	None	-6											X					
				(1) Poly	HNO_3	-6							X									
				(1) Poly	NaOH	-6												X				
—	—	Aq	TRIP BLANK	(3) VOAs	HCl	-7										X						
—	—	Aq	MeOH Blank	MeOH		-8										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/15/9	1500	Kelly Robinson	[signature]	4/16/09	930
Date:	Time:	Relinquished by:	Received by:	Date	Time
			[signature]		

Remarks:
* See Attached list for Metals analytes.

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COC 1 of 3

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel: 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/15/9	1135	Soil	AOC 22-15 (1.0-1.5')	(3) Jar		-1				X			X				X	X				
↓	↓	↓	↓	(2) Encore		-1										X						
↓	↓	↓	↓	(2) VIALS		-1										X						
4/15/9	1155	Soil	AOC 22-15 (1.5-2.0')	(3) Jar		-2				X			X				X	X				
↓	↓	↓	↓	(2) Encore		-2										X						
↓	↓	↓	↓	(2) VIALS		-2										X						
4/15/9	1155	Soil	AOC 22-15 (1.5-2.0') DUP	(3) Jar		-3				X			X				X	X				
↓	↓	↓	↓	(2) Encore		-3										X						
↓	↓	↓	↓	(2) VIALS		-3										X						
—	—	Aq	MeOH Blank	(2) VIALS		-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/15/9	1500	Kelly Robinson	[signature]	4/16/09	0935

Remarks:
* See Attached Analyte list

COC 2 OF 3

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/15/9	1245	Soil	AOC 22-15 (30-32')	(3) Jar	None	-5				X			X				X	X				
↓	↓	↓	↓	(2) Encore	None	-5										X						
↓	↓	↓	↓	(2) Vial	MeOH	-5										X						
4/15/9	1315	Aq	FB-041509	(5) VOAs	HCl	-6										X						
↓	↓	↓	↓	(1) VOA	None	-6				X												
↓	↓	↓	↓	(1) Amber	None	-6											X					
↓	↓	↓	↓	(1) Poly	HNO_3	-6							X									
↓	↓	↓	↓	(1) Poly	NaOH	-6												X				
—	—	Aq	Trip Blank	(3) VOAs	HCl	-7										X						
4/15/9	1340	Soil	AOC 22-15 (34-36')	(3) Jar	None	-8				X			X				X	X				
↓	↓	↓	↓	(2) Vial	MeOH	-8										X						
↓	↓	↓	↓	(2) Encore	None	-8										X						

Date	Time	Relinquished by	Received by	Date	Time
4/15/9	1800	Kelly Robinson	[signature]	4/16/09	930

Remarks: See Attached for Metals Analyte List.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 3 of 3

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST, INC. BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990 BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *See Attached	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/15/9	1355	Aq	EBS-041509	(5) VOA	HCl	-9										X						
↓	↓	↓	↓	(1) VOA	None	-9				X												
↓	↓	↓	↓	(1) Poly	HNO_3	-9							X									
↓	↓	↓	↓	(1) Poly	NaOH	-9												X				
↓	↓	↓	↓	(1) Amber	None	-9											X					

Date	Time	Relinquished by	Received by	Date	Time
4/16/9	1500	Kelly Robinson	[signature]	4/16/09	930

Remarks: See Attached analyte list for metals.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain of Custody Record

COC 1 of 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals See Attached	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/16/9	900	Soil	AOC 26-8 (0-1.0')	(4) Jars	None	-1				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) Vials	MeOH	-1										X						
4/16/9	0900	Soil	AOC 26-8 (0-1.0') DUP	(4) Jars	None	-2				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) Vials	MeOH	-2										X						
↓	0920	Soil	AOC 26-8 (1.5-2.0')	(4) Jars	None	-3				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) Vials	MeOH	-3										X						
—	—	Aq	MeOH Blank	(2) Vials	MeOH	-4										X						
—	—	Aq	Trip Blank	(3) VOAs	HCl	-5										X						

Date	Time	Relinquished by	Received by	Date	Time
4/16/9	1500	[signature]	[signature]	4/17/09	940

Remarks: See Attached for Metals list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

LOC 2 OF 3

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST, INC

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505.632.4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ ~~Other~~

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/16/9	0945	Aq	FB-041609	(5) VOAs	HCl	-6										X						
↓	↓	↓	↓	(3) VOAs	None	-6				X									X			
				(1) Amber	None	-6											X					
				(1) Poly	HNO_3	-6							X									
				(1) Poly	NaOH	-6												X				
↓	1215	Aq	EBS-041609	(5) VOAs	HCl	-7										X						
	↓	↓	↓	(3) VOAs	None	-7				X									X			
				(1) Amber	None	-7											X					
				(1) Poly	HNO_3	-7							X									
				(1) Poly	NaOH	-7												X				
4/16/9	1430	Soil	AOC 26-8 (~~32-36~~)	(3) Jars	None	-8				X			X				X	X	X			
↓	↓	↓	↓ (32-36')	(2) encore	None	-8																

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/16/9	1500	[signature]	[signature]	4/17/09	940
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: *See Attached for metals analytes

COC 3 OF 3

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
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email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: [illegible]

Sample Temperature: [illegible]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
4/16/9	1430	Soil	AOC 24-8 (32-36')	(2) VIALS	MeOH	-8										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/16/9	1500	Kelly Robinson	[signature]	4/17/09	9:4
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See attached for metals analysts.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 2

Chain of Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: [illegible]
Sample Temperature: [illegible]

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) Gro DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals*	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (~~VOA~~)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/15/9	1615	SOIL	AOC 22-1 (1.5-2.0')	(3) Jars	None	-1				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) Vials	MeOH	-1										X						
4/15/9	1600	Soil	AOC 22-1 (0-0.5')	(3) Jars	None	-2				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) Vials	MeOH	-2										X						
↓	1630	SOIL	AOC 22-2 (0-0.5')	(3) Jars	None	-3				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) Vials	MeOH	-3										X						
↓	1640	Soil	AOC 22-2 (1.5-2.0')	(3) Jars	None	-4				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) Vials	MeOH	-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/16/9	1500	Kelly Robinson	[signature]	4/17/09	940

Remarks: *See Analyte list for metals

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 OF 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST, INC.
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO/MRO ORO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/15/9	1650	Soil	AOC 22-3 (0-0.5')	(3) Jars	None	-5				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-5										X						
↓	↓	↓	↓	(2) Vials	MeOH	-5										X						
4/15/9	1700	Soil	AOC 22-3 (1.5-2.0)	(3) Jars	None	-6				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-6										X						
↓	↓	↓	↓	(2) Vials	MeOH	-6										X						
4/15/9	1710	SOIL	AOC 22-4 (0-0.5)	(3) JARS	NONE	-7				X			X				X	X				
↓	↓	↓	↓	(2) ENCORE	↓	-7										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-7										X						
4/15/9	1720	SOIL	AOC 22-4 (1.5-2.0)	(3) JARS	NONE	-8				X			X				X	X				
↓	↓	↓	↓	(2) ENCORE	↓	-8										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-8										X						
			MeOH Blank		MeOH											X						

Date: 4/16/9 Time: 1500 Relinquished by: [signature] Received by: [signature] Date 4/17/09 Time 940

Date: Time: Relinquished by: Received by: Date Time

Remarks:
* See Attached Analytic List
Methanol Blank - 9 - 8260/680 AT 4/17/09

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505·632·4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Ethanol	Cyanide			Air Bubbles (Y or N)
4/20/9	1250	Soil	AOC 26-3 (0-0.5')	(4) Jar	None	-1				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
4/20/9	1300	Soil	AOC 26-3 (1.5-2.0')	(4) Jar	None	-2				X			X				X	X	X			
				(2) Encore	↓	-2										X						
			↓	(2) VIALS	MeOH	-2										X						
			AOC 26-3 (1.5-2.0') DUP	(4) Jar	None	-3				X			X				X	X	X			
				(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
4/20/9	1325	Soil	AOC 26-4 (0-0.5')	(4) Jar	None	-4				X			X				X	X	X			
				(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/20/9	1500	Kelly Robinson [signature]	[signature]	4/21/09	1005
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Refer to Work Plan Summary table for analyte list

Chain-of-Custody Record

COC 2 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC. BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990 BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Sample Temperature:

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA~~ 8 Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/20/9	1335	Soil	AOC 26-4(1.5-2.0')	(4) Jar	None	-5				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-5										X						
↓	↓	↓	↓	(2) Vials	MeOH	-5										X						
—	—	~~Aq~~ MeOH 4/21/09	MeOH Blank	2 VIALS	MeOH	-6										X						
4/20/9	1415	Aq	EBS-042009	(5) VOAS		-7										X						
↓	↓	↓	↓	(2) VOAS		-7				X									X			
↓	↓	↓	↓	(1) Amber		-7											X					
↓	↓	↓	↓	(1) Poly	HNO_3	-7							X					~~X~~				
↓	↓	↓	↓	(1) Poly	NaOH	-7												X				
—	—	Aq	Trip Blank	(3) VOAS	HCl	-8										X						

Date: 4/20/9 Time: 1500 Relinquished by: Kelly Robinson

Received by: [signature] Date 4/20/09 Time 1005

Date: Time: Relinquished by:

Received by: Date Time

Remarks: Refer to Work Plan Survey tables for analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

COC 1 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC
BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals * See Comments	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/20/9	955	Soil	AOC 26-9 (0-0.5')	(4) Jars	None	-1				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-1										X						
				(2) VIALS	MeOH	-1										X						
4/20/9	1000	Soil	AOC 26-9 (1.5-2.0')	(4) Jar	None	-2				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-2										X						
				(2) VIALS	MeOH	-2										X						
4/20/9	1200	Soil	AOC 26-1 (0-0.5')	(4) Jars	None	-3				X			X				X	X	X			
		↓	↓	(2) Encore	↓	-3										X						
				(2) VIALS	MeOH	-3										X						
	1215	Soil	AOC 26-1 (1.5-2.0')	(4) Jars	None	-4				X			X				X	X	X			
		↓	↓	(2) Encore	↓	-4										X						
↓				(2) VIALS	MeOH	-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/20/9	1500	Kelly Robinson	[signature]	4/21/09	1000
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * See Work Plan Summary Table for analysis

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 2 of 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) EXCEL

Turn-Around Time:

☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: Yes No

Sample Temperature:

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO, DRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/20/9	1115	Aq	FB-042009	(1) Amber	None	-5											X					
↓	↓	↓	↓	(5) VOAS	HCl	-5										X						
↓	↓	↓	↓	(3) VOAS	None	-5				X									X			
↓	↓	↓	↓	(1) Poly	HNO_3	-5							X									
↓	↓	↓	↓	(1) Poly	NaOH	-5												X				
4/20/9	1230	Soil	AOC 26-2 (0-0.5')	(4) Jars	None	-6				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-6										X						
↓	↓	↓	↓	(2) Vials	MeOH	-6										X						
4/20/9	1240	Soil	AOC 26-2 (1.5-2.0')	(4) Jars	None	-7				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-7										X						
↓	↓	↓	↓	(2) Vials	MeOH	-7										X						
—	—	Aq	Trip Blank	3 VOAS	HCl	-8										X						
—	—	Aq	MeOH Blank	2 Vials	MeOH	-9										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/20/9	1500	[signature]	[signature]	4/21/09	1000
Date:	Time:	Relinquished by:	Received by: [signature]	Date	Time

Remarks: See Work Plan Sampling Tables for analyte list

COC 1 of 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol			Air Bubbles (Y or N)
4/20/9	1530	SOIL	AOC 26-5 (0-0.5')	(4) Jar	None	-1				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
↓	1545	↓	AOC 26-5 (1.5-2.0')	(4) Jar	None	-2				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
↓	1600	↓	AOC 26-6 (0-0.5')	(4) Jar	None	-3				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
↓	1605	↓	AOC 26-6 (1.5-2.0')	(4) Jar	None	-4				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-4										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/21/9	1500	Kelly Robinson	[signature]	4/22/09	0935
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:

* Refer to Work Plan Summary Tables for analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

COC 2 OF 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505.632.4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice:
Sample Temperature:

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~ DRO MRO ORO)	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Ethanol **			Air Bubbles (Y or N)
4/20/09	1615	Soil	AOC 26-7 (0-0.5')	(4) Jar	None	-5				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-5										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-5										X						
4/20/09	1630	Soil	AOC 26-7 (1.5-2.0')	(4) Jar	None	-4				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-4										X						
—	—	~~MeOH Blk~~ AT 4/22	~~MeOH Blank~~	~~(2) VIALS~~	~~MeOH~~	~~-7~~										~~X~~	AT 4/22/09					
4/20/09	1520	Soil	AOC 26-9 (36-38')	(4) Jar	None	-8				X			X				X	X	X			
↓	↓	↓	↓	(2) Encore	None	-8										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-8										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/21/09	1500	Kelly Robinson	[signature]	4/22/09	9:35
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to WorkPlan Summary tables for analyte list.
** HOLD Ethanol samples

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 OF 1

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time:

☑ Standard ☐ Rush

Project Name:

RCRA INVESTIGATION - GROUP #3

Project #:

—

Project Manager:

KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/21/9	1115	Soil	AOC 23-1 (0-0.5')	(3) Jars	None	-1				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-1										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
↓	1115	Soil	AOC 23-1 (0-0.5') DUP	(3) Jars	None	-2				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
4/21/9	1130	Soil	AOC 23-1 (1.5-2.0')	(3) Jars	None	-3																
↓	↓	↓	↓	(2) Encore	↓	-3																
↓	↓	↓	↓	(2) VIALS	MeOH	-3																

Date	Time	Relinquished by	Received by	Date	Time
4/21/9	1500	Kelly Robinson SDV	[signature]	4/22/09	935
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * Refer to Work Plan Summary tables for analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 & 3

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM 87413
Phone #: (505) 632-4166
email or Fax#: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 3
Project #: ——
Project Manager: Kelly Robinson
Sampler: Tracy Payne
[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO, DRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	850	Soil	AOC24-1 (0-0.5')	(2) VIALS	MeOH	-1										X						
↓	↓	↓	↓	(2) Encore	None	-1										X						
↓	↓	↓	↓	(3) Jars	↓	-1				X			X				X	X				
4/23/9	900	Soil	AOC24-1 (1.5-2.0')	(2) VIALS	MeOH	-2										X						
↓	↓	↓	↓	(2) Encore	None	-2										X						
↓	↓	↓	↓	(3) Jar	↓	-2				X			X				X	X				
4/23/9	930	Soil	AOC24-2 (0-0.5')	(2) VIALS	MeOH	-3										X						
↓	↓	↓	↓	(2) Encore	None	-3										X						
↓	↓	↓	↓	(3) Jars	↓	-3				X			X				X	X				
4/23/9	940	Soil	AOC24-2 (1.5-2.0')	(2) VIALS	MeOH	-4										X						
↓	↓	↓	↓	(2) Encore	None	-4										X						
↓	↓	↓	↓	(3) Jars	↓	-4				X			X				X	X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/23/9	1500	Kelly Robinson	[signature]	4/24/09	1035
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Refer to Work Plan Summary Table for metals analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #2

COC 2 of 3

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87415

Phone #: (505) 632-4166

email or ~~Fax#~~: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ——

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO ORO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1000	Soil	AOC 24-3 (0-0.5')	(2) VIALS	MeOH	-5										X						
↓	↓	↓	↓	(2) Encore	None	-5										X						
↓	↓	↓	↓	(3) Jar	↓	-5				X			X				X	X				
4/23/9	1010	Soil	AOC 24-3 (1.5-2.0')	(2) VIALS	MeOH	-6										X						
↓	↓	↓	↓	(2) Encore	None	-6										X						
↓	↓	↓	↓	(3) Jar	↓	-6				X			X				X	X				
4/23/9	1030	Soil	AOC 24-4 (0-0.5')	(2) VIALS	MeOH	-7										X						
↓	↓	↓	↓	(2) Encore	None	-7										X						
↓	↓	↓	↓	(3) Jars	↓	-7				X			X				X	X				
4/23/9	1040	Soil	AOC 24-4 (1.5-2.0')	(2) VIALS	MeOH	-8										X						
↓	↓	↓	↓	(2) Encore	None	-8										X						
↓	↓	↓	↓	(3) Jar	↓	-8				X			X				X	X				

Date: 4/23/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date 4/24/09 Time 1035

Date: Time: Relinquished by:
Received by: Date Time

Remarks:
* Refer to Work Plan Summary tables for Metals list

LOC 3 of 3

Chain-of-Custody Record

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package: ☐ Standard ☑ Level 4 (Full Validation)

Accreditation ☐ NELAP ☐ Other

☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B ~~(VOA)~~	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1040	Soil	AOC 24-4 (1.5-2.0') Dup	(2) Vials	MeOH	-9										X						
↓	↓	↓	↓	(2) Encore	None	-9										X						
↓	↓	↓	↓	(3) Jars	None	-9				X			X				X	X				
—	—	MeOH Kit 4/24/09 Aq	MeOH Blank	(2) Vials	MeOH	-10										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/23/9	1500	Kelly Robinson	[signature]	4/24/09	1035
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to Work Plan Summary Tables for Metals list.

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Cooler #2

Chain of Custody Record

COC 1 OF 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other
- ☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) Gro Dro Mro	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Air Bubbles (Y or N)
4/21/9	1540	Aq	FB-042109	(5) VOAs	HCl	-1										X			
↓	↓	↓	↓	(1) VOA	None	-1				X									
				(1) Amber	None	-1											X		
				(1) Poly	HNO_3	-1							X						
				(1) Poly	NaOH	-1												X	
4/22/09	1540	Aq	FB-042209	(5) VOAs	HCl	-2													
↓	↓	↓	↓	(1) VOA	None	-2													
				(1) Amber	None	-2													
				(1) Poly	HNO_3	-2													
				(1) Poly	NaOH	-2													

Date	Time	Relinquished by	Received by	Date	Time
4/23/9	1500	Kelly Robinson	[signature]	4/24/09	1035
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * Refer to Work Plan Summary table for analyte list on metals

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1

COC 2 OF 2

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD REFINERY
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505.632.4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush ______
Project Name: RCRA INVESTIGATION GROUP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE
On Ice: [illegible]
Sample Temperature: [illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/22/9	1520	Aq	EBS-042209	(5) VOAs	HCl	-3										X						
				(1) VOA	None	-3				X												
				(1) Amber	None	-3											X					
				(1) Poly	HNO_3	-3							X									
				(1) Poly	NaOH	-3												X				
4/21/09	1520	Aq	EBS-042109	(5) VOAs	HCl	-4																
				(1) VOA	None	-4																
				(1) Amber	~~An~~ None	-4																
				(1) Poly	HNO_3	-4																
				(1) Poly	NaOH	-4																
—	—	Aq	Trip Blank	(3) VOAs	HCl	-5										X						
—	—	~~Aq~~ MeOH	MeOH Blank	(2) VOAs	MeOH	-6										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/23/9	1500	Kelly Robinson	[signature]	4/24/09	1035
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* See Previous COC.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1

Chain-of-Custody Record

COC 3 OF 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: WESTERN REFINING SOUTHWEST INC.

BLOOMFIELD REFINERY

Mailing Address: 50 ROAD 4990

BLOOMFIELD, NM 87413

Phone #: 505-632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION GROUP 3

Project #: —

Project Manager: KELLY ROBINSON

Sampler: TRACY PAYNE

On Ice: Yes No

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/22/9	1510	Soil	AOC 23-1(52-53')	(2) Encore		-7										X						
↓	↓	↓	↓	(2) Vials		-7										X						
↓	↓	↓	↓	(3) Jars		-7				X			X				X	X				

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/23/9	1500	Kelly Robinson	[signature]	4/24/09	1035
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See Previous COC.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1

Chain-of-Custody Record

Coc 1 of 2

Cooler #1

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield, NM

Mailing Address: 50 Road 4990 Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package: ☐ Standard ☑ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other

☐ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: —

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1750	Aq	EBS-042309	(5) VOAs	HCl	-1										X						
↓	↓	↓	↓	(1) VOA	None	-1				X												
↓	↓	↓	↓	(1) Amber	None	-1											X					
↓	↓	↓	↓	(1) Poly	HNO_3	-1							X									
↓	↓	↓	↓	(1) Poly	NaOH	-1												X				
4/23/9	1740	Aq	FB-042309	(5) VOAs	HCl	-2										X						
↓	↓	↓	↓	(1) VOA	None	-2				X												
↓	↓	↓	↓	(1) Amber	None	-2											X					
↓	↓	↓	↓	(1) Poly	HNO_3	-2							X									
↓	↓	↓	↓	(1) Poly	NaOH	-2												X				
—	—	Aq	Trip Blank	(3) VOAs	HCL	-3										X						
—	—	Aq	MeOH Blank	(2) VIALs	MeOH	-4										X						

Date: 4/24/9 Time: 1200 Relinquished by: Kelly Robinson

Received by: [signature] 16:20 4/24/09

Date: Time: Relinquished by:

Received by: Date Time

Remarks: * Refer to Work Plan Summary table for metals list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1 Coc 2 of 2

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush______

Project Name: RCRA INVESTIGATION - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) GRO DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1600	Soil	AOC 25-1 (0-0.5')	(3) Jar	None	-5				X			X				X	X				
				(2) Encore		-5										X						
				(2) Vial	MeOH	-5										X						
4/23/9	1610	Soil	AOC 25-1 (1.5-2.0')	(3) Jar	None	-6				X			X				X	X				
				(2) Encore		-6										X						
				(2) Vial	MeOH	-6										X						

Date: 4/24/09 Time: 1200 Relinquished by: Kelly Robinson

Received by: [signature] 16:20 4/24/09

Date: Time: Relinquished by:

Received by: Date Time

Remarks: See previous Coc

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #2 COC 1 of 3

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST, INC
BLOOMFIELD, NM

Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413

Phone #: (505) 632-4166

email or Fax#: KELLY.ROBINSON@WNR.COM

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
RCRA INVESTIGATION-GRP 3

Project #:
—

Project Manager:
KELLY ROBINSON

Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ Gas DRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1410	Soil	SWMU 5-1 (0-0.5')	(3) Jars	None	-1				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-1										X						
				(2) Vials	MeOH	-1										X						
	1420	Soil	SWMU 5-1 (1.5-2.0')	(3) Jars	None	-2				X			X				X	X				
	↓	↓	↓	(2) Encore	↓	-2										X						
				(2) Vials	MeOH	-2										X						
	1430	Soil	SWMU 5-2 (0-0.5')	(3) Jars	None	-3				X			X				X	X				
	↓	↓	↓	(2) Encore	↓	-3										X						
				(2) Vials	MeOH	-3										X						
	1435	Soil	SWMU 5-2 (1.5-2.0')	(3) Jars	None	-4				X			X				X	X				
	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) Vials	MeOH	-4										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/24/9	1200	Kelly Robinson	[signature]	4/24/09	16:20
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to Work Plan Summary Tables for Metals analyte list

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Coder #2 COC 2 of 3

Chain-of-Custody Record

Client: WESTERN REFINERIES SOUTHWEST INC
BLOOMFIELD, NM
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505.632.4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush ______
Project Name: RCRA INVESTIGATION GROUP 3
Project #: ——
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1440	Soil	SWMU S-3 (0-0.5')	(3) Jars	None	-5				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-5										X						
↓	↓	↓	↓	(2) Vials	MeOH	-5										X						
↓	1445	Soil	SWMU S-3 (1.5-2.0')	(3) Jars	None	-6				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-6										X						
↓	↓	↓	↓	(2) Vials	MeOH	-6										X						
↓	1450	Soil	SWMU S-4 (0-0.5')	(3) Jars	None	-7				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-7										X						
↓	↓	↓	↓	(2) Vials	MeOH	-7										X						
↓	1455	Soil	SWMU S-4 (1.5-2.0')	(3) Jars	None	-8				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-8										X						
↓	↓	↓	↓	(2) Vials	MeOH	-8										X						

Date: 4/24/9 Time: 1200 Relinquished by: Kelly Robinson
Received by: [signature] Date 4/24/09 Time 16:20

Date: Time: Relinquished by:
Received by: Date Time

Remarks: * Refer to previous COC.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Code #2

COC 3 of 3

Chain-of-Custody Record

Client: WESTERN REFINING SOUTHWEST INC.
BLOOMFIELD, NM
Mailing Address: 50 ROAD 4990
BLOOMFIELD, NM 87413
Phone #: 505-632-4166
email or Fax#: KELLY.ROBINSON@WNR.COM
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time: ✓ Standard ☐ Rush
Project Name: RCRA INVESTIGATION-GRP 3
Project #: —
Project Manager: KELLY ROBINSON
Sampler: TRACY PAYNE

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH/Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO/GRO/MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1500	Soil	SWMU 5-5 (0-0.5')	(3) Jars	None	-9				X			X				~~X~~	X				
↓	↓	↓	↓	(2) Encore	↓	-9										X						
↓	↓	↓ AT 4/27/09	↓	(2) VIALS	MeOH	-9										X						
—	—	~~AQ~~ MeOH	MeOH Blank	(2) VIALS	MeOH	-10										X						

Date	Time	Relinquished by	Received by	Date	Time
4/24/9	1200	Kelly Robinson	[signature]	4/24/09	16:20

Remarks: * Refer to Work Plan Summary tables for metals analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #3 CoC 1&2

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package: ☐ Standard ☑ Level 4 (Full Validation)

Accreditation: ☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION - GROUP 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Tracy Payne

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1720	Soil	AOC 22-5 (0-0.5')	(3) Jars	None	-1				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	4/24/09 -81										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-1										X						
↓	1730	Soil	AOC 22-5 (1.5-2.0')	(3) Jars	None	-2				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-2										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-2										X						
↓	1650	Soil	AOC 22-6 (0-0.5')	(3) Jars	None	-3				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-3										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-3										X						
↓	1655	Soil	AOC 22-6 (1.5-2.0')	(3) Jars	None	-4				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-4										X						
↓	↓	↓	↓	(2) Vials	MeOH	-4										X						

Date	Time	Relinquished by	Received by	Date	Time
4/24/9	1200	Kelly Robinson	[signature]	4/24/09	16:20

Remarks: * Refer to Work Plan Summary Table for Metals analyte list cooler 3

CoC 2 of 2

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name:
RCRA INVESTIGATION Group 3

Project #: ______

Project Manager:
Kelly Robinson

Sampler: Tracy Payne

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO/GRO	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide				Air Bubbles (Y or N)
4/23/9	1505	Soil	SWMU 5-5 (1.5-2.0')	(3) Jars	None	-5				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-5										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-5										X						
4/23/9	1505	Soil	SWMU 5-5 (1.5-2.0') Dup	(3) Jars	None	-6				X			X				X	X				
↓	↓	↓	↓	(2) Encores	↓	-6										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-6										X						
4/23/9	1510	Soil	SWMU 5-6 (0-0.5')	(3) Jars	None	-7				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-7										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-7										X						
4/23/9	1515	Soil	SWMU 5-6 (1.5-2.0')	(3) Jars	None	-8				X			X				X	X				
↓	↓	↓	↓	(2) Encore	↓	-8										X						
↓	↓	↓	↓	(2) VIALS	MeOH	-8										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
4/24/9	1200	Kelly Robinson (MeOH Blank)	[signature] MeOH	16:20	4/24/09
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* See Previous COC
MeOH Blank #9 43

COC 1 of ~~2~~ 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
RCRA Investigation - Group 3

Project #: ______

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO MRO GRO	~~EDB (Method 504.1)~~ Gen Chemistry	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Dissolved Metals	NO_2/NO_3		Air Bubbles (Y or N)
5/13/9	1130	Aq	MW-~~#~~ 102	(1) VOA	None	-1				X												
↓	↓	↓	↓	(1) Poly	None	-1					X											
				(2) Poly	HNO_3	-1							X						X			
				(5) VOAs	HCl	-1										X						
				(1) Amber	None	-1											X					
				(1) Poly	NaOH	-1												X				
				(1) Poly	H_2SO_4	-1														X		
5/12/9	1720	Aq	EBW-051209	(1) VOA	None	-2				X												
↓	↓	↓	↓	(1) Poly	None	-2					X											
				(2) Poly	HNO_3	-2							X						X			
				(5) VOAs	HCl	-2										X						
				(1) Amber	None	-2											X					
				(1) Poly	NaOH	-2												X				
				(1) Poly	H_2SO_4	-2														X		

Date	Time	Relinquished by:	Received by:	Date	Time
5/13/9	1500	Kelly Robinson			
Date:	Time:	Relinquished by:	Received by: [signature]	5/14/09	10:00

Remarks: Refer to attached analytical list for metals and general chemistry

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Q.out : 0905247

Coc ~~2~~ 2 of ~~3~~ 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

[redacted]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	[redacted]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	~~EDB (Method 504.1)~~ Gen Chemistry	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals	Cyanide	NO_2/NO_3		Air Bubbles (Y or N)
5/13/9	910	Aq	MW-61	(1) VOA	None	-3				X												
				(1) Poly	None	-3					X											
				(2) Poly	HNO_3	-3							X					X				
				(5) VOAs	HCl	-3										X						
				(1) Amber	None	-3											X					
				(1) Poly	NaOH	-3													X			
				(1) Poly	H_2SO_4	-3														X		
—	—	Aq	TRIP BLANK	(3) VOAs	HCl	-4										X						

Date	Time	Relinquished by:	Received by:	Date	Time
5/13/9	1500	Kelly Robinson			
Date	Time	Relinquished by:	Received by: [signature]	10:00	5/14/09

Remarks: See Previous COC

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Report # 0905247

Coc 3 of 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, ~~Refinery~~ NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other

☑ EDD (Type) EXCEL

Turn-Around Time:

☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO/MRO/GRO	~~EDB (Method 504.1)~~ Gen Chemistry	8310 (PNA or PAH)	~~RCRA 8 Metals~~ *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals	Cyanide	NO_2/NO_3		Air Bubbles (Y or N)
5/12/9	1700	Aq	FB-051209	(1) VOA	None	-5				X												
				(1) Poly	None	-5					X											
				(2) Poly	HNO_3	-5							X					X				
				(5) VOAs	HCl	-5										X						
				(3) Amber	None	-5											X					
				(1) Poly	H_2SO_4	-5														X		
				(1) Poly	NaOH	-5													X			

Date	Time	Relinquished by:	Received by:	Date	Time
5/13/9	1500	Kelly Robinson			
Date:	Time:	Relinquished by:	Received by: [signature]	5/14/09	10:00

Remarks: Refer to attached analytical list for metals and general chemistry

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Report # 0905247

COC 1 of 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
RCRA INVESTIGATION - GROUP 3

Project #: ——

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com Cooler #2
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO, GRO, MRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ * Gen Chem	~~RCRA 8 Metals~~ Dissolved Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals* (See Reference)	Cyanide	Ethanol	NO_2/NO_3	Air Bubbles (Y or N)
5/12/9	1400	Aq	MW-66	(1) VOA	None	-1				X												
				(1) Poly	None	-1						X										
				(2) Poly	HNO_3	-1							X					X				
				(5) VOA	HCl	-1										X						
				(1) Amber	None	-1											X					
				(1) Poly	NaOH	-1													X			
				(1) VOA	NONE	-1														X		
				(1) Poly	H_2SO_4	-1															X	
—	—	Aq	TRIP BLANK	(3) VOA	HCl	-2																

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/13/9	1500	Kelly Robinson	[signature]	5/14/09	10:00
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to attached analyte list for metals and gen chemistry list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Coc 2 of 3

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com Cooler #2

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Client: Western Refining Southwest Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush ______

Project Name: RCRA-INVESTIGATION-Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ Gen Chem	~~RCRA 8 Metals~~ Dissolved Metals*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals* (See reference)	Cyanide	Ethanol	NO_2/NO_3	Air Bubbles (Y or N)
5/12/9	1630	Aq	~~MS~~ MW-65	(1) VOA	None	-3				X												
				(1) Poly	None	-3						X										
				(2) Poly	HNO_3 ~~H_2SO_4~~	-3							X					X				
				(5) VOAs	HCl	-3										X						
				(1) Poly	NaOH	-3													X			
				(2) VOAS	None	-3														X		
				(1) Poly	H_2SO_4	-3															X	
				(1) Amber	None	-3											X					

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/13/9	1500	Kelly Robinson	[signature]	5/14/09	10:00
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: Refer to attached analyte list for metals and general chemistry.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Coc 3 of 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com Cooler #2

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO MRO GRO	~~EDB (Method 504.1)~~ Gen Chem	8310 (PNA or PAH)	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals	Cyanide	Ethanol	NO_2/NO_3	Air Bubbles (Y or N)
5/12/9	1630	Aq	MW-65 (DUP)	(1) VOA	None	-4				X												
↓	↓	↓	↓	(1) Poly	None	-4					X											
				(2) Poly	HNO_3	-4							X					X				
				(5) VOAs	HCl	-4										X						
				(1) Amber	None	-4											X					
				(1) Poly	NaOH	-4													X			
				(2) VOAs	None	-4														X		
				(1) Poly	H_2SO_4	-4															X	

Date: 5/13/9 Time: 1500 Relinquished by: Kelly Robinson

Received by: [signature] Date 10:00 Time 5/14/09

Date: Time: Relinquished by:

Received by: Date Time

Remarks: Refer to attached analyte list for Metals and General Chemistry

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

CoC X of 2

Chain-of-Custody Record

Client: Western Refining Southwest, Inc Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard
☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION - GROUP 3

Project #: ~~RCRA Investigation Group 3~~

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ Gen Chem.	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals *	Cyanide	NO_2/NO_3		Air Bubbles (Y or N)
5/14/9	1020	Aq	MW-60	(1) VOA	None	-3				X												
				(1) Poly	None	-3						X										
				(2) Poly	HNO_3	-3							X					X				
				(5) VOAs	HCl	-3										X						
				(1) Amber	None	-3											X					
				(1) Poly	NaOH	-3													X			
				(1) Poly	H_2SO_4	-3														X		
5/14/9	1215	Aq	FB-051409	(1) VOA	None	-4				X												
				(1) POLY	NONE	-4						X										
				(2) Poly	HNO_3	-4							X					X				
				(5) VOAs	HCl	-4										X						
				(1) Amber	None	-4											X					
				(1) Poly	NaOH	-4													X			
				(1) Poly	H_2SO_4	-4														X		
—	—	Aq	TRIP BLANK	(3) VOAs	HCl	-5										X						

Date	Time	Relinquished by	Received by	Date	Time
5/14/9	1500	Kelly Robinson	[signature]	5/15/09	10:00

Remarks: Refer to attached analyte list for Gen Chem + metals.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 1

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM 87413
Phone #: (505) 632-4166
email or Fax#: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA INVESTIGATION - GROUP 3
Project #: —
Project Manager: Kelly Robinson
Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ Gen Chem	~~RCRA 8 Metals~~* Dissolved Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Metals* (See Reference)	Cyanide	~~[illegible]~~	NO_2/NO_3	Air Bubbles (Y or N)
5/14/9	0900	Aq	MW-59	(1) VOA	None	-1				X												
				(1) Poly	None	-1						X										
				(2) Poly	~~[illegible]~~ HNO3	-1							X					X				
				(5) VOAs	HCl	-1										X						
				(1) Amber	None	-1											X					
				(1) Poly	NaOH	-1													X			
				(1) Poly	H_2SO_4	-1															X	
5/14/9	1245	Aq	EBW-051409	(1) VOA	None	-2				X												
				(1) Poly (2) Poly	None HNO_3	-2						X	X					X				
				(5) VOA (1) Amber	HCl None	-2										X	X					
				(1) Poly	NaOH	-2													X			
				(1) Poly	H_2SO_4	-2															X	

Date: 5/14/9 Time: 1500 ~~1400~~ Relinquished by: Kelly Robinson
Received by: [signature] 10:00 5/15/09 Date Time
Date: Time: Relinquished by:
Received by: Date Time

Remarks: Refer to attached analyte list for metals and general Chemistry

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 1 of 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM 87413
Phone #: (505) 632-4166
email or Fax#: kelly.robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 3
Project #:
Project Manager: Kelly Robinson
Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY #1 Cooler

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO GRO MRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ Gen Chemistry	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals * Field Filter	Cyanide	NO_2/NO_3			Air Bubbles (Y or N)
5/13/9	1515	Aq	MW-64	(1) VOA	None	-1				X													
				(1) Poly	None	-1						X											
				(2) Poly	HNO_3	-1							X					X					
				(5) VOAs	HCl	-1										X							
				(1) Amber	None	-1											X						
				(1) Poly	NaOH	-1													X				
				(1) Poly	H_2SO_4	-1														X			
5/13/9	1700	Aq	FB-051309	(1) VOA	None	-2				X													
				(1) Poly	None	-2						X						X					
				(2) Poly	HNO_3	-2							X										
				(5) VOA	HCl	-2										X							
				(1) Amber	None	-2											X						
				(1) Poly	NaOH	-2													X				
				(1) Poly	H_2SO_4	-2														X			

Date: 5/14/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date: 5/15/09 Time: 10:00
Date: Time: Relinquished by:
Received by: Date Time

Remarks: Refer to attached analyte list for metals and general Chemistry
(1) ~~The VOA for TPH~~

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Lab Report 0905299

Chain-of-Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield, NM 87413
Phone #: (505) 632-4166
email or Fax#: Kelly.Robinson@wnr.com
QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
Accreditation
☐ NELAP ☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush
Project Name: RCRA Investigation - Group 3
Project #:
Project Manager: Kelly Robinson
Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Cooler #1

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~) DRO MRO GRO	EDB (Method 504.1)	~~8310 (PNA or PAH)~~ Gen Chemistry	~~RCRA 8~~ Metals *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Cyanide	Dissolved Metals	NO_2/NO_3		Air Bubbles (Y or N)
5/13/9	1640	Aq	~~MW-62~~ MW-63	(1) VOA	None	-3				X												
				(1) Poly	None	-3						X										
				(2) Poly	HNO_3	-3							X						X			
				(5) VOAs	HCl	-3										X						
				(1) Amber	None	-3											X					
				(1) Poly	H_2SO_4	-3														X		
				(1) Poly	NaOH	-3												X				
5/13/09	1730	Aq	EBW-051309	(1) VOA	None	-4																
				(3) Poly	None	-4																
				(2) Poly	HNO_3	-4																
				(5) VOAs	HCl	-4																
				(1) Amber	None	-4																

Date: 5/14/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date 5/15/09 Time 10:00
Date: Time: Relinquished by:
Received by: Date Time

Remarks: Refer to attached analyte list for metals and general Chemistry

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Lab Report 0905299

Coc 3 of 3

Chain-of-Custody Record

Client: Western Refining Southwest Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:

☐ Standard ☑ Level 4 (Full Validation)

☐ Other ______

☑ EDD (Type) Excel

Turn-Around Time:

☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Cooler #1

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	NO_2/NO_3	Cyanide			Air Bubbles (Y or N)
5/13/09	1730	Aq	EBW-051309	(1) Poly	H_2SO_4	-4												X				
↓	↓	↓	↓	(1) Poly	NaOH	-4													X			
—	—	Aq	Trip Blank	(3) VOAs	HCl	-5										X						

Date	Time	Relinquished by:	Received by:	Date	Time
5/14/09	1500	Kelly Robinson	[signature]	5/15/09	10:00
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: See Previous COC.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Lab Report 0905299

Coc 1/2

Chain of Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~)	EDB (Method 504.1)	8310 (PNA or PAH)	~~8081~~ Metals Filtered *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Total Metals *	Gen Chemistry	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/15/9	1130	Aq	MW-64	(1) VOA	None	1				X												
				(5) VOA	HCl	1										X						
				(1) Poly	None	1													X			
				(1) Poly	HNO_3	1							X					X				
				(1) Amber	None	1											X					
				(1) Poly	NaOH	1														X		
				(1) Poly	H_2SO_4	1															X	
—	—	Aq	TRIP BLANK	(3) VOA	HCl	2										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/15/9	1500	Kelly Robinson	[signature]	7/16/09	1000
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to attached analyte list
Call with questions

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1

COC 272

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~	~~EDB (Method 504.1)~~ Ethanol	8310 (PNA or PAH)	~~RCRA 8~~ Metals Dissolved *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Total Metals *	Gen Chemistry *	NO_2/NO_3	Cyanide	Air Bubbles (Y or N)
7/15/9	0915	Aq	MW-66	(3) VOAs	None	3				X	X											
↓	↓	↓	↓	(5) VOAs	HCl	3										X						
				(1) Poly	None	3													X			
				(1) Poly	HNO_3	3							X					X				
				(1) Amber	None	3											X					
				(1) Poly	NaOH	3															X	
				(1) Poly	H_2SO_4	3														X		
			~~TRIP BLA~~																			

Date	Time	Relinquished by	Received by	Date	Time
7/15/9	1800	Kelly Robinson	[signature]	7/16/09	1020

Remarks:
* Refer to Analyte List.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #2

Coc Zp 2

Chain-of-Custody Record

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other
☑ EDD (Type) EXCEL

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #:

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~)	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals (Filtered) *	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen Chemistry *	Total Metals *	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/15/9	1300	Aq	MW-63	(1) VOAs	None	1				X												
				(5) VOAs	HCl	1										X						
				(1) Poly	None	1												X				
				(1) Poly	HNO_3	1							X						X			
				(1) Amber	None	1											X					
				(1) Poly	NaOH	1														X		
				(1) Poly	H_2SO_4	1															X	
—	—	Aq	TRIP Blank	(3) VOA	HCl	2										X						

Date: 7/15/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: AB Date: 7/16/09 Time: 1020

Date: Time: Relinquished by: Received by: Date Time

Remarks:
* Refer to attached analyte list
Call with questions.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #f Report 0907286

COC 1 of 2

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 · Fax 505-345-4107

Client: Western Refining Southwest, Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other ______
- ☑ EDD (Type) ______

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: RCRA Investigation - Group 3

Project #: ——

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~[illegible]~~	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8 Metals~~ * (Filtered)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen. Chemistry*	Total Metals*	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/15/9	1300	Aq	MW-~~62~~ 63 (Dup)	(1) VOAs	None	3				X												
				(5) VOAs	HCl	3										X						
				(1) Poly	None	3												X				
				(2) Poly	HNO_3	3							X						X			
				(1) Amber	None	3											X					
				(1) Poly	NaOH	3														X		
				(1) Poly	H_2SO_4	3															X	

Date	Time	Relinquished by	Received by	Date	Time
7/15/	1500	Kelly Robinson	[signature]	7/16/09	1020

Remarks: *Refer to attached analyte list
Call w/ questions.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #1

Report 0907286

COC 1 - 3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ________
☑ EDD (Type) Excel

Turn-Around Time:
☒ Standard ☐ Rush ________

Project Name:
RCRA Investigation - Group 3

Project #:
____

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson

On Ice: [illegible]
Sample Temperature: [illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. [illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals (Filtered)*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen Chemistry*	Total Metals*	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/16/9	1300	Aq	MW-61	(1) VOA	None	1				X												
				(5) VOAs	HCl	1										X						
				(1) Poly	None	1												X				
				(4) ~~(2)~~ Poly	HNO_3	1							X						X			
				(1) Amber	None	1											X					
				(1) Poly	NaOH	1														X		
				(1) Poly	H_2SO_4	1															X	
—	—	Aq	TRIP BLANKS	(3) VOAs	HCl	2										X						

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/16/9	1500	Kelly Robinson	[signature]	7/17/09	1025
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
*Refer to attached analyte list.
Call w/ questions

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Cooler #3

COC 2 of 5

Chain of Custody Record

Client: Western Refining Southwest Inc
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) EXCEL

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
RCRA Investigation - Group 3

Project #:

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson

Office Use / Sample Temperature: [illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~)	~~EDB (Method 504.1)~~ Ethanol	8310 (PNA or PAH)	* ~~RCRA 8~~ Metals (filtered)	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Total Metals*	Gen Chemistry*	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/16/9	1145	Aq	MW-65	(3) VOA	None	3				X	X											
↓	↓	↓	↓	(5) VOAs	HCl	3										X						
				(1) Poly	None	3													X			
				(2) Poly	HNO_3	3							X					X				
				(1) Amber	None	3											X					
				(1) Poly	NaOH	3														X		
				(1) Poly	H_2SO_4	3															X	

Date: 7/16/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: [signature] Date 7/17/09 Time 1025

Date: Time: Relinquished by:
Received by: Date Time

Remarks:
* Refer to Analyte List.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

COC 3-3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc.
Bloomfield Refinery

Mailing Address: 50 Road 4990
Bloomfield, NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) ______

Turn-Around Time: ☑ Standard ☐ Rush

Project Name: RCRA INVESTIGATION - (GROUP ~~1~~ 3)

Project #: ______

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~)	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals (Filtered)*	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Gen. Chemistry*	Total Metals*	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/16/9	0900	Aq	MW-59	(1) VOA	NONE	4				X												
↓	↓	↓	↓	(5) VOAs	HCl	4										X						
↓	↓	↓	↓	(1) Poly	None	4												X				
↓	↓	↓	↓	(2) Poly	HNO_3	4							X						X			
↓	↓	↓	↓	(1) Amber	None	4											X					
↓	↓	↓	↓	(1) Poly	NaOH	4														X		
↓	↓	↓	↓	(1) Poly	H_2SO_4	4															X	

Date	Time	Relinquished by	Received by	Date	Time
7/16/9	1500	Kelly Robinson	[signature]	7/17/09	1025
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks:
* Refer to attached analyte list.
Call with questions.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

* Bullet 22/23

Cooler #3

Chain-of-Custody Record

Client: Western Refining Southwest, Inc. Bloomfield Refinery

Mailing Address: 50 Road 4990 Bloomfield NM 87413

Phone #: (505) 632-4166

email or Fax#: Kelly.Robinson@wnr.com

QA/QC Package:
- ☐ Standard
- ☑ Level 4 (Full Validation)
- ☐ Other ______
- ☑ EDD (Type) ______

Turn-Around Time: ☑ Standard ☐ Rush ______

Project Name: RCRA Investigation - Group 3

Project #: ______

Project Manager: Kelly Robinson

Sampler: Kelly Robinson

[illegible]

[illegible]

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Lab Report 0907315

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and # (KR 8/13/9)	Preservative Type	[illegible]	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (~~Method 418.1~~)	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals (filtered)*	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Total Metals *	Gen. Chemistry	Cyanide	NO_2/NO_3	Air Bubbles (Y or N)
7/16/9	1030	Aq	~~MW-65~~ MW-62	(1) VOAs	None	1				X												
↓	↓	↓	↓	(5) VOAs	HCl	1										X						
				(1) Poly	None	1													X			
			(4)	(2) Poly	HNO_3	1							X					X				
				(1) Amber	None	1											X					
				(1) Poly	NaOH	1														X		
				(1) Poly	H_2SO_4	1															X	
			~~EBW~~																			
7/15/9	1600	Aq	EBW-071509	(1) VOA	None	2				X												
↓	↓	↓	↓	(5) VOAs	HCl	2										X						
				(1) Poly	None	2													^			
				(4) Poly	HNO_3	2							X					X				

Date	Time	Relinquished by:	Received by:	Date	Time
7/16/9	1500	Kelly Robinson	[signature]	7/17/09	1025
Date:	Time:	Relinquished by:	Received by:	Date	Time

Remarks: * Refer to attached analyte list.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Western Refining Southwest, Inc
Bloomfield Refinery
Mailing Address: 50 Road 4990
Bloomfield NM 87413
Phone #: (505) 632-4166
email ~~or Fax#~~: Kelly.Robinson@wnr.com

QA/QC Package:
☐ Standard ☑ Level 4 (Full Validation)
☐ Other ______
☑ EDD (Type) Excel

Turn-Around Time:
☑ Standard ☐ Rush

Project Name:
RCRA Investigation - Group 3

Project #:

Project Manager:
Kelly Robinson

Sampler: Kelly Robinson

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type		BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH ~~(Method 418.1)~~ *	EDB (Method 504.1)	8310 (PNA or PAH)	~~RCRA 8~~ Metals, * Total	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Dissolved Metals *	NO_2/NO_3	Gen Chemistry *	Cyanide	Air Bubbles (Y or N)
7/29/9	13:20 ~~1329~~	Aq	TW-01	(5) VOAs	HCl	/				X						X						
↓	↓	↓	↓	(1) VOA	None	/				X												
				(3) Poly	HNO_3	/							X					X				
				(1) Poly	NaOH	/															X	
				(1) Poly	None	/														X		
				(1) Poly	H_2SO_4	/													X			
				(1) Amber	None	/											X					
—	—	Aq	TRIP BLANK	(3) VOA	None	2										X						

Date: 7/29/9 Time: 1500 Relinquished by: Kelly Robinson
Received by: Fed Ex Date Time

Date: Time: Relinquished by:
Received by: [signature] 10:35 Date Time 7/30/09

Remarks:
* See attached analyte list for specific analytes.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Appendix D

Survey Data

Fixed width point lat/long/elevation listing

Project : WESTERN REFINERY

User name	hwilleto	**Date & Time**	9:55:07 AM 9/3/2009
Coordinate System	Projection from data collector	**Zone**	Zone from data collector
Project Datum	(WGS 84)		
Vertical Datum		**Geoid Model**	GEOID03
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

Point listing

Name	Latitude	Longitude	Elevation	Feature Code
64	36°41'48.66146"N	107°58'14.66801"W	5540.445	TANK 44 SOUTH
65	36°41'48.66772"N	107°58'12.78343"W	5540.632	TANK 45 SOUTH
66	36°41'48.01176"N	107°58'15.61914"W	5543.595	LOADING BAY #1 COR
67	36°41'47.89084"N	107°58'15.56867"W	5543.567	LOADING BAY #1 COR
68	36°41'47.66694"N	107°58'16.45442"W	5543.569	LOADING BAY #1 COR
69	36°41'47.78111"N	107°58'16.50315"W	5543.774	LOADING BAY #1 COR
70	36°41'47.53262"N	107°58'16.40604"W	5543.655	LOADING BAY #2 COR
71	36°41'47.41675"N	107°58'16.35878"W	5543.508	LOADING BAY #2 COR
72	36°41'47.64134"N	107°58'15.47457"W	5543.646	LOADING BAY #2 COR
73	36°41'47.76306"N	107°58'15.52374"W	5543.700	LOADING BAY #2 COR
74	36°41'47.51769"N	107°58'15.42746"W	5543.616	LOADING BAY #3 COR
75	36°41'47.39555"N	107°58'15.37969"W	5543.508	LOADING BAY #3 COR
76	36°41'47.27035"N	107°58'15.33252"W	5543.492	LOADING BAY #4 COR
77	36°41'47.14612"N	107°58'15.28193"W	5543.540	LOADING BAY #4 COR
78	36°41'46.92246"N	107°58'16.16575"W	5543.596	LOADING BAY #4 COR
79	36°41'47.04449"N	107°58'16.21421"W	5543.500	LOADING BAY #4 COR
80	36°41'47.16837"N	107°58'16.26543"W	5543.533	LOADING BAY #3 COR
81	36°41'47.29019"N	107°58'16.31362"W	5543.499	LOADING BAY #3 COR
82	36°41'44.96497"N	107°58'17.22097"W	5549.393	AOC 22-10
83	36°41'44.55341"N	107°58'17.06316"W	5549.485	AOC 22-11
84	36°41'45.15384"N	107°58'24.54356"W	5545.382	CONCRETE PAD
85	36°41'45.15375"N	107°58'25.13052"W	5545.386	CONCRETE PAD
86	36°41'45.05405"N	107°58'25.13172"W	5545.316	CONCRETE PAD
87	36°41'45.05365"N	107°58'25.24909"W	5545.179	CONCRETE PAD
88	36°41'45.18933"N	107°58'25.25039"W	5544.396	BLD COR
89	36°41'44.66058"N	107°58'24.54189"W	5545.317	CONCRETE PAD
90	36°41'44.66144"N	107°58'25.15767"W	5545.327	CONCRETE PAD 8FT O/S
91	36°41'44.49225"N	107°58'25.24860"W	5544.607	BLD COR
92	36°41'44.49015"N	107°58'26.73399"W	5544.265	BLD COR
8500	36°41'45.18715"N	107°58'26.73611"W	5544.396	BLD COR
9049	36°41'48.83926"N	107°58'17.16476"W	5539.588	AOC 22-15/MW-61 PVMT
9050	36°41'48.82916"N	107°58'17.16031"W	5539.613	AOC 22-15/MW-61 PAD
9051	36°41'48.82131"N	107°58'17.15514"W	5539.411	AOC 22-15/MW-61 TOP OF CASING
9052	36°41'49.20054"N	107°58'15.40126"W	5539.902	AOC 26-8/MW-65 PVMT
9053	36°41'49.18933"N	107°58'15.39658"W	5539.941	AOC 26-8/MW-65 PAD
9054	36°41'49.18120"N	107°58'15.39107"W	5539.517	AOC 26-8/MW-65 TOP OF CASING
9055	36°41'48.96076"N	107°58'13.11816"W	5540.206	AOC 26-5
9056	36°41'49.08555"N	107°58'12.57862"W	5540.025	AOC 26-6
9057	36°41'48.54564"N	107°58'12.67447"W	5540.360	AOC 26-7
9058	36°41'48.99048"N	107°58'14.06416"W	5541.979	AOC 26-9/MW-66 GRADE
9059	36°41'48.98135"N	107°58'14.06109"W	5542.030	AOC 26-9/MW-66 PAD
9060	36°41'48.97462"N	107°58'14.05858"W	5544.625	AOC 26-9/MW-66 TOP OF CASING
9061	36°41'48.62399"N	107°58'14.85771"W	5540.054	AOC 26-2
9062	36°41'48.90866"N	107°58'14.97772"W	5540.088	AOC 26-1
9063	36°41'48.70583"N	107°58'14.43626"W	5540.587	AOC 26-4

9064	36°41'48.41610"N	107°58'14.64503"W	5543.638	AOC 26-3
9065	36°41'48.63697"N	107°58'15.77033"W	5540.853	AOC 22-3
9066	36°41'48.83611"N	107°58'16.03057"W	5540.449	AOC 22-12/TW-1 GRADE
9067	36°41'48.82723"N	107°58'16.02711"W	5540.336	AOC 22-12/TW-1 PAD
9068	36°41'48.82442"N	107°58'16.02512"W	5543.607	AOC 22-12/TW-1 TOP OF CASING
9069	36°41'48.95123"N	107°58'16.04153"W	5540.379	AOC 22-2
9070	36°41'48.50044"N	107°58'16.34853"W	5540.103	AOC 22-1
9071	36°41'48.53647"N	107°58'16.20569"W	5540.324	AOC 22-13
9072	36°41'48.38276"N	107°58'15.95304"W	5541.189	AOC 22-4
9073	36°41'47.56329"N	107°58'16.74392"W	5543.605	AOC 22-5
9074	36°41'47.04554"N	107°58'16.49572"W	5543.874	AOC 22-6
9075	36°41'46.18239"N	107°58'17.09575"W	5543.745	AOC 22-7
9076	36°41'45.80509"N	107°58'17.08569"W	5546.880	AOC 22-9
9077	36°41'46.01420"N	107°58'17.35087"W	5545.296	AOC 22-14
9078	36°41'45.99895"N	107°58'16.85610"W	5545.715	AOC 22-8
9079	36°41'43.67391"N	107°58'17.17320"W	5552.073	AOC 24-6
9080	36°41'43.33506"N	107°58'16.48842"W	5551.597	AOC 24-1
9081	36°41'42.89208"N	107°58'18.26308"W	5550.914	AOC 24-4
9082	36°41'42.89601"N	107°58'17.40801"W	5550.986	AOC 24-3
9083	36°41'43.44358"N	107°58'18.28355"W	5550.721	AOC 24-5
9084	36°41'44.02484"N	107°58'18.38288"W	5549.111	AOC 24-7/MW-64 GRADE
9085	36°41'44.02633"N	107°58'18.36885"W	5549.043	AOC 24-7/MW-64 PAD
9086	36°41'44.02863"N	107°58'18.35629"W	5552.285	AOC 24-7/MW-64 TOP OF CASING
9087	36°41'46.18596"N	107°58'18.25178"W	5544.488	AOC 22-16/MW-63 GRADE
9088	36°41'46.17832"N	107°58'18.24028"W	5544.482	AOC 22-16/MW-63 PAD
9089	36°41'46.17547"N	107°58'18.22906"W	5547.255	AOC 22-16/MW-63 TOP OF CASING
9090	36°41'45.92894"N	107°58'22.23505"W	5542.373	SWMU 4-1/MW-59 GRADE
9091	36°41'45.92727"N	107°58'22.21723"W	5542.365	SWMU 4-1/MW-59 PAD
9092	36°41'45.92938"N	107°58'22.20599"W	5545.196	SWMU 4-1/MW-59 TOP OF CASING
9093	36°41'45.19215"N	107°58'24.95955"W	5544.569	SWMU 5-1
9094	36°41'45.20846"N	107°58'24.73350"W	5544.407	SWMU 5-2
9095	36°41'44.99208"N	107°58'24.49009"W	5544.918	SWMU 5-3
9096	36°41'44.82380"N	107°58'24.50076"W	5544.925	SWMU 5-4
9097	36°41'44.61681"N	107°58'24.73909"W	5544.880	SWMU 5-5
9098	36°41'44.61062"N	107°58'25.05289"W	5544.571	SWMU 5-6
9099	36°41'44.32802"N	107°58'25.68687"W	5544.772	AOC 25-1
9100	36°41'45.38988"N	107°58'25.99162"W	5544.007	AOC 25-2/MW-60 GRADE
9101	36°41'45.37937"N	107°58'25.98861"W	5544.003	AOC 25-2/MW-60 PAD
9102	36°41'45.37028"N	107°58'25.98617"W	5543.711	AOC 25-2/MW-60 TOP OF CASING
9103	36°41'42.90086"N	107°58'16.48495"W	5551.416	AOC 24-2
9104	36°41'43.03985"N	107°58'07.46838"W	5558.555	AOC 23-1/MW-62 GRADE
9105	36°41'43.02840"N	107°58'07.46780"W	5558.703	AOC 23-1/MW-62 PAD
9106	36°41'43.02125"N	107°58'07.46590"W	5561.322	AOC 23-1/MW-62 PAD

Back to top

Appendix E

Field Methods

Field Methods

Pursuant to Section IV of the Order, an investigation of soils and ground water was conducted to determine and evaluate the presence, nature, extent, fate, and transport of contaminants. To accomplish this objective, soil borings and monitoring wells were installed at the SWMU No. 4 Transportation Terminal Sump, SWMU No. 5 Heat Exchanger Bundle Cleaning Area, AOC No. 22 Product Loading Rack and Crude Receiving Loading Racks, AOC No. 23 Southeast Holding Ponds, AOC No. 24 Tank Areas 41 and 43, AOC No. 25 Auxiliary Warehouse and 90-Day Storage Area, and AOC No. 26 Tank Areas 44 and 45. The field methods are described below and individual discussions are presented for the following activities:

- Drilling procedures;
- Soil screening;
- Decontamination procedures;
- Monitoring well development;
- Fluid level measurements;
- Purging of monitoring wells/groundwater sample collection;
- Sample collection and handling procedures;
- Vadose zone vapor sampling;
- Equipment calibration; and
- Management of investigation derived waste.

Drilling Procedures

The soil borings were drilled using the hollow-stem auguring (HSA) method ODEX method or a hand auger was used for shallow (two-foot) borings. Soil samples were collected continuously and logged by a qualified geologist in accordance with 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 natural 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 allowed to rest for a minimum of 5 minutes while the vapors equilibrated. Vapors present within the sample bag's headspace were then measured by inserting the probe of a MiniRae 2000 portable VOC monitor PGM-7600 in a small opening in the bag. The maximum value and the ambient air temperature were recorded on the field boring log for each sample. The screening results are presented in Table 12 for shallow soil samples and Table 13 for soil borings going deeper than two feet. Field screening results and any conditions that were considered to be capable of influencing the results of the field screening were recorded on the field logs.

Decontamination Procedures

The drilling equipment (e.g., hollow-stem augers) was decontaminated between each borehole using a high pressure potable water wash. The sampling equipment coming in direct contact with the samples (e.g., hand augers and split-spoon samplers) were decontaminated using a brush, as necessary, to remove larger particulate matter followed by a rinse with potable water, wash with nonphosphate detergent, rinse with potable water, and double rinse with deionized water. In the event that more than one SWMU was investigated during the day a new batch of wash water and rinse water was prepared prior to decontamination.

Monitoring Well Development

Following monitor well completion activities, the new monitor wells were developed using a combination of mechanical surging and air-lift techniques. Using a surge block attached to the end of the drill rod, groundwater was forced to flow in and out of the well screen by the repeated upward and downward motion of the surge block along the entire length of the well screen. The repeated plunging motion drew filter pack fines and loosened sediment into the well casing, improving the water quality within the surrounding formation and filter pack.

Once the well was surged for a minimum of 20-minutes, the surge block was removed and the air-lift apparatus was used to remove the loosened sediment and fines from inside the well casing. Using an air compressor and dedicated 1-inch PVC eductor piping, compressed air was injected into the well. The air flow rate was manually adjusted to produce a continuous flow of water/sediment mixture out the top of the well casing via the 1-inch eductor piping. The groundwater/sediment mixture discharged directly into a 55-gallon drum. A glass jar was used to capture a sample of the purge water every 15 minutes to monitor the improving clarity of the purge water. Air lifting ceased once the purge water was relatively clear.

Fluid Level Measurements

The depth to separate phase hydrocarbon, if present, and groundwater was measured prior to purging the wells of potentially stagnant groundwater. A Keck KIR Interface Probe was used to measure fluid levels to 0.01 foot.

Purging of Monitoring Wells/Groundwater Sample Collection

The permanent monitoring wells (MW-59, MW-60, MW-61, MW-62, MW-63, MW-64, MW-65, and MW-66) and temporary well TW-1 were purged of a minimum of three well volumes prior to sample collection. The purge volumes are calculated as follows:

Volume (gallons) = water column thickness (ft) x 3.14 x radius of well casing^2 (ft) x 7.48 (gals/ft). The calculated purge volumes and actual volumes removed from each well are presented below.

Well / date	Water Column Thickness (ft)	Calculated Purge Volume (gallons) – 3 Well Volumes	Actual Purge Volume (gallons)
MW-59 / 5/14/2009	3.62	7.2	10.0
MW-59 / 7/16/2009	3.62	7.2	10.0
MW-60 / 5/14/2009	0.99	1.96	2.0
MW-60 / 7/16/2009	DRY	DRY	DRY
MW-61 / 5/13/2009	4.23	8.4	10.0
MW-61 / 7/16/2009	3.95	7.82	10.0
MW-62 / 5/13/2009	5.28	10.45	15.0
MW-62 / 7/16/2009	5.09	10.08	15.0
MW-63 / 5/13/2009	2.96	5.86	8.0
MW-63 / 7/15/2009	2.92	5.78	7.0
MW-64 / 5/13/2009	2.28	4.5	7.0
MW-64 / 7/15/2009	2.25	4.45	7.0
MW-65 / 5/12/2009	7.37	14.6	15.0
MW-65 / 7/16/2009	7.23	14.3	15.0
MW-66 / 5/12/2009	3.74	7.4	10.0
MW-66 / 7/15/2009	3.75	7.4	10.0
AOC 22-12 (TW-1) / 4/14/2009	Not purged	Not purged	Not purged
AOC 22-12 (TW-1) / 7/29/2009	4.57	2.33	5.0

Field measurements of groundwater stabilization parameters included pH, specific conductance, dissolved oxygen concentrations, oxidation-reduction potential, and temperature. These measurements are presented in Table 14. A disposable bailer was used to remove groundwater from the well during the purging procedures.

Sample Collection and Handling Procedures

Soil samples were collected using split-spoon samplers or directly from the auger bucket for borings completed with a hand auger. The selected portion of the sample interval was placed in pre-cleaned, laboratory-prepared sample containers for laboratory chemical analysis. Three soil samples were collected for VOC analysis. An Encore® Sampler was used for collection of soil samples for low-level VOC analysis pursuant to EPA method 5035; the second sample aliquot (approximately 1 gram) was placed in a laboratory-prepared container with a methanol preservative; and the third sample aliquot was placed in an 8-ounce glass jar, which was filled to the top to minimize any head space.

Groundwater samples were collected with disposable bailers and immediately poured directly into clean laboratory supplied sample containers with the exception of samples collected for dissolved analyses. Samples specified for dissolved analyses were filtered in the field using a disposable 0.45 micron filter. A new filter and syringe enclosure were used for each sample. All samples were immediately placed into an ice chest with ice. The samples were maintained in the custody of the sampler until the chain-of-custody form was completed and the ice chest was sealed for shipment to the laboratory.

Vadose Zone Vapor Sampling

Field vapor monitoring of the vadose zone was completed using a multi-gas Eagle Meter manufactured by RKI Instruments, Inc. The vapor monitoring was completed by sealing the top of the well with a cap containing a sample port. The well was purged of stagnant vapor for 25 minutes at a rate of approximately 1 liter per 10 seconds using a vacuum pump. Polyethylene tubing was inserted through the sample port and attached to a low-velocity pump and the Eagle Meter.

Equipment Calibration

Soil vapor screening was conducted using a MiniRae 2000 portable VOC monitor PGM-7600. The instrument was calibrated at the beginning of each work day to a concentration of 100 ppm isobutylene.

The instruments used to measured groundwater stabilization parameters included a YSI 550A dissolved oxygen probe and an Ultrameter 6P made by the Myron L Company. The calibration solutions used at the beginning of each day are as follows:

- 4.0 pH solution;
- 7.0 pH solution;
- 10.0 pH solution;
- 1.413 mS/cm conductivity solution; and
- 220 for ORP.

The multi-gas Eagle Meter manufactured by RKI Instruments, Inc. was calibrated with 15% CO_2, 12.0% O_2, and 100 ppm isobutylene each work day. There were no field conditions encountered during the sampling event that affected procedural or sample testing results.

Management of Investigation Derived Waste

The decontamination water from the drilling equipment was collected on a mobile decon trailer and was subsequently placed in open top 55-gallon drums, which were sealed at the end of each work day. The decontamination water generated from sampling equipment was collected in buckets and placed in open top 55-gallon drums, which were sealed at the end of each work day. Purge water was also collected in a 55-gallon drum. The decon and purge water was disposed in the Refinery's wastewater treatment system up-stream of the API Separator. Soil cuttings were also placed in open top 55-gallon drums and were sealed when not in use. Each drum of soils was labeled and stored in a concrete curbed area pending waste characterization and disposal.

Appendix F

Boring Logs

RPS

LOG OF BORING

Boring No.: AOC 22-11
Start Date: 4/14/2009
Finish Date: 4/14/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.743' W107º58.281'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5549.485
Site Coordinates:
N 36º41'44.55341" **W** 107º58'17.06316"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1440	G/2V/ 2E/3J		5.9 73ºF	ML	100	**Clayey Silt (ML)** Low plasticity, compact, very fine grain, damp, brown, gravelly	0
	1.5-2'	1445	G/2V/ 2E/3J		4.3 73ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.811' W107º58.272'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.103
Site Coordinates:
N 36º41'48.50044" W 107º58'16.34853"

Boring No.: AOC 22-1
Start Date: 4/15/2009
Finish Date: 4/15/2009

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1600	G/2V/2E/3J		4.5 70ºF		100	**Silt (ML)** Very fine grain, loose, dry, brown	0
	1.5-2'	1615	G/2V/2E/3J		3.5 70ºF			**Clayey Silt (ML)** Low plasticity, soft, damp, brown	
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 22-10
Start Date: 4/14/2009
Finish Date: 4/14/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.749' W107º58.283'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5549.393
Site Coordinates:
N 36º41'44.96497" **W** 107º58'17.22097"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1410	G/2V/2E/3J		7.9 72ºF		100	**Silt/Gravel Base (ML)** Very fine grain, compact, dry, brown	0
	1.5-2'	1425	G/2V/2E/3J		3.8 72ºF			**Clayey Silt (ML)** Low plasticity, very fine grain, compact, damp, brown	
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

WELL CONSTRUCTION

Well No.: AOC 22-12 / TW-01

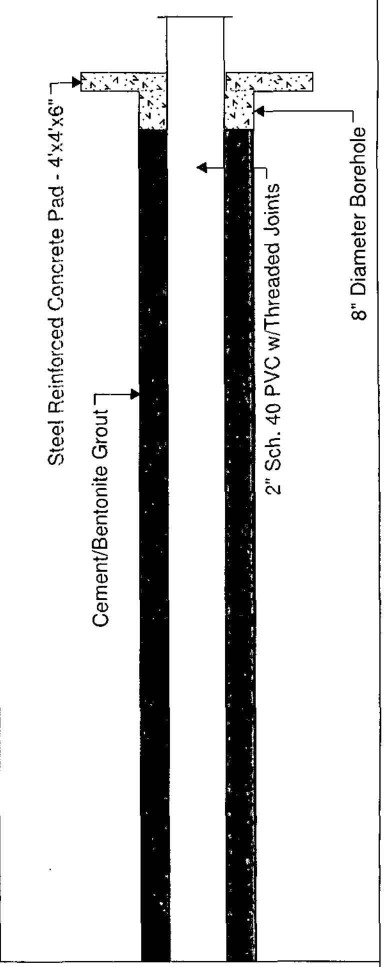
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.816' W107º58.256'

Total Depth: 42' bgl
Ground Water: Saturated @ 37.75' bgl
Elev., TOC (ft. msl): 5543.607
Elev., PAD (ft. msl): 5540.336
Elev., GL (ft. msl): 5540.449
Site Coordinates:
N 36º41'48.82442" W 107º58'16.02512"

Start Date: 4/13/2009
Finish Date: 4/13/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0								Ground Surface
0–2	0.5'	0915 &Dup	G/4V/4E/6J		0.9 53ºF		100	**Silt (ML)** Very fine grain, compact, damp, brown
	1.5-2'	0930	G/2V/2E/3J		3.4 53ºF			
2–4					4.9 60ºF		80	**Clayey Silt (ML)** Similar to above
4–6					5.6 60ºF		80	**Clayey Silt (ML)** Similar to above
6–8					5.2 60ºF		90	**Clayey Silt (ML)** Similar to above
8–10					4.9 60ºF		100	**Clayey Silt (ML)** Similar to above, trace fine grain sand
10–12					4.2 60ºF		100	**Sandy Silt (ML)** Very fine grain, loose to compact, damp, light brown
12–14					6.3 60ºF		90	**Sandy Silt (ML)** Similar to above
14–16					6.0 60ºF		60	**Clayey Silt (ML)** Low plasticity, soft, very fine grain, compact, damp, brown
16–18					5.2 60ºF		100	**Clayey Silt (ML)** Similar to above
18–20					5.1 60ºF		100	**Sandy Silt (ML)** Very fine grain, loose to compact, damp, light brown
20–22					4.4 60ºF		90	**Silty Sand (SM)** Very fine to fine grain, loose, damp, light brown

Completion Results



RPS
404 Camp Craft Road
Austin, Texas 78746
512/347-7588
512/347-8243 fax

RPS

WELL CONSTRUCTION

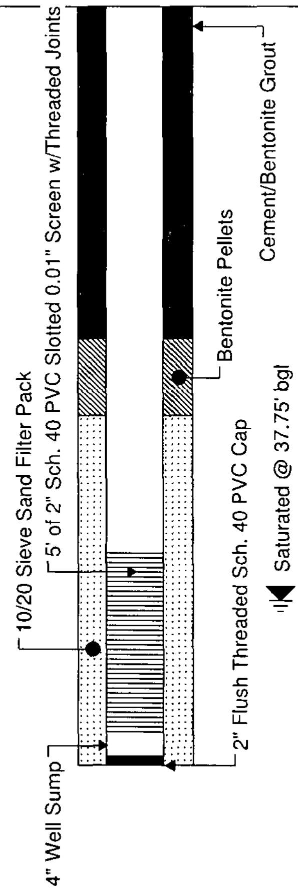
Well No.: AOC 22-12 / TW-01

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.816' W107º58.256'

Total Depth: 42' bgl
Ground Water: Saturated @ 37.75' bgl
Elev., TOC (ft. msl): 5543.607
Elev., PAD (ft. msl): 5540.336
Elev., GL (ft. msl): 5540.449
Site Coordinates:
N 36º41'48.82442" **W** 107º58'16.02512"

Start Date: 4/13/2009
Finish Date: 4/13/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
24					4.3 60ºF		50	**Silty Sand (SM)** Very fine to fine grain, loose, damp, light brown	
26					5.7 60ºF		50	**Silty Sand (SM)** Similar to above, faint odor	
28					5.2 60ºF		90	**Silty Sand (SM)** Similar to above, clayey sand at base, dark brown, odor	
30					22.7 60ºF		100	**Sandy Clay (CL)** Low plasticity, soft, damp, dark brown, odor	
32					35 60ºF		50	**Silty Sand (SM/SP)** Fine grain, loose, damp to very damp, dark gray, odor	31'
34	32-35'	1150	G/2V/2E/3J		25 60ºF		50	**Gravelly Sand (SW)** Fine to medium grain, loose, damp, gray, coarse gravel, odor	33'
					68 60ºF		10	**Gravelly Sand (SW)** Similar to above	
36	36-37.75'	1210	G/2V/2E/3J		220 60ºF		10	No Recovery - similar to above	36.5'
38				37.75				**Gravelly Sand (SW)** Similar to above, saturated at 37.37' bgl	
40							90	**Sand (SW)** Fine to coarse grain, loose, saturated, gray, odor	
42							90	**Sand (SW)** Similar to above, saturated, gray, odor	41.5' 42'
44								**Nacimiento Formation Clayey Sand/Weathered Sandstone (SC/SS)** Dense, damp, yellowish brown	
46								Total Depth = 42' BGL	



RPS
404 Camp Craft Road
Austin, Texas 78746
512/347-7588
512/347-8243 fax

RPS

LOG OF BORING

Boring No.: AOC 22-13
Start Date: 4/8/2009
Finish Date: 4/8/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow Stem Augers
Sampling Method: Split Spoon
Comments: N36º41.811' W107º58.269'

Total Depth: 42.5' bgl
Ground Water: Saturated @ 39' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.324
Site Coordinates:
N 36º41'48.53647" **W** 107º58'16.20569"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1540	G/2V/ 2E/3J		1427 76ºF		100	**Silt (ML)** Very fine grain, compact, dry, brown, odor	0
2	1.5-2'	1555	G/2V/ 2E/3J		1186 76ºF		60	**Clayey Silt (ML)** Very fine grain, low plasticity, compact to loose, damp, brown, odor	2
4					1373 76ºF		70	**Clayey Silt (ML)** Similar to above, odor	4
6					1349 76ºF		70	**Clayey Silt (ML)** Similar to above, odor	6
8					1302 76ºF		70	**Clayey Silt (ML)** Similar to above, odor	8
10					1302 76ºF		60	**Clayey Silt (ML)** Similar to above, odor	10
12					1345 75ºF		90	**Clayey Silt (ML)** Similar to above, odor	12
14					1277 75ºF		90	**Clayey Silt (ML)** Similar to above, odor	14
16					1250 75ºF		90	**Clayey Silt (ML)** Similar to above, odor	16
18	18-20'	1800	G/2V/ 2E/3J		1660 74ºF		60	**Silty Sand (SM)** Very fine grain, loose, damp, light brown to tan, faint staining apparent, odor	18
20					1611 74ºF		70	**Silty Sand (SM)** Similar to above, odor	20
22					1336 74ºF		90	**Silty Sand (SM)** Similar to above, odor	22

RPS

LOG OF BORING

Boring No.: AOC 22-13
Start Date: 4/8/2009
Finish Date: 4/8/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow Stem Augers
Sampling Method: Split Spoon
Comments: N36º41.811' W107º58.269'

Total Depth: 42.5' bgl
Ground Water: Saturated @ 39' bgl
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.324
Site Coordinates:
N 36º41'48.53647" W 107º58'16.20569"

Depth (ft.)	Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
25					1131 74ºF		100	**Silty Sand (SM)** Very fine grain, loose, damp, light brown to tan, faint staining apparent, odor	25
27					1131 73ºF		80	**Silty Sand (SM)** Similar to above, odor	27
29					1184 73ºF		80	**Silty Sand (SM)** Similar to above, sand lenses at base of interval, odor	29
31					1268 73ºF		60	**Sand (SP)** Fine grain, loose, damp, tan, stained, odor, gravelly sand at base	31
33	32-34.5'	1810	G/2V/ 2E/3J		1694 73ºF		50	**Sand (SP)** Similar to above, stained, odor, very damp, trace gravel	33
					1596 73ºF		0	No Recovery - similar to above	
35							50	**Gravelly Sand (SW)** Medium grain, loose, stained, odor, damp to very damp, coarse gravel	35
37					908 72ºF		10	**Gravelly Sand (SW)** Similar to above, odor	37
	37-39'	1820	G/2V/ 2E/3J	39'	1228 72ºF		10	**Gravelly Sand (SW)** Similar to above, dark brown, odor, stained/oily appearance	
39							20	**Gravelly Sand (SW)** Similar to above, less gravel, saturated, dark gray, odor	39
41							70	**Nacimiento Formation Sand/Sandstone (SS)** Fine to medium grain, dense, damp, yellowish brown clay lense at base	41
43							90	**Clay (CH)** High plasticity, very stiff, damp, yellowish brown	43
45								**Sandstone (SS)** Medium grained, dense	45

Total Depth = 42.5' BGL

LOG OF BORING

Boring No.: AOC 22-14
Start Date: 4/8/2009
Finish Date: 4/8/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow Stem Augers
Sampling Method: Split Spoon
Comments: N36º41.768' W107º58.290'

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5545.296
Site Coordinates:
N 36º41'46.01420" **W** 107º58'17.35087"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1410	G/2V/ 2E/3J		2.1/ 3.1 71ºF		100	**Silt (ML)** Very fine grain, compact, dry, brown	0
	1.5-2'	1420	G/2V/ 2E/3J						
2					6.3 71ºF		90	**Clayey Silt (ML)** Very fine grain, low plasticity, loose, damp, brown	2
4					5.1 71ºF		90	**Clayey Silt (ML)** Similar to above	4
6					4.6 71ºF		90	**Clayey Silt (ML)** Similar to above	6
8					3.8 71ºF		90	**Clayey Silt (ML)** Similar to above	8
10								Total Depth = 10' BGL	10
12									12
14									14
16									16

RPS

LOG OF BORING

Boring No.: AOC 22-2
Start Date: 4/15/2009
Finish Date: 4/15/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.818' W107º58.266'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.379
Site Coordinates:
N 36º41'48.95123" **W** 107º58'16.04153"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1630	G/2V/ 2E/3J		16.1 70ºF		100	**Silt (ML)** Very fine grain, loose, dry, brown	0
	1.5-2'	1640	G/2V/ 2E/3J		2.1 70ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Boring No.: AOC 22-3
Start Date: 4/15/2009
Finish Date: 4/15/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.813' W107º58.261'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.853
Site Coordinates: **N** 36º41'48.63697"
W 107º58'15.77033"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1650	G/2V/2E/3J		5.1 70ºF		100	**Silt (ML)** Very fine grain, loose to compact, dry to damp, brown	0
	1.5-2'	1700	G/2V/2E/3J		3.7 70ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-4
Start Date: 4/15/2009
Finish Date: 4/15/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.808' W107º58.265'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5541.189
Site Coordinates:
N 36º41'48.38276" **W** 107º58'15.95304"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1710	G/2V/2E/3J		3.4 70ºF		100	**Sandy Silt (ML)** Very fine grain, loose to compact, dry to damp, brown, odor	0
2	1.5-2'	1720	G/2V/2E/3J		2429 70ºF			Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-5
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.793' W107º58.280'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5543.605
Site Coordinates:
N 36º41'47.56329" W 107º58'16.74392"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1720	G/2V/ 2E/3J		1.6 80ºF		100	**Sandy Silt (ML)** Fine grain, loose, dry, gray	0
	1.5-2'	1730	G/2V/ 2E/3J		1.4 80ºF			**Clayey Silt (ML)** Fine grain, compact, moist, brown	
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-6
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.783' W107º58.278'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5543.874
Site Coordinates:
N 36º41'47.04554" **W** 107º58'16.49572"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1650	G/2V/ 2E/3J		1.5 80ºF		100	**Sandy Silt (ML)** Fine grain, loose, dry, gray	0
	1.5-2'	1655	G/2V/ 2E/3J		4.1 80ºF			**Clayey Silt (ML)** Fine grain, compact, moist, brown	
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-7
Start Date: 4/13/2009
Finish Date: 4/13/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.770' W107º58.284'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5543.745
Site Coordinates:
N 36º41'46.18239" **W** 107º58'17.09575"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1525	G/2V/2E/3J		1.3 68ºF	ML	100	**Silt (ML)** Very fine grain, loose to compact, damp, brown	0
	1.5-2'	1535	G/2V/2E/3J		2.6 68ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-8
Start Date: 4/13/2009
Finish Date: 4/13/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.767' W107º58.281'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5545.715
Site Coordinates:
N 36º41'45.99895 **W** 107º58'16.85610"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1615	G/2V/ 2E/3J		1.4 68ºF		100	**Silt (ML)** Very fine grain, loose to compact, dry to damp, brown	0
2	1.5-2' &Dup	1630	G/2V/ 2E/3J		1.2 68ºF				2
								Total Depth = 2' BGL	
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: AOC 22-9
Start Date: 4/13/2009
Finish Date: 4/13/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.764' W107º58.286'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5546.880
Site Coordinates:
N 36º41'45.80509" **W** 107º58'17.08569"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1655	G/2V/ 2E/3J		0.6 68ºF		100	**Silt (ML)** Very fine grain, loose to compact, dry to damp, brown	0
	1.5-2'	1705	G/2V/ 2E/3J		1.1 68ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-1
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.723' W107º58.276'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5551.597
Site Coordinates:
N 36º41'43.33506" **W** 107º58'16.48842"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0850	G/2V/ 2E/3J		3.3 60ºF		100	**Silt (ML)** Very fine grain, loose, damp, brown	0
2	1.5-2'	0900	G/2V/ 2E/3J		3.9 60ºF				2
								Total Depth = 2' BGL	
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-2
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.716' W107º58.278'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5551.416
Site Coordinates:
N 36º41'42.90086" **W** 107º58'16.48495"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	0930	G/2V/ 2E/3J		2.7 62ºF		100	**Clayey Silt (ML)** Very fine grain, compact, damp, brown	0
	1.5-2'	0940	G/2V/ 2E/3J		4.1 62ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-3
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.722' W107º58.288'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5550.986
Site Coordinates:
N 36º41'42.89601" **W** 107º58'17.40801"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1000	G/2V/ 2E/3J		1.7 65ºF		100	**Gravelly Silty Sand (SM/SP)** Fine grain, compact, damp, brown	0
	1.5-2'	1010	G/2V/ 2E/3J		7.7 65ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-4
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.717' W107º58.303'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5550.914
Site Coordinates:
N 36º41'42.89208" **W** 107º58'18.26308"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1030	G/2V/ 2E/3J		3.9 70ºF		100	**Gravelly Silty Sand (SM/SP)** Fine grain, loose to compact, damp, brown	0
	1.5-2' &Dup	1040	G/2V/ 2E/3J		6.4 70ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-5
Start Date: 4/8/2009
Finish Date: 4/8/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow Stem Augers
Sampling Method: Split Spoon
Comments: N36º41.724' W107º58.304'

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5550.721
Site Coordinates:
N 36º41'43.44358" **W** 107º58'18.28355"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5' &Dup	1100	G/2V/ 2E/3J		1.2 69ºF		100	**Silt (ML)** Very fine grain, compact, dry, brown, gravelly	0
	1.5-2'	1200	G/2V/ 2E/3J		6.0 69ºF				
2					5.4 69ºF		100	**Clayey Silt (ML)** Low plasticity, very fine grain, compact, damp, brown	2
4					6.4 69ºF		100	**Clayey Silt (ML)** Similar to above	4
6					7.8 69ºF		50	**Clayey Silt (ML)** Similar to above	6
8					5.9 69ºF		100	**Clayey Silt (ML)** Similar to above, trace of very fine grain sand	8
10								Total Depth = 10' BGL	10
12									12

RPS

LOG OF BORING

Boring No.: AOC 24-6
Start Date: 4/8/2009
Finish Date: 4/8/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow Stem Augers
Sampling Method: Split Spoon
Comments: N36º41.728' W107º58.287'

Total Depth: 10' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5552.073
Site Coordinates:
N 36º41'43.67391" **W** 107º58'17.17320"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1255	G/2V/ 2E/3J		0.3 74ºF		100	**Silt (ML)** Low plasticity, very fine grain, loose to compact, dry, brown, black nodule of asphaltic material, no staining of the soil was observed	0
	1.5-2'	1315	G/2V/ 2E/3J		5.0 74ºF				
2					4.8 74ºF		80	**Clayey Silt (ML)** Similar to above, clayey	2
4					4.9 74ºF		80	**Clayey Silt (ML)** Similar to above	4
6					2.0 74ºF		80	**Clayey Silt (ML)** Similar to above	6
8					5.3 74ºF		100	**Clayey Silt (ML)** Similar to above, trace of very fine grain sand	8
10								Total Depth = 10' BGL	10
12									12

RPS

LOG OF BORING

Boring No.: AOC 25-1
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.741' W107º58.429'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.772
Site Coordinates:
N 36º41'44.32802" **W** 107º58'25.68687"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1600	G/2V/ 2E/3J		5.5 82ºF		100	**Gravelly Silty Sand (SM)** Fine grain, compact, dry to damp, brown	0
	1.5-2'	1610	G/2V/ 2E/3J		5.5 82ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Boring No.: AOC 26-1
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.815' W107º58.249'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.088
Site Coordinates:
N 36º41'48.90866" **W** 107º58'14.97772"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1200	G/2V/ 2E/4J		5.6 72ºF	ML	100	**Clayey Silt (ML)** Very fine grain, compact, damp, brown	0
	1.5-2'	1215	G/2V/ 2E/4J		3.5 72ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 26-2
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.811' W107º58.247'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.054
Site Coordinates:
N 36º41'48.62399" **W** 107º58'14.85771"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1230	G/2V/ 2E/4J		4.6 72ºF		100	**Clayey Silt (ML)** Very fine grain, compact, damp, brown	0
2	1.5-2'	1240	G/2V/ 2E/4J		3.9 72ºF			Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Boring No.: AOC 26-3
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.809' W107º58.244'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5543.638
Site Coordinates:
N 36º41'48.41610" **W** 107º58'14.64503"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1250	G/2V/ 2E/4J		4.3 73ºF		100	**Clayey Silt (ML)** Very fine grain, compact, damp to moist, brown	0
	1.5-2' &Dup	1300	G/2V/ 2E/4J		7.2 73ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

RPS

LOG OF BORING

Boring No.: AOC 26-4
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.811' W107º58.243'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.587
Site Coordinates:
N 36º41'48.70583" **W** 107º58'14.43626"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1325	G/2V/ 2E/4J		4.5 74ºF		100	**Clayey Silt (ML)** Very fine grain, loose to compact, damp, brown	0
	1.5-2'	1335	G/2V/ 2E/4J		4.1 74ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Boring No.: AOC 26-5
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.816' W107º58.220'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.206
Site Coordinates:
N 36º41'48.96076" **W** 107º58'13.11816"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1530	G/2V/ 2E/4J		9.2 77ºF		100	**Clayey Silt (ML)** Very fine grain, loose to compact, dry to moist, brown	0
2	1.5-2'	1545	G/2V/ 2E/4J		15.2 77ºF				2
								Total Depth = 2' BGL	
4									4
6									6
8									8
10									10
12									12

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LOG OF BORING

Boring No.: AOC 26-6
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.818' W107º58.210'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.025
Site Coordinates:
N 36º41'49.08555" **W** 107º58'12.57862"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1600	G/2V/ 2E/4J		9.3 77ºF		100	**Clayey Silt (ML)** Very fine grain, loose to compact, dry to moist, brown	0
	1.5-2'	1605	G/2V/ 2E/4J		6.6 77ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

Boring No.: AOC 26-7
Start Date: 4/20/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.809' W107º58.211'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5540.360
Site Coordinates:
N 36º41'48.54564" **W** 107º58'12.67447"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1615	G/2V/ 2E/4J		5.5 77ºF	ML	100	**Clayey Silt (ML)** Very fine grain, loose to compact, dry to moist, brown	0
	1.5-2'	1630	G/2V/ 2E/4J		6.1 77ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

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WELL CONSTRUCTION

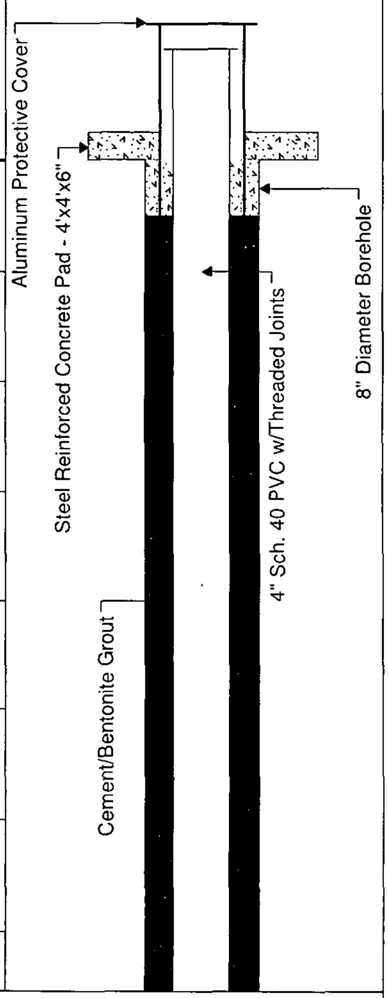
Well No.: MW-59 (SWMU 4-1)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.767' W107º58.370'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 40' bgl
Elev., TOC (ft. msl): 5545.196
Elev., PAD (ft. msl): 5542.365
Elev., GL (ft. msl): 5542.373
Site Coordinates:
N 36º41'45.92938" **W** 107º58'22.20599"

Start Date: 4/6/2009
Finish Date: 4/6/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
-2									
0	0-0.5' 1.5-2'	0845 0930	G/2V/2E/3J G/2V/2E/3J		0.2 38ºF		100	Ground Surface **Clayey Silt (ML)** Low plasticity, firm, damp, brown	
2					2.9 37ºF		80	**Clayey Silt (ML)** Similar to above	
4					50.8 37ºF		80	**Clayey Silt (ML)** Similar to above, mixed with soft black sticky sludge, odor	
6	6-8'	1130	G/2V/2E/3J		214 37ºF		80	**Clayey Silt/Sludge (ML)** Gray silt mixed with sludge	
8					9.7 49ºF		90	**Clayey Silt (ML)** Low plasticity, soft, damp, brown to light gray, 8.5-9' faint odor	
10					41 49ºF		80	**Clayey Silt (ML)** Similar to above, light gray/brown	
12					9.5 49ºF		60	**Silty Sand (SM)** Very fine grain, compact, damp, brown	
14								**Silty Sand (SM)** Similar to above	



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WELL CONSTRUCTION

Well No.: MW-59 (SWMU 4-1)

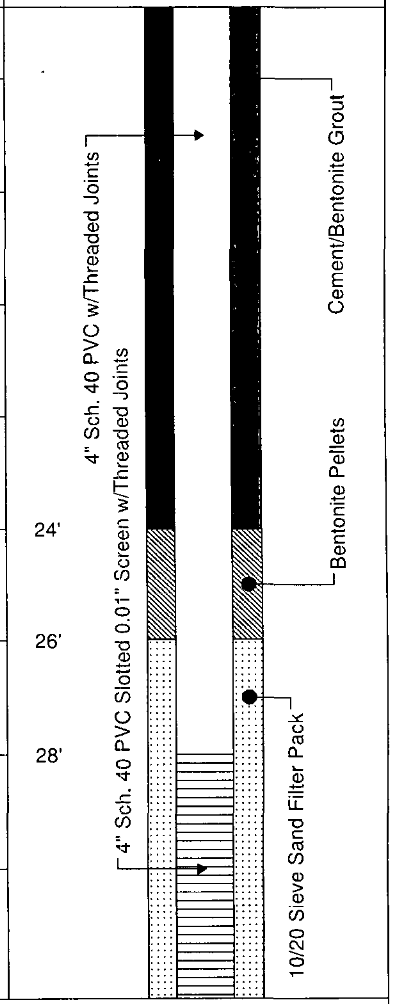
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.767' W107º58.370'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 40' bgl
Elev., TOC (ft. msl): 5545.196
Elev., PAD (ft. msl): 5542.365
Elev., GL (ft. msl): 5542.373
Site Coordinates:
N 36º41'45.92938" **W** 107º58'22.20599"

Start Date: 4/6/2009
Finish Date: 4/6/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					8.0 50ºF		50	
16					8.1 50ºF		60	**Silty Sand (SM)** Similar to above
18					7.3 50ºF		80	**Silty Sand (SM)** Similar to above, gypsum crystals
20					6.4 50ºF		80	**Silty Sand (SM)** Very fine to fine grain, loose to compact, light brown to tan
22					6.6 50ºF		80	**Silty Sand (SM)** Similar to above
24					5.5 50ºF		80	**Silty Sand (SM)** Similar to above
26					6.3 50ºF		90	**Silty Sand (SM)** Similar to above
28					4.2 50ºF		90	**Silty Sand (SM)** Similar to above
30					3.9 50ºF		80	**Clayey Silt (ML)** Low plasticity, soft to firm, damp, brown
32								

Completion Results



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WELL CONSTRUCTION

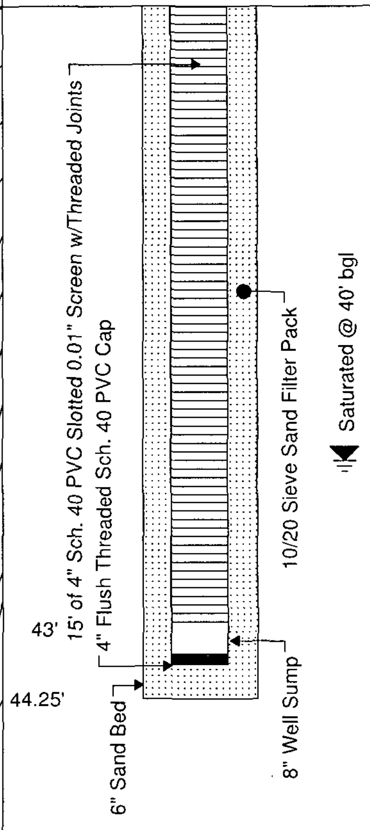
Well No.: MW-59 (SWMU 4-1)
Start Date: 4/6/2009
Finish Date: 4/6/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.767' W107º58.370'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 40' bgl
Elev., TOC (ft. msl): 5545.196
Elev., PAD (ft. msl): 5542.365
Elev., GL (ft. msl): 5542.373
Site Coordinates:
N 36º41'45.92938" **W** 107º58'22.20599"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
33					2.8 50ºF		30	**Gravelly Sand (SW)** Fine to coarse grain, compact, damp, brown, medium to coarse gravel
								Sand (SP) Fine grain, loose, damp, brown
35					3.1 50ºF		60	**Sand (SP)** Similar to above
								Gravelly Sand (SW) Fine to coarse grain, compact, damp, brown, medium to coarse gravel
37	36-38'	1700	G/2V/2E/3J		3.8 70ºF		60	**Sand (SP)** Fine grain, loose, damp, brown
39							60	**Gravelly Sand (SW)** Fine to coarse grain, compact, damp, brown, medium to coarse gravel
				40'				**Gravelly Sand (SW)** Similar to above, moist
41							60	**Sand (SP)** Fine grain, loose, damp to moist, brown
								Gravelly Sand (SW) Fine to coarse grain, compact, saturated, brown, medium to coarse gravel
43							60	**Gravelly Sand (SW)** Similar to above
45								**Nacimiento Formation Sandstone (SS)** Dense, damp, yellowish brown
47								Total Depth = 44.25' BGL
49								

Completion Results



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WELL CONSTRUCTION

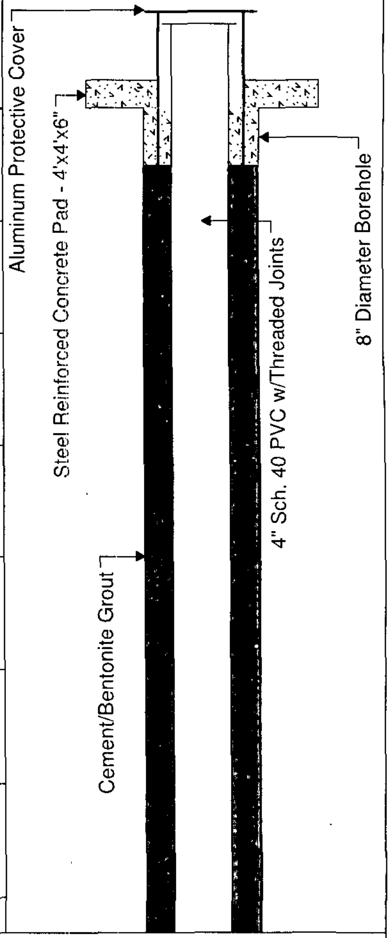
Well No.: MW-60 (AOC 25 -2)
Start Date: 4/5/2009
Finish Date: 4/5/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: Hydroexcavated to 8' bgl. N36º41.754' W107º58.434'

Total Depth: 45.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5543.711
Elev., PAD (ft. msl): 5544.003
Elev., GL (ft. msl): 5544.007
Site Coordinates:
N 36º41'45.37028" **W** 107º58'25.98617"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0	0-0.5' &Dup 1.5-2'	1645 1700	G/4V/4E/6J G/2V/2E/3J		0.1 53ºF		100	Ground Surface **Clayey Silt (ML)** Low plasticity, very soft, damp, brown
2					0.1 53ºF		100	**Clayey Silt (ML)** Similar to above
4							0	**Clayey Silt (ML)** Similar to above, no recovery
6					0.1 53ºF		100	**Clayey Silt (ML)** Similar to above
8					0.0 43ºF		90	**Clayey Silt (ML)** Low plasticity, very soft, damp, brown
10					0.0 43ºF		80	**Clayey Silt (ML)** Similar to above
12					0.1 43ºF		100	**Silty Sand (SM)** Very fine grain, loose to compact, damp, brown
14								

Completion Results



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WELL CONSTRUCTION

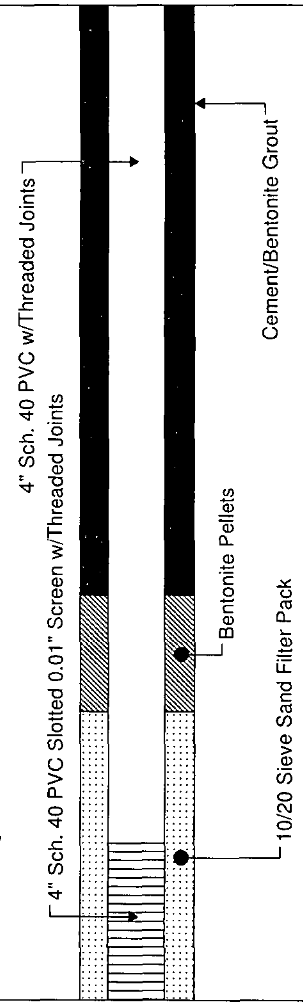
Well No.: MW-60 (AOC 25 -2)

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: Hydroexcavated to 8' bgl. N36º41.754' W107º58.434'

Total Depth: 45.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5543.711
Elev., PAD (ft. msl): 5544.003
Elev., GL (ft. msl): 5544.007
Site Coordinates:
N 36º41'45.37028" **W** 107º58'25.98617"

Start Date: 4/5/2009
Finish Date: 4/5/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
					0.0 43ºF		90	**Silty Sand (SM)** Very fine grain, loose to compact, damp, brown	
16					0.2 43ºF		90	**Silty Sand (SM)** Similar to above	
18					0.4 43ºF		100	**Silty Sand (SM)** Similar to above	
20					0.1 43ºF		100	**Silty Sand (SM)** Similar to above	
22					0.3 44ºF		100	**Silty Sand (SM)** Similar to above	
24					0.4 44ºF		100	**Silty Sand (SM)** Similar to above	24.5'
26					0.3 44ºF		100	**Silty Sand (SM)** Similar to above	26.5'
28					0.2 44ºF		100	**Silty Sand (SM)** Similar to above	28.75'
30					0.1 44ºF		100	**Silty Sand (SM)** Similar to above	



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WELL CONSTRUCTION

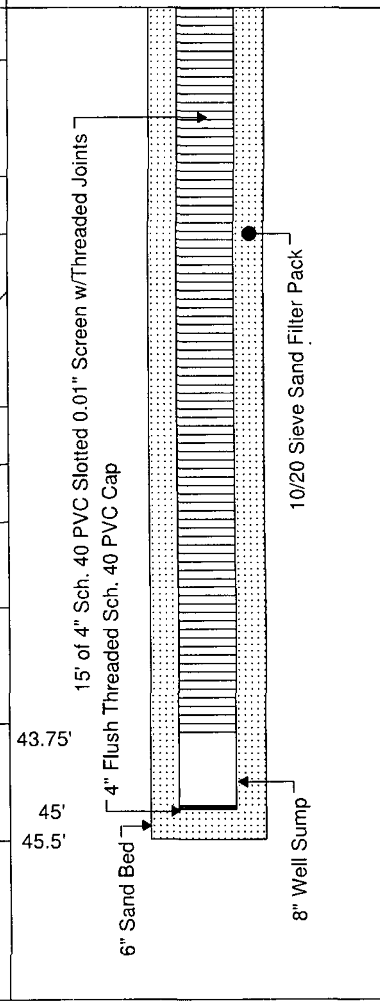
Well No.: MW-60 (AOC 25 -2)
Start Date: 4/5/2009
Finish Date: 4/5/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: Hydroexcavated to 8' bgl. N36º41.754' W107º58.434'

Total Depth: 45.5' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5543.711
Elev., PAD (ft. msl): 5544.003
Elev., GL (ft. msl): 5544.007
Site Coordinates:
N 36º41'45.37028" W 107º58'25.98617"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
33					3.6 44ºF		100	**Silty Sand (SM)** Very fine grain, loose to compact, damp, brown
								Sand (SP) *Fine to medium grain, loose, damp, brown*
35					2.5 44ºF		100	**Gravelly Sand (SW)** Medium to coarse grain, compact, damp, brown, coarse to fine gravel
37	36-38'	1715	G/2V/2E/3J		4.2 44ºF		80	**Gravelly Sand (SW)** Similar to above
							10	**Gravelly Sand (SW)** Similar to above
39							0	**Gravelly Sand (SW)** Similar to above, no recovery
41							50	**Gravelly Sand (SW)** Similar to above
43							0	**Gravelly Sand (SW)** Similar to above, no recovery
45							100	**Nacimiento Formation Weathered Sandstone/Sandstone (SS)** Fine grain, dense, damp, light yellowish brown
47								Total Depth = 45.5' BGL

Completion Results



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WELL CONSTRUCTION

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Well No.: MW-61 (AOC 22 -15)

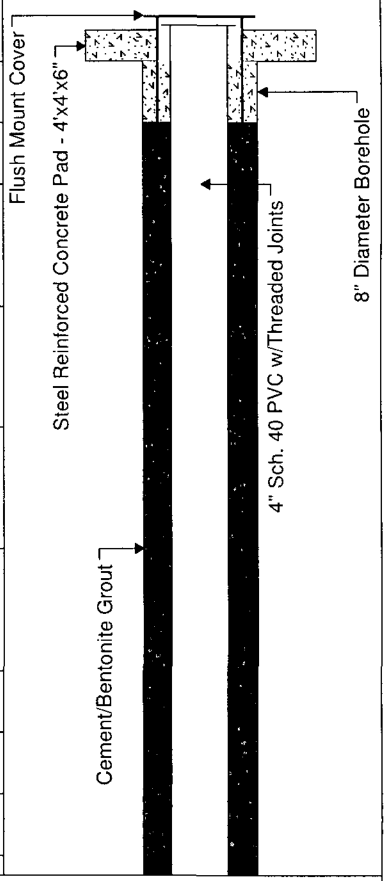
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.813' W107º58.287'

Total Depth: 40.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.411
Elev., PAD (ft. msl): 5539.613
Elev., GL (ft. msl): 5539.588
Site Coordinates:
N 36º41'48.82131" **W** 107º58'17.15514"

Start Date: 4/15/2009
Finish Date: 4/15/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0								Ground Surface
0								**Asphalt/Base**
	1-1.5' 1.5-2' &Dup	1135 1155	G/2V/2E/3J G/2V/2E/3J		2.8 63ºF 29.5 63ºF		100	**Clayey Silt (ML)** Low plasticity, stiff, damp, brown
2					23.4 68ºF		60	**Clayey Silt (ML)** Similar to above, soft
4					5.5 68ºF		50	**Clayey Silt (ML)** Similar to above
6							0	**Clayey Silt (ML)** Similar to above - no recovery
8					13.1 68ºF		10	**Clayey Silt (ML)** Similar to above
10					18.1 68ºF		80	**Clayey Silt (ML)** Similar to above, trace very fine grain sand
								Silty Sand (SM) Very fine grain, loose, damp, brown
12							70	**Silty Sand (SM)** Similar to above

Completion Results



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WELL CONSTRUCTION

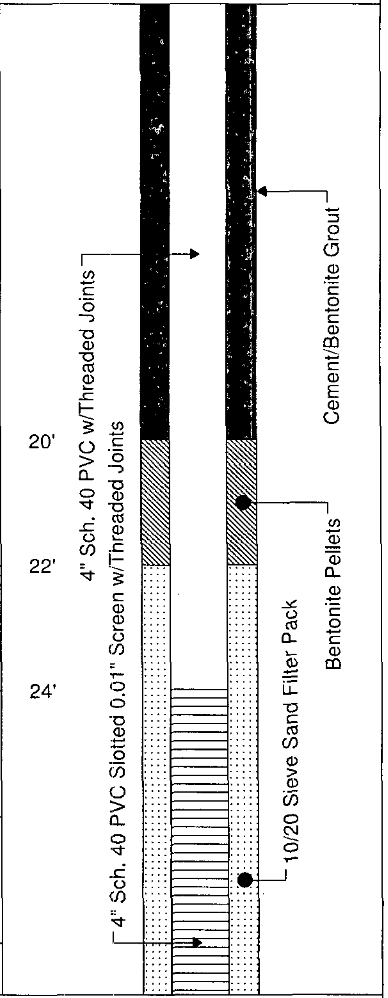
Well No.: MW-61 (AOC 22 -15)
Start Date: 4/15/2009
Finish Date: 4/15/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.813' W107º58.287'

Total Depth: 40.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.411
Elev., PAD (ft. msl): 5539.613
Elev., GL (ft. msl): 5539.588
Site Coordinates:
N 36º41'48.82131" **W** 107º58'17.15514"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					16.6 68ºF			**Clayey Silt (ML)** Low plasticity, very fine grain, compact, damp, brown
15					11.2 68ºF		70	**Clayey Silt (ML)** Similar to above
17					6.5 68ºF		80	**Clayey/Silty Sand (SC/SM)** Very fine grain, compact, damp, brown
19					13.2 68ºF		90	**Silty Sand (SM)** Similar to above, less clay
21					13.2 68ºF		80	**Silty Sand (SM)** Similar to above
23					21.5 67ºF		60	**Silty Sand (SM)** Very fine grain, loose to compact, damp, brown to light brown
25					12.9 67ºF		60	**Clayey Silty Sand (SC/SM)** Similar to above, increase in clay content
27					16.0 67ºF		90	**Clayey Silty Sand (SC/SM)** Similar to above

Completion Results



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WELL CONSTRUCTION

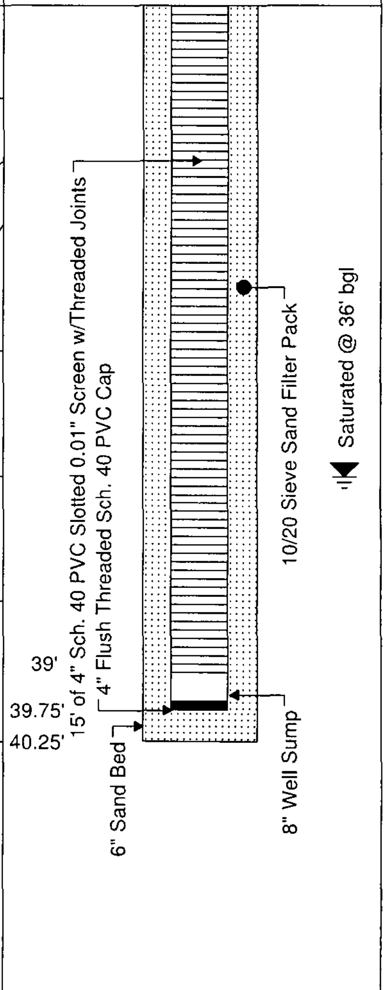
Well No.: MW-61 (AOC 22 -15)
Start Date: 4/15/2009
Finish Date: 4/15/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.813' W107º58.287'

Total Depth: 40.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.411
Elev., PAD (ft. msl): 5539.613
Elev., GL (ft. msl): 5539.588
Site Coordinates:
N 36º41'48.82131" W 107º58'17.15514"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					17.1 67ºF		90	**Clayey Silty Sand (SC/SM)** Similar to above, trace tan sand seams present
30	30-32'	1245	G/2V/2E/3J		22 67ºF		80	**Silty Sand (SM)** Very fine grain sand, compact, brown to gray, moist, odor
								Gravelly Sand (SW) Very fine to medium grain, compact to loose, brown to gray, odor, coarse gravel
32					165 67ºF		60	**Gravelly Sand (SW)** Similar to above, fine to coarse sand, odor, stained
34	34-36'	1340	G/2V/2E/3J	36'	510 67ºF		70	**Gravelly Sand (SW)** Similar to above, odor
36							10	**Gravelly Sand (SW)** Similar to above
38							10	**Nacimiento Formation Silty Sandy Clay (CL)** Low plasticity, firm, dry to damp, yellow brown to greenish gray, no odor
40								Total Depth = 40.25' BGL
42								
44								

Completion Results



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WELL CONSTRUCTION

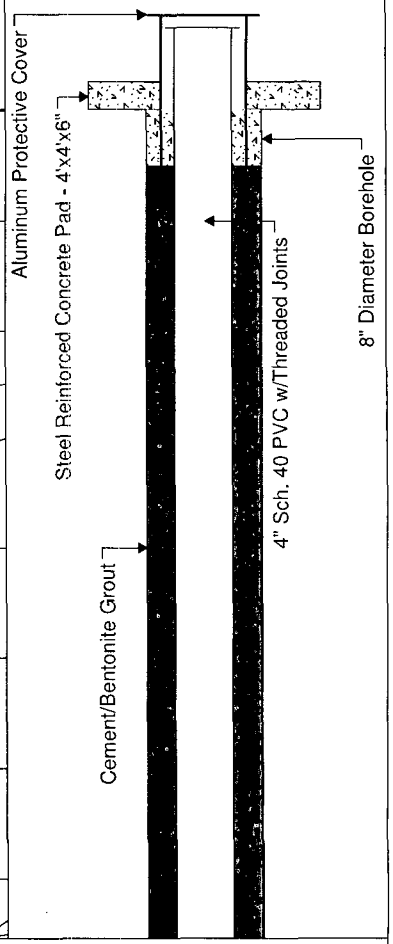
Well No.: MW-62 (AOC 23 -1)
Start Date: 4/21/2009
Finish Date: 4/21/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.717' W107º58.123'

Total Depth: 58.25' bgl
Ground Water: Saturated @ 55' bgl
Elev., TOC (ft. msl): 5561.322
Elev., PAD (ft. msl): 5558.703
Elev., GL (ft. msl): 5558.555
Site Coordinates:
N 36º41'43.02125" **W** 107º58'07.46590"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0	0-0.5' &Dup	1115	G/2V/2E/3J		3.1 71ºF		100	Ground Surface **Silt (ML)** Very fine grain, loose, dry, brown
	1.5-2'	1130	G/2V/2E/3J		3.3 71ºF			
2					14.5 74ºF		40	**Silt (ML)** Similar to above, damp
4					14.4 74ºF		90	**Silt (ML)** Similar to above **Sand (SP)** Fine grain, loose, damp, dark brown
6					14.8 74ºF		100	**Sand (SP)** Similar to above, brown to light brown
8					12.3 74ºF		60	**Gravelly Sand (SW)** Fine to coarse grain, loose, dry, brown, coarse gravel
10							0	**Gravelly Sand (SW)** Similar to above, no recovery
12					7.1 77ºF		100	**Silty Sand (SM)** Fine grain, loose to compact, damp, light grayish tan
14					17.6 77ºF		90	**Silty Sand (SM)** Similar to above, compact

Completion Results



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WELL CONSTRUCTION

RPS

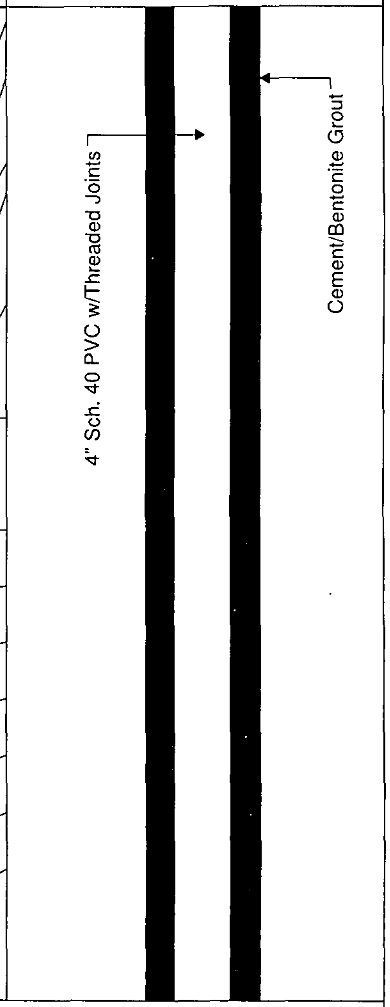
Well No.: MW-62 (AOC 23 -1)
Start Date: 4/21/2009
Finish Date: 4/21/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.717' W107º58.123'

Total Depth: 58.25' bgl
Ground Water: Saturated @ 55' bgl
Elev., TOC (ft. msl): 5561.322
Elev., PAD (ft. msl): 5558.703
Elev., GL (ft. msl): 5558.555
Site Coordinates:
N 36º41'43.02125" **W** 107º58'07.46590"

Depth (ft.)	Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
							0	**Silty Sand (SM)** Similar to above, sandstone present, yellowish brown
16					8.7 78ºF		60	**Silty Sand (SM)** Similar to above, no recovery
							0	**Clayey Silty Sand (SC/SM)** Fine grain, very dense, damp, tan
18					2.2 78ºF		100	**Clayey Silty Sand (SC/SM)** Similar to above, no recovery
								Clayey Silty Sand (SC/SM) Similar to above, grayish tan, organics at 18.5' bgl, pinkish tan 18.25 to 18.75' bgl
20					3.9 78ºF		100	**Clayey Silty Sand (SC/SM)** Fine grain, very dense, damp, grayish tan
22					2.4 78ºF		100	**Clayey Silty Sand (SC/SM)** Similar to above, compact
24					1.6 78ºF		90	**Clayey Silty Sand (SC/SM)** Similar to above
							0	**Clayey Silty Sand (SC/SM)** Similar to above, no recovery
26					4.0 77ºF		90	**Silty Sand (SM)** Fine grain, compact, damp, light brown
							0	**Silty Sand (SM)** Similar to above, no recovery
28					3.6 77ºF		90	**Silty Sand (SM)** Similar to above, clay/silt lenses present
								Silty Sand (SM) Similar to above, no recovery
30					5.4 77ºF		90	**Silty Sand (SM)** Similar to above, increase in silt content
32								

Completion Results



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RPS

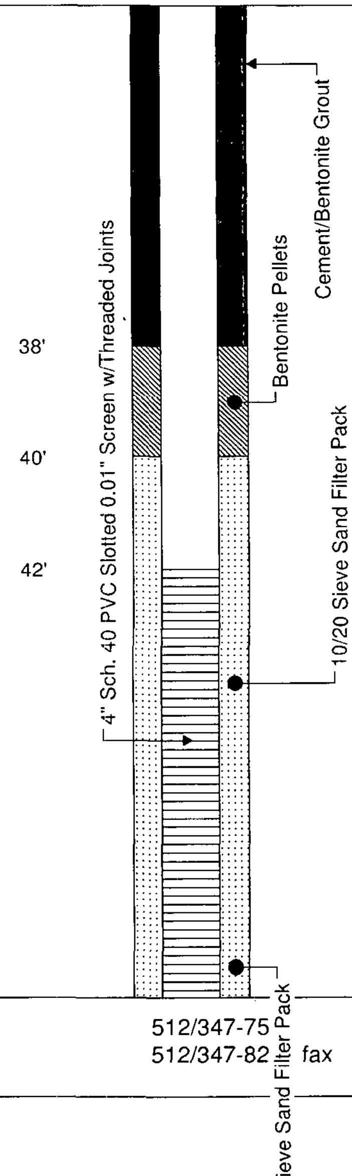
WELL CONSTRUCTION

Well No.: MW-62 (AOC 23 -1)
Start Date: 4/21/2009
Finish Date: 4/21/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.717' W107º58.123'

Total Depth: 58.25' bgl
Ground Water: Saturated @ 55' bgl
Elev., TOC (ft. msl): 5561.322
Elev., PAD (ft. msl): 5558.703
Elev., GL (ft. msl): 5558.555
Site Coordinates:
N 36º41'43.02125" **W** 107º58'07.46590"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
33					3.2 58ºF		50	**Sandy Silt (ML)** Very fine grain, compact, dry, greenish gray, no plasticity	
35					3.3 58ºF		50	**Sandy Silt (ML)** Similar to above, dense, fine grain sand lenses present, rusty brown and tan	
37					4.4 62ºF		50	**Silty Sand (SM)** Fine grain, compact, damp, light greenish gray	
39					5.3 63ºF		90	**Silty Sand (SM)** Similar to above, slightly cemented, black organics present, gray sand	
41					3.3 71ºF		90	**Silty Sand (SM)** Similar to above, trace clay	
43							0	**Silty Sand (SM)** Similar to above	
45					3.3 73ºF		20	**Silty Sand (SM)** Similar to above	
47							0	**Silty Sand (SM)** Similar to above	
49					2.3 84ºF		50	**Silty Sand (SM)** Fine grain, poorly cemented, damp, light greenish gray	



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WELL CONSTRUCTION

RPS

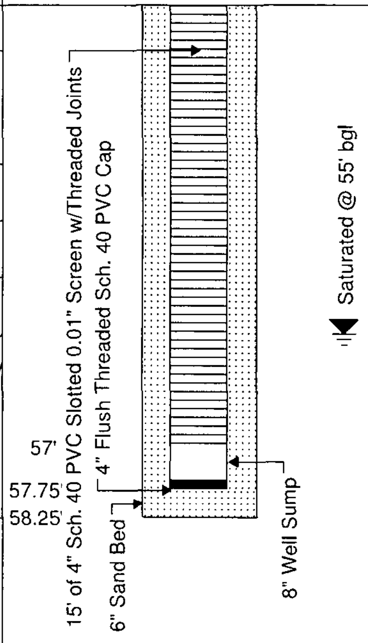
Well No.: MW-62 (AOC 23 -1)
Start Date: 4/21/2009
Finish Date: 4/21/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.717' W107º58.123'

Total Depth: 58.25' bgl
Ground Water: Saturated @ 55' bgl
Elev., TOC (ft. msl): 5561.322
Elev., PAD (ft. msl): 5558.703
Elev., GL (ft. msl): 5558.555
Site Coordinates:
N 36º41'43.02125" **W** 107º58'07.46590"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
51					3.8 82ºF		90	**Silty Sand (SM)** Similar to above, trace clay, poorly cemented, standstone present
53	52- 53'	1510	G/2V/ 2E/3J		4.4 83ºF		90	**Silty Sand (SM)** Similar to above
							10	**Silty Sand (SM)** Similar to above
55				55'			0	**Silty Sand/Sand (SM/SW)** Medium to coarse grain, loose, moist to saturated at 55' bgl
							90	**Silty Sand (SM)** Similar to above, saturated, brown to yellowish brown
57							90	**Nacimiento Formation Silt/Shale (ML)** Very dense, dry, black, no odor
59								Total Depth = 58.25' BGL
61								
63								
65								

Completion Results



WELL CONSTRUCTION

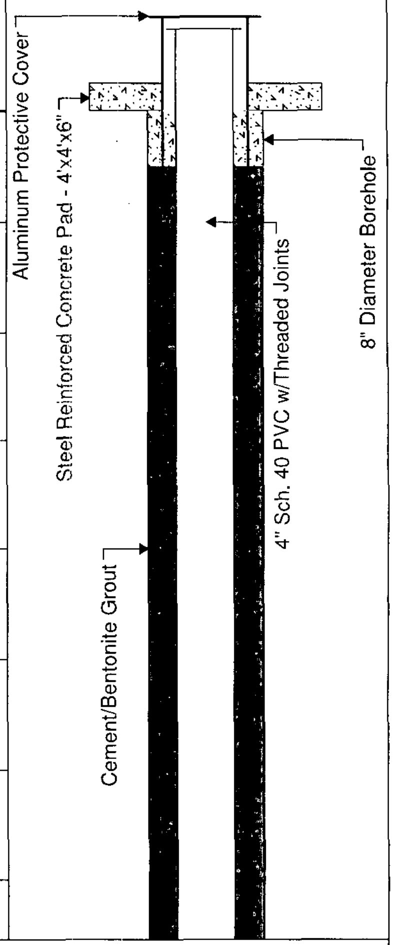
Well No.: MW-63 (AOC 22 -16)
Start Date: 4/13/2009
Finish Date: 4/14/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.771' W107º58.305'

Total Depth: 46' bgl
Ground Water: Saturated @ 39' bgl
Elev., TOC (ft. msl): 5547.255
Elev., PAD (ft. msl): 5544.482
Elev., GL (ft. msl): 5544.488
Site Coordinates:
N 36º41'46.17547" W 107º58'18.22906"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0								Ground Surface
0	0-0.5'	1325	G/2V/2E/3J		1.6		100	**Silt (ML)** Very fine grain, compact, damp, brown
2	1.5-2'	1335	G/2V/2E/3J		0.9			
					4.5 68ºF		50	**Clayey Silt (ML)** Similar to above
4					5.8 68ºF		60	**Clayey Silt (ML)** Similar to above
6					5.8 68ºF		70	**Clayey Silt (ML)** Similar to above
8					7.3 68ºF		80	**Clayey Silt (ML)** Similar to above
10					3.2 68ºF		10	**Clayey Silt (ML)** Similar to above
12					3.8 68ºF		90	**Clayey Silt (ML)** Similar to above, trace sand
14								**Clayey Silt (ML)** Similar to above

Completion Results



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WELL CONSTRUCTION

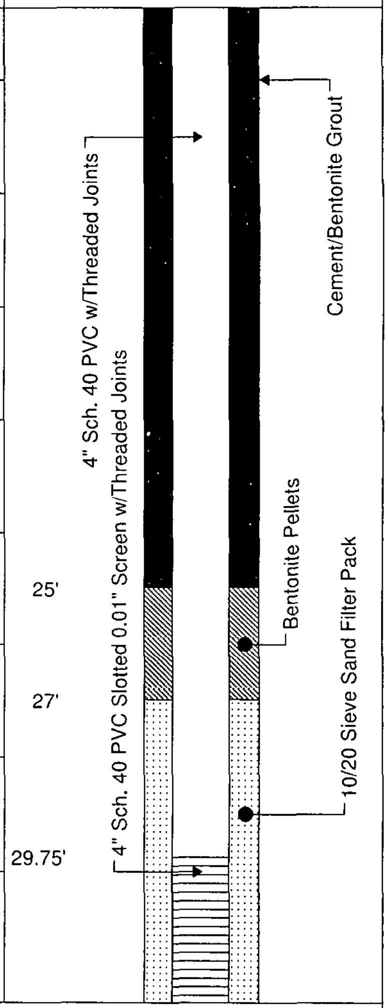
Well No.: MW-63 (AOC 22 -16)
Start Date: 4/13/2009
Finish Date: 4/14/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.771' W107º58.305'

Total Depth: 46' bgl
Ground Water: Saturated @ 39' bgl
Elev., TOC (ft. msl): 5547.255
Elev., PAD (ft. msl): 5544.482
Elev., GL (ft. msl): 5544.488
Site Coordinates:
N 36º41'46.17547" **W** 107º58'18.22906"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					6.2 68ºF		90	
16					5.8 68ºF		80	**Clayey Silt (ML)** Similar to above
18					5.7 68ºF		90	**Clayey Silt/Silt (ML)** Similar to above, trace light brown to tan sand in partings
20					5.8 68ºF		90	**Silty Sand (SM)** Very fine grain, loose, damp, light brown to tan
22					6.8 68ºF		90	**Silty Sand (SM)** Similar to above, tan
24					4.9 68ºF		90	**Silty Sand (SM)** Very fine grain, loose, damp, tan
26					7.5 68ºF		90	**Silty Sand (SM)** Similar to above
28					7.9 68ºF		90	**Silty Sand (SM)** Similar to above
30					6.0 68ºF		90	**Silty Sand (SM)** Similar to above
32								

Completion Results



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WELL CONSTRUCTION

Well No.: MW-63 (AOC 22 -16)

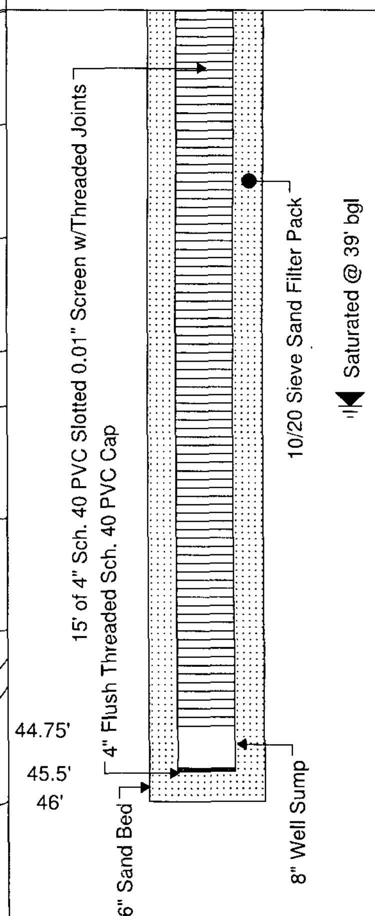
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36°41.771' W107°58.305'

Total Depth: 46' bgl
Ground Water: Saturated @ 39' bgl
Elev., TOC (ft. msl): 5547.255
Elev., PAD (ft. msl): 5544.482
Elev., GL (ft. msl): 5544.488
Site Coordinates:
N 36°41'46.17547" **W** 107°58'18.22906"

Start Date: 4/13/2009
Finish Date: 4/14/2009

Depth (ft.)	Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
33					6.5 68°F		50	**Gravelly Sand (SW)** Medium to coarse grain, loose, damp, brown, coarse gravel
35					10.9 70°F		60	**Gravelly Sand (SW)** Similar to above
37	36-38'	1230	G/2V/2E/3J		12.2 70°F		70	**Gravelly Sand (SW)** Similar to above
				39'			0	No recovery - similar to above
39							40	**Sand (SW)** Medium to coarse grain, loose, saturated, brown, trace gravel
41							40	**Sand (SW)** Similar to above
43							20	**Sand (SW)** Similar to above
							0	No recovery - similar to above
45							50	**Nacimiento Formation Weathered Sandstone/Sandstone (SS)** Dense to fine grain, dry, greenish gray
47								Total Depth = 46' BGL
49								

Completion Results



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WELL CONSTRUCTION

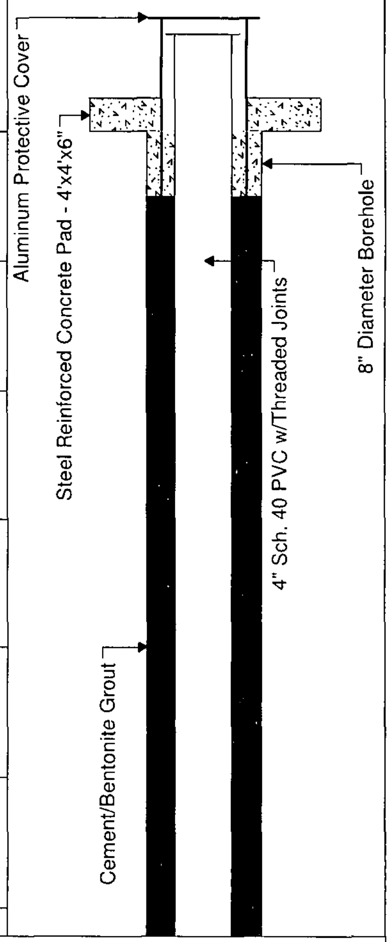
Well No.: MW-64 (AOC 24 -7)
Start Date: 4/7/2009
Finish Date: 4/7/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.736' W107º58.304'

Total Depth: 50.25' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5552.285
Elev., PAD (ft. msl): 5549.043
Elev., GL (ft. msl): 5549.111
Site Coordinates:
N 36º41'44.02863" W 107º58'18.35629"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
0								Ground Surface
0–2	0-0.5'	1130	G/2V/2E/3J		0.4 57ºF		100	**Clayey Silt (ML)** Low plasticity, stiff, damp, brown
	1.5-2'	1145	G/2V/2E/3J					
2–4					0.4 57ºF		60	**Clayey Silt (ML)** Similar to above
4–6					0.2 57ºF		90	**Sandy Silt (ML)** Low plasticity, fine grain sand, compact, damp, brown
6–8					0.3 57ºF		60	**Sandy Silt (ML)** Similar to above
8–10					0.4 57ºF		70	**Sandy Silt (ML)** Similar to above
10–12					0.3 57ºF		90	**Clayey Silt (ML)** Low plasticity, firm, damp, brown

Completion Results



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512/347-8243 fax

WELL CONSTRUCTION

RPS

Well No.: MW-64 (AOC 24 -7)

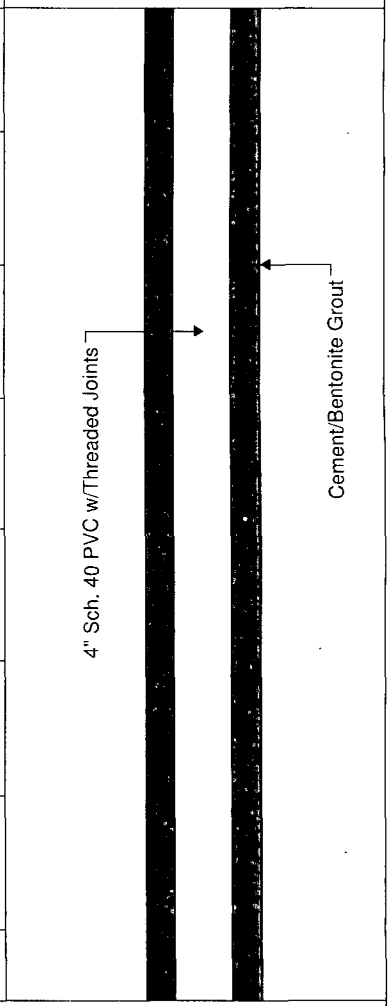
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.736' W107º58.304'

Total Depth: 50.25' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5552.285
Elev., PAD (ft. msl): 5549.043
Elev., GL (ft. msl): 5549.111
Site Coordinates:
N 36º41'44.02863" W 107º58'18.35629"

Start Date: 4/7/2009
Finish Date: 4/7/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					0.4 57ºF		80	**Sandy Silt (ML)** Low plasticity, fine grain sand, compact, damp, brown, trace gravel
14					0.4 57ºF		20	**Sandy Silt (ML)** Similar to above
16					0.1 57ºF		100	**Sandy Silt (ML)** Similar to above
18					0.5 57ºF		100	**Sandy Silt (ML)** Similar to above, loose, more sand
20					0.3 57ºF		100	**Silty Sand (SM)** Very fine grain, loose, damp, brown
22					0.1 57ºF		100	**Silty Sand (SM)** Similar to above, light brown/tan
24					0.1 57ºF		100	**Silty Sand (SM)** Similar to above
26								**Silty Sand (SM)** Similar to above

Completion Results



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WELL CONSTRUCTION

Well No.: MW-64 (AOC 24 -7)

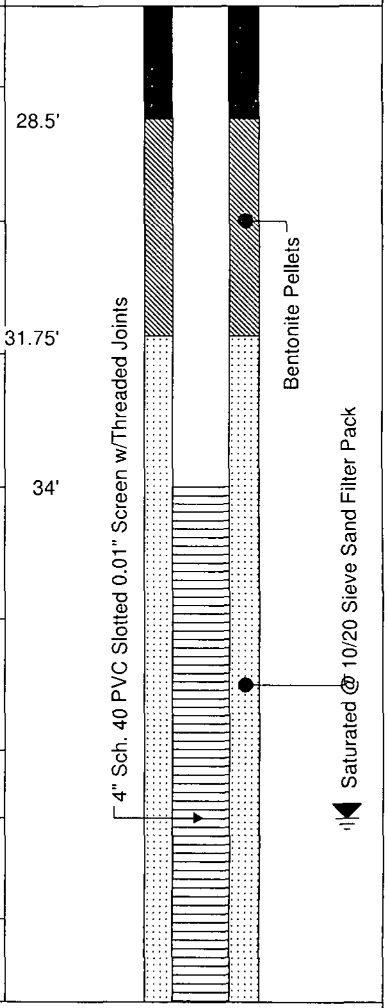
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.736' W107º58.304'

Total Depth: 50.25' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5552.285
Elev., PAD (ft. msl): 5549.043
Elev., GL (ft. msl): 5549.111
Site Coordinates:
N 36º41'44.02863" W 107º58'18.35629"

Start Date: 4/7/2009
Finish Date: 4/7/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					0.1 57ºF		100	
28					0.3 57ºF		100	**Silty Sand (SM)** Very fine grain, loose, damp, tan
30					0.2 57ºF		100	**Silty Sand (SM)** Similar to above, decrease in silt
32					0.4 57ºF		100	**Silty Sand (SM)** Similar to above
34					0.9 57ºF		100	**Silty Sand (SM)** Similar to above
36					3.4 57ºF		100	**Silty Sand (SM)** Fine grain, compact, damp, brown, trace gravelly sand at base
38							0	**Gravelly Sand (SW)**
40	39-42'	1815	G/2V/2E/3J		4.4 68ºF		50	**Gravelly Sand (SW)** Medium to coarse grain, loose, damp, brown, coarse gravel
					1.2 68ºF		50	**Gravelly Sand (SW)** Similar to above

Completion Results



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WELL CONSTRUCTION

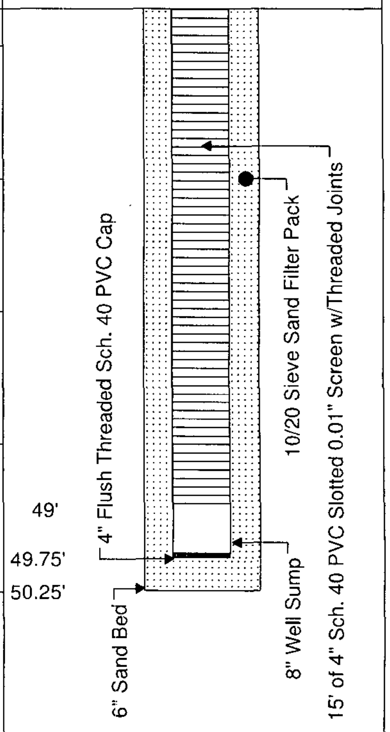
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger
Sampling Method: Split Spoon
Comments: N36º41.736' W107º58.304'

Total Depth: 50.25' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): 5552.285
Elev., PAD (ft. msl): 5549.043
Elev., GL (ft. msl): 5549.111
Site Coordinates:
N 36º41'44.02863" **W** 107º58'18.35629"

Well No.: MW-64 (AOC 24 -7)
Start Date: 4/7/2009
Finish Date: 4/7/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
43					3.1 68ºF		80	**Gravelly Sand (SW)** Similar to above, sand lenses present
45					3.1 68ºF		20	**Gravelly Sand (SW)** Medium to coarse grain, loose, damp, brown, coarse gravel
47					3.6 68ºF		50	**Gravelly Sand (SW)** Similar to above
49							90	**Nacimiento Formation Sandy Clay (CH)** Dense, very stiff, dry to damp, yellowish brown
51								Total Depth = 50.25' BGL
53								
55								

Completion Results



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WELL CONSTRUCTION

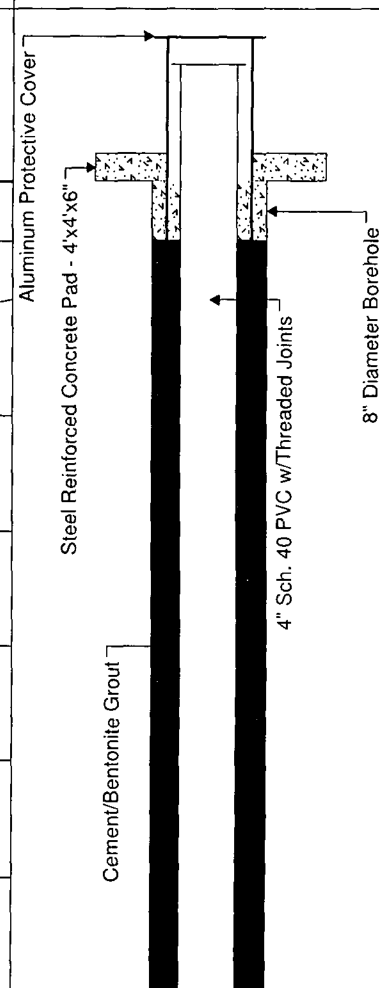
Well No.: MW-65 (AOC 26-8)
Start Date: 4/16/2009
Finish Date: 4/16/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.826' W107º58.244'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.517
Elev., PAD (ft. msl): 5539.941
Elev., GL (ft. msl): 5539.902
Site Coordinates:
N 36º41'49.18120" **W** 107º58'15.39107"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2 to 0								Ground Surface
0–1	0-1' &Dup	0900	G/2V/2E/4J		1.8 50ºF		100	**Silt/Gravel** Six inches of asphalt
1–2	1.5-2'	0920	G/2V/2E/4J		1.0 50ºF			**Clayey Silt (ML)** Low plasticity, soft, damp, brown
2–4					2.3 50ºF		100	**Clayey Silt (ML)** Similar to above
4–6					2.0 50ºF		100	**Clayey Silt (ML)** Similar to above
6–8					1.2 50ºF		100	**Clayey Silt (ML)** Similar to above
8–10					1.0 50ºF		100	**Clayey Silt (ML)** Similar to above
10–12					1.9 46ºF		80	**Sandy Silt (ML)** Very fine grain, compact to loose, damp, brown, trace clay
12–14					2.5 46ºF		70	**Sandy Silt (ML)** Similar to above

Completion Results



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WELL CONSTRUCTION

Well No.: MW-65 (AOC 26-8)

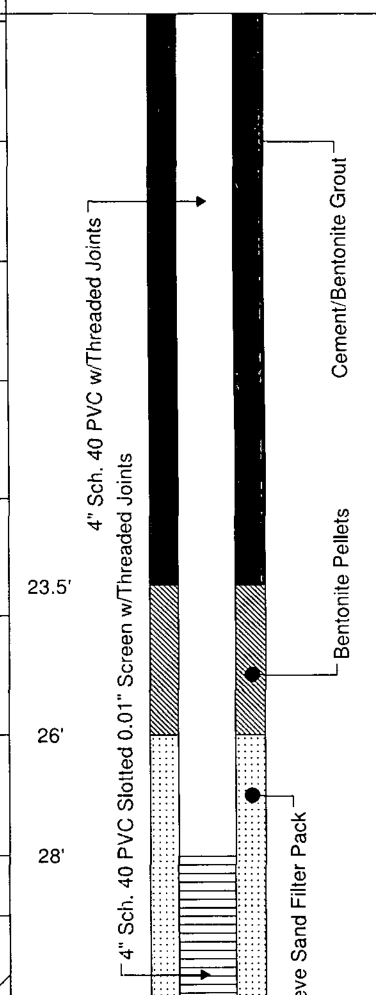
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.826' W107º58.244'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.517
Elev., PAD (ft. msl): 5539.941
Elev., GL (ft. msl): 5539.902
Site Coordinates:
N 36º41'49.18120" W 107º58'15.39107"

Start Date: 4/16/2009
Finish Date: 4/16/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
15					2.1 46ºF		70	**Sandy Silt (ML)** Very fine grain, compact to loose, damp, brown, trace clay
17					2.1 46ºF		80	**Sandy Silt (ML)** Similar to above
19					1.8 45ºF		90	**Silty Sand (SM)** Very fine grain, loose, damp, light brown
21					1.2 44ºF		80	**Silty Sand (SM)** Similar to above, tan sand in seams, calcareous
23					1.1 44ºF		80	**Silty Sand (SM)** Similar to above
25					1.3 44ºF		80	**Silty Sand (SM)** Similar to above
27					2.4 45ºF		80	**Clayey Silty Sand (SC/SM)** Very fine grain, compact, damp, brown, calcareous
29					11 46ºF		80	**Clayey Silty Sand (SC/SM)** Similar to above, faint odor **Sand (SW)** Fine to medium grain, loose, damp, brown, faint odor

Completion Results



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WELL CONSTRUCTION

Well No.: MW-65 (AOC 26-8)

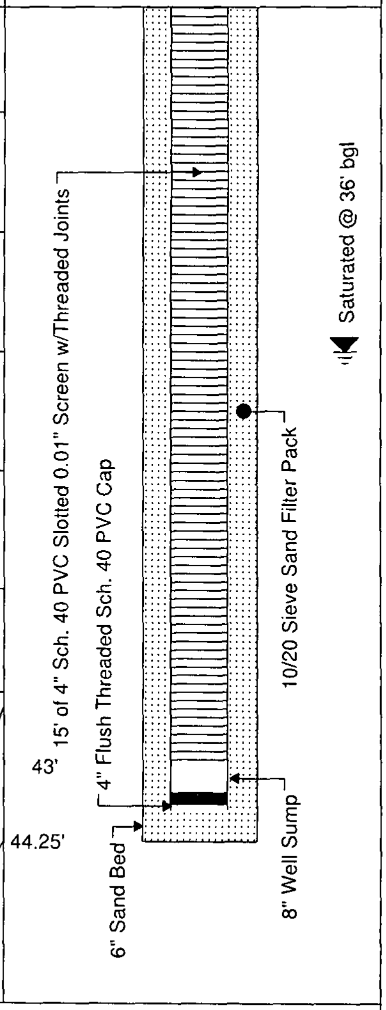
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.826' W107º58.244'

Total Depth: 44.25' bgl
Ground Water: Saturated @ 36' bgl
Elev., TOC (ft. msl): 5539.517
Elev., PAD (ft. msl): 5539.941
Elev., GL (ft. msl): 5539.902
Site Coordinates:
N 36º41'49.18120" **W** 107º58'15.39107"

Start Date: 4/16/2009
Finish Date: 4/16/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
					20.8 44ºF		80	**Gravelly Sand (SW)** Fine to coarse grain, gravelly at base, damp to moist, odor, gray
32					58.7 48ºF		60	**Gravelly Sand (SW)** Fine to coarse grain, damp, gravelly, gray, strong odor, trace dark to black clay
34	32-36'	1430	G/2V/2E/4J		145 47ºF		80	**Gravelly Sand (SW)** Similar to above, odor
36				36'			10	**Gravelly Sand (SW)** Similar to above, moist to saturated, strong hydrocarbon odor
38							10	**Gravelly Sand (SW)** Similar to above, saturated, black
40							70	**Sand (SW)** Fine to coarse grain, compact, saturated, dark gray, odor
42							--	**Sandy Clay/Clayey Sand (CL/SC)** Fine grain, very stiff, damp, yellowish brown
44								**Nacimiento Formation Sandy Clay/Clayey Sand (CL/SC)** Similar to above, becomes very dense, greenish gray
46								Total Depth = 44.25' BGL

Completion Results



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WELL CONSTRUCTION

Well No.: MW-66 (AOC 26-9)

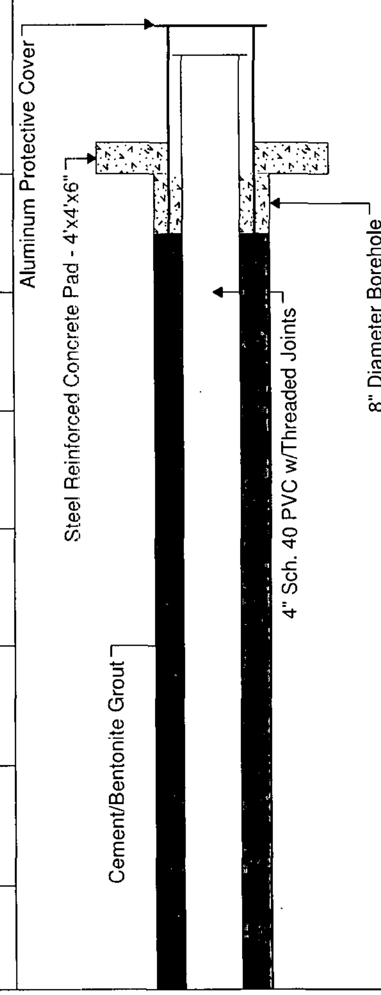
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.818' W107º58.234'

Total Depth: 43.25' bgl
Ground Water: Saturated @ 38' bgl
Elev., TOC (ft. msl): 5544.625
Elev., PAD (ft. msl): 5542.030
Elev., GL (ft. msl): 5541.979
Site Coordinates:
N 36º41'48.97462" **W** 107º58'14.05858"

Start Date: 4/16/2009
Finish Date: 4/20/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
-2								
0	0-0.5'	0955	G/2V/2E/4J					Ground Surface
0–2	1.5-2'	1000	G/2V/2E/4J		8.6 66ºF		100	**Clayey Silt (ML)** Low plasticity, firm, damp, brown
2–4					10.5 66ºF		100	**Clayey Silt (ML)** Similar to above
4–6					10.5 66ºF		60	**Clayey Silt (ML)** Similar to above
6–8					9.0 66ºF		70	**Clayey Silt (ML)** Similar to above
8–10					10.0 66ºF		90	**Sandy Silt (ML)** Very fine grain, compact to loose, damp, brown
10–12					8.3 66ºF		10	**Sandy Silt (ML)** Similar to above
12–					8.2 66ºF		70	**Sandy Silt (ML)** Similar to above

Completion Results



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WELL CONSTRUCTION

Well No.: MW-66 (AOC 26-9)

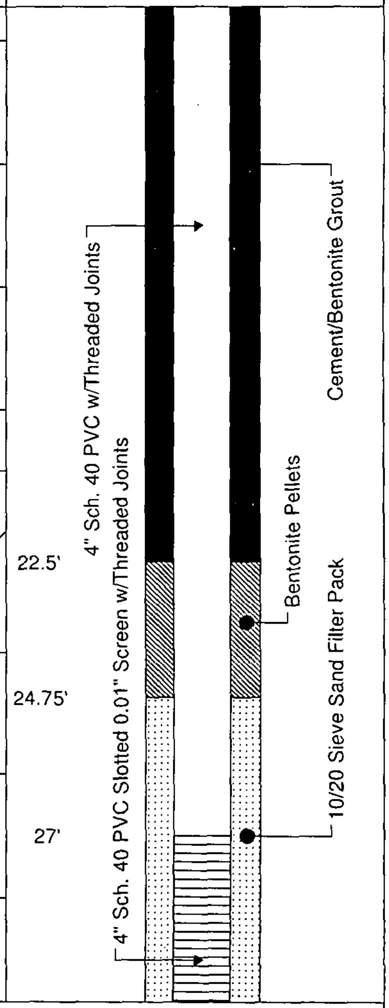
Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.818' W107º58.234'

Total Depth: 43.25' bgl
Ground Water: Saturated @ 38' bgl
Elev., TOC (ft. msl): 5544.625
Elev., PAD (ft. msl): 5542.030
Elev., GL (ft. msl): 5541.979
Site Coordinates:
N 36º41'48.97462" W 107º58'14.05858"

Start Date: 4/16/2009
Finish Date: 4/20/2009

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description
15					9.6 66ºF		80	**Sandy Silt (ML)** Very fine grain, compact to loose, damp, brown
17					9.5 66ºF		90	**Sandy Silt (ML)** Similar to above
19					8.8 66ºF		90	**Sandy Silt (ML)** Similar to above, tan and brown
21					10.9 66ºF		80	**Sandy Silt (ML)** Similar to above, increase in sand **Silty Sand (SM)** Very fine grain, compact to loose, damp, light brown
23					10.4 68ºF		90	**Silty Sand (SM)** Similar to above
25					10.0 68ºF		100	**Silty Sand (SM)** Similar to above
27					9.5 68ºF		80	**Silty Sand (SM)** Similar to above
29					7.9 68ºF		70	**Silty Sand (SM)** Fine to medium grained, compact, damp, brown, trace gravel, clayey

Completion Results



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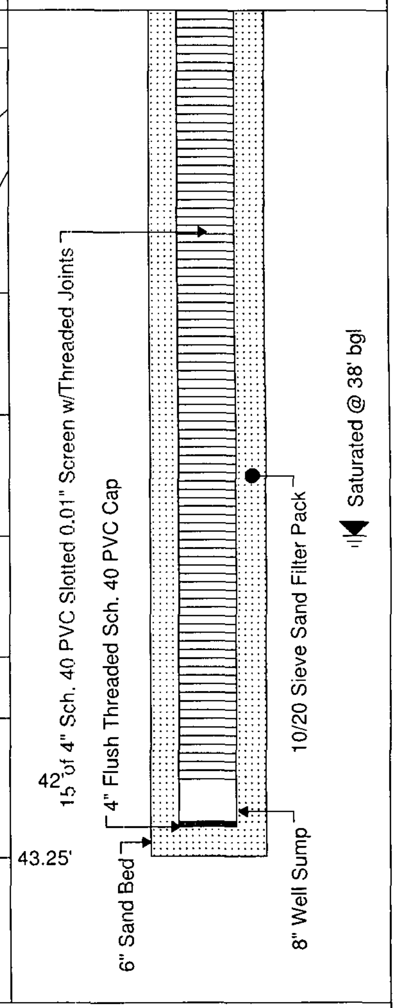
WELL CONSTRUCTION

Well No.: MW-66 (AOC 26-9)
Start Date: 4/16/2009
Finish Date: 4/20/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: Enviro-Drill, Inc.
Drilling Rig: CME 75
Drilling Method: Hollow-Stem Auger/ODEX
Sampling Method: Split Spoon
Comments: N36º41.818' W107º58.234'

Total Depth: 43.25' bgl
Ground Water: Saturated @ 38' bgl
Elev., TOC (ft. msl): 5544.625
Elev., PAD (ft. msl): 5542.030
Elev., GL (ft. msl): 5541.979
Site Coordinates:
N 36º41'48.97462" **W** 107º58'14.05858"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/Container/No	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Completion Results
31					5.6 68ºF		90	**Silty Clayey Sand (SM/SC)** Fine to medium grain, compact, damp, brown, trace gravel, clayey **Gravelly Sand (SW)** Fine to medium grain, loose, damp, brown, coarse gravel	
33					6.3 68ºF		100	**Gravelly Sand (SW)** Similar to above	
35					25.3 68ºF		30	**Gravelly Sand (SW)** Similar to above	
37	36-38'	1520	G/2V/2E/4J	38'	3939 75ºF		70	**Gravelly Sand (SW)** Medium to coarse grain, loose, damp to moist, brown and gray, coarse gravel, odor	
39							50	**Gravelly Sand (SW)** Similar to above, saturated, odor	
								Sand (SP) Medium grain, loose, saturated, gray, odor	
41							100	**Nacimiento Formation Sandy Silty Clay (CL)** Low to moderate plasticity, stiff to very stiff, dry, grayish green	
43								Total Depth = 43.25' BGL	
45									



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LOG OF BORING

Boring No.: SWMU 5-1
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.754' W107º58.417'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.569
Site Coordinates:
N 36º41'45.19215" **W** 107º58'24.95955"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1410	G/2V/2E/3J		9.8 78ºF	SM	100	**Gravelly Silty Sand (SM)** Fine grain, compact, dry to damp, brown	0
	1.5-2'	1420	G/2V/2E/3J		9.4 78ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: SWMU 5-2
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.754' W107º58.414'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.407
Site Coordinates:
N 36º41'45.20846" **W** 107º58'24.73350"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1430	G/2V/2E/3J		7.7 78ºF	SM	100	**Gravelly Silty Sand (SM)** Fine grain, compact, dry to damp, brown	0
	1.5-2'	1435	G/2V/2E/3J		9.3 78ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

LOG OF BORING

RPS

Boring No.: SWMU 5-3
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.750' W107º58.409'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.918
Site Coordinates:
N 36º41'44.99208" **W** 107º58'24.49009"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1440	G/2V/ 2E/3J		12.2 80ºF		100	**Gravelly Silty Sand (SM)** Fine grain, compact, damp, brown	0
	1.5-2'	1445	G/2V/ 2E/3J		15.9 80ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

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LOG OF BORING

Boring No.: SWMU 5-4
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.747' W107º58.409'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.925
Site Coordinates:
N 36º41'44.82380" **W** 107º58'24.50076"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1450	G/2V/2E/3J		13.7 78ºF		100	**Gravelly Silty Sand (SM)** Fine grain, compact, damp, brown	0
	1.5-2'	1455	G/2V/2E/3J		14.3 78ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

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LOG OF BORING

Boring No.: SWMU 5-5
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.744' W107º58.414'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.880
Site Coordinates:
N 36º41'44.61681" **W** 107º58'24.73909"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
0								Ground Surface	0
	0-0.5'	1500	G/2V/ 2E/3J		12.0 80ºF	SM	100	**Gravelly Silty Sand (SM)** Fine grain, compact, dry to damp, brown	
2	1.5-2' & Dup	1505	G/2V/ 2E/3J		17.8 80ºF			Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

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LOG OF BORING

RPS

Boring No.: SWMU 5-6
Start Date: 4/23/2009
Finish Date: 4/23/2009

Client: Western Refining Southwest, Inc.
Site: SWMU Group #3, Bloomfield Refinery
Job No.: 354 - Bloomfield, NM
Geologist: Tracy Payne
Driller: N/A
Drilling Rig: N/A
Drilling Method: Hand Auger
Sampling Method: Auger Bucket
Comments: N36º41.744' W107º58.419'

Total Depth: 2' bgl
Ground Water: Not Encountered
Elev., TOC (ft. msl): --
Elev., PAD (ft. msl): --
Elev., GL (ft. msl): 5544.571
Site Coordinates:
N 36º41'44".61062" **W** 107º58'25.05289"

Depth (ft.)	Sampling: Sample Depth	Time	Sample Type/ Containe/No.	Saturation	Organic Vapor (ppm)	USCS Class	Recovery (%)	Sample Description	Depth (ft.)
								Ground Surface	
0	0-0.5'	1510	G/2V/ 2E/3J		16.0 80ºF		100	**Gravelly Silty Sand (SM)** Fine grain, compact, dry to damp, brown	0
	1.5-2'	1515	G/2V/ 2E/3J		12.5 80ºF				
2								Total Depth = 2' BGL	2
4									4
6									6
8									8
10									10
12									12

Appendix G

Site-Specific Dilution / Attenuation Factor Calculations

Calculation of Site-Specific Dilution/Attenuation Factor (DAF)

The DAF value was calculated using equation 19 from NMED's *Technical Background Document for Development of Soil Screening Levels (Revision 5.0, August 2009).*

$$DAF = 1 + \left(\frac{K * i * D}{I * L}\right) \qquad DAF = 1 + \left(\frac{4{,}893 * 0.0023 * 1}{0.01 * 100}\right) = 11.25$$

Where:

$$D = \left(0.0112 * L^2\right)^{0.5} + D_a\left(1 - \exp\left[\frac{-L * I}{K * i * D_a}\right]\right)$$

K = Aquifer hydraulic conductivity (m/yr)
i = Hydraulic gradient (m/m)
D = Mixing zone depth (m)
I = Infiltration rate (m/yr)
L= Source length parallel to ground water flow (m)
D_a= Aquifer thickness (m)

Derivation of site-specific values:

K = 4,893 m/yr as determined from pumping test at well RW-22 (lowest of three values determined during 1994 RCRA Facility Investigation)
i = 0.0023 m/m as measured during August 2008 ground water sampling event
D = 1 m (lower of aquifer thickness (1m) or calculated mixing zone depth (10.58m))
I = 0.01 m derivation using EPA's HELP model as described below
L = 100 m – conservative average of SWMU/AOC source area length
D_a= 1 m - average saturated thickness measured during August 2008 ground water sampling event

Calculation of Infiltration Rate

Pursuant to *EPA's Soil Screening Guidance: User's Guide (Second Edition, July 1996)*, infiltration rates can be calculated either of two ways: (1) assume that infiltration rate is equivalent to recharge, or (2) use the EPA HELP model to estimate infiltration. Because the Bloomfield site is located in an area with low annual rainfall rates and high potential evapotranspiration rates, method 1 is not representative of site conditions. That is to say that it is unreasonable to assume that infiltration is equal to recharge.

EPA's HELP model was used to calculate the site-specific infiltration rate. Site-specific meteorological data was obtained from the Western Regional Climate Center and New Mexico State University, which operates a nearby weather station (Bloomfield 3 SE) as part of the NWS Cooperator Climate Stations. The weather station is located 1.7 miles south of Bloomfield on HWY 44 and then two miles east on Industrial Blvd, thus being approximately two miles southeast of the Western Bloomfield Refinery.

Data obtained from the Bloomfield 3 SE station includes mean monthly temperature and average monthly precipitation. The average wind speed (13.5 km/hr) was obtained from the Western Regional Climate Center, as measured at the Farmington, NM airport. Daily solar radiation and quarterly relative humidity values were based on measurements from Albuquerque, NM. This data was obtained from the National Atmospheric and Oceanic Administration (NOAA) and is included in the HELP model's Weather Generator module. A review of the monthly average weather conditions (temperature and precipitation) at Bloomfield and Albuquerque as shown in the table below indicates very similar conditions such that use of quarterly relative humidity and solar radiation from Albuquerque should be sufficient to estimate conditions at Bloomfield. The quarterly relative humidity values used are 48%, 30%, 45%, and 50% for the first, second, third, and fourth quarters, respectively.

The vadose zone physical properties were based on the predominant lithology as observed during on-site monitoring well installation. The soil type chosen in the model was loamy sand with an average thickness of 5 meters. The land surface was assumed to be bare soil with a slope of 0%. This should be a conservative estimate, as there is a slight slope across most of the refinery with the exception of areas within tank dikes. There are structures (e.g., parking lots, building pads, concrete foundations, etc.) that could limit infiltration but the model assumes only bare soil without any obstructions to infiltration. Based on the selected soil type (loamy sand), the model default value for porosity is 0.437, field capacity is 0.105, wilting point is 0.047, and saturated hydraulic conductivity is 0.0017 cm/day. These model default vales are taken from the US Department of Agriculture.

Using the model's synthetic weather generator and the aforementioned inputs, the model was run for a 40 year period to simulate potential infiltration (percolation or leakage through Layer 1). The model output is enclosed, showing the annual values. Over the modeled 40 year period, the average annual infiltration was 0.01 meters. This average annual infiltration was used in the aforementioned calculation of the site-specific DAF value.

Bloomfield 3 SE, New Mexico Weather Station Data

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual
Average Max Temp (F)	41	48.6	57.4	67.2	77.4	88	92	89	81.8	69.4	54.4	43.4	67.5
Average Min. Temp (F)	16.2	22.4	27.8	35	43.8	52.1	59.6	57.7	49.5	37.7	25.7	18	37.1
Mean Monthly Temp (F)	28.6	35.5	42.6	51.1	60.6	70.1	75.8	73.4	65.7	53.6	40.1	30.7	52.3
Mean Monthly Temp (C)	-1.89	1.94	5.89	10.61	15.89	21.14	24.33	22.97	18.69	11.97	4.47	-0.72	
Average total Prec. (in)	0.55	0.56	0.63	0.6	0.52	0.38	0.99	1.27	0.95	0.95	0.63	0.57	8.60
Average total Prec. (mm)	13.97	14.224	16.002	15.24	13.208	9.652	25.146	32.258	24.13	24.13	16.002	14.478	

Data collected from 1/1/1914 to 12/31/2005 at the Bloomfield 3 SE (#291063) weather monitoring station; obtained from Western Regional Climate Center, National Oceanic & Atmospheric Administration

Albuquerque, New Mexico Weather Station Data

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Annual
Average Max Temp (F)	49.9	53.6	60.8	72.4	80.1	91.1	93.2	92	84.8	74.4	59.5	49.8	71.8
Average Min. Temp (F)	20.9	23.7	30.2	38.7	46.8	56.3	62	60.5	52.5	40.3	26.4	21.6	40
Mean Monthly Temp (F)	35.4	38.65	45.5	55.55	63.45	73.7	77.6	76.25	68.65	57.35	42.95	35.7	55.9
Mean Monthly Temp (C)	1.89	3.69	7.50	13.08	17.47	23.17	25.33	24.58	20.36	14.08	6.08	2.06	
Average total Prec. (in)	0.32	0.29	0.46	0.61	0.7	0.87	1.3	1.57	1.03	0.63	0.43	0.46	8.67
Average total Prec. (mm)	8.128	7.366	11.684	15.494	17.78	22.098	33.02	39.878	26.162	16.002	10.922	11.684	

Data collected from 1/1/1932 to 1/31/1954 at the Albuquerque (#290222) weather monitoring station; obtained from Western Regional Climate Center, National Oceanic & Atmospheric Administration

F - Fahrenheit
C- Celsius

in - inch
mm- millimeter

Project : Western Refining Bloomfield, New Mexico

Estimation of infiltration at Bloomfield Refinery

Model : HELP
An US EPA model for predicting landfill hydrologic processes and testing of effectiveness of landfill designs

Author : Scott Crouch

Client : Western Refining - Randy Schmaltz

Location : Bloomfield, NM

3/11/2010

Profile 1

Model Settings

[HELP] Case Settings

Parameter	Value	Units
Runoff Method	Model calculated	(-)
Initial Moisture Settings	Model calculated	(-)

[HELP] Surface Water Settings

Parameter	Value	Units
Runoff Area	100	(%%)
Vegetation Class	Bare soil	(-)

Profile Structure

Layer	Top (m)	Bottom (m)	Thickness (m)
Loamy Sand	100.0000	95.0000	5.0000

1.1. Layer. Loamy Sand

Top Slope Length: 0.0000
Bottom Slope Length: 0.0000
Top Slope: 0.0000
Bottom Slope : 0.0000

[HELP] Vertical Perc. Layer Parameters

Parameter	Value	Units
total porosity	0.437	(vol/vol)
field capacity	0.105	(vol/vol)
wilting point	0.047	(vol/vol)
sat.hydr.conductivity	0.0017	(cm/sec)
subsurface inflow	0	(mm/year)

Annual Totals rate (m)

	Precipitation (m)	Runoff (m)	Evapotranspiration (m)	Percolation or leakance through Layer 1 (m)
Year-1 (m)	1.9660E-01	0.0000E+00	1.8579E-01	5.2109E-05
Year-2 (m)	3.0180E-01	0.0000E+00	2.6922E-01	1.0255E-04
Year-3 (m)	2.3510E-01	0.0000E+00	2.3452E-01	1.9650E-04
Year-4 (m)	2.3000E-01	0.0000E+00	2.1004E-01	2.4626E-04
Year-5 (m)	2.5270E-01	0.0000E+00	2.3977E-01	4.1142E-04
Year-6 (m)	1.5870E-01	0.0000E+00	1.4899E-01	3.6109E-04
Year-7 (m)	1.8420E-01	0.0000E+00	1.7010E-01	5.0670E-04
Year-8 (m)	2.5770E-01	0.0000E+00	2.3978E-01	5.9778E-04
Year-9 (m)	1.9170E-01	0.0000E+00	1.7956E-01	7.2288E-04
Year-10 (m)	2.2820E-01	0.0000E+00	1.9825E-01	9.4104E-04
Year-11 (m)	2.3680E-01	0.0000E+00	2.2456E-01	1.6311E-03
Year-12 (m)	2.5940E-01	0.0000E+00	2.4152E-01	3.7601E-03
Year-13 (m)	1.8440E-01	0.0000E+00	1.7107E-01	5.6153E-03
Year-14 (m)	1.5860E-01	0.0000E+00	1.5145E-01	1.0341E-02
Year-15 (m)	2.4990E-01	0.0000E+00	2.3436E-01	1.4166E-02
Year-16 (m)	1.6700E-01	0.0000E+00	1.5633E-01	1.4482E-02
Year-17 (m)	1.3040E-01	0.0000E+00	1.1372E-01	1.2954E-02
Year-18 (m)	1.5020E-01	0.0000E+00	1.4066E-01	1.3977E-02
Year-19 (m)	2.0530E-01	0.0000E+00	1.9662E-01	1.3219E-02
Year-20 (m)	1.8180E-01	0.0000E+00	1.6946E-01	1.0024E-02
Year-21 (m)	2.3550E-01	0.0000E+00	2.1477E-01	1.0887E-02
Year-22 (m)	1.3750E-01	0.0000E+00	1.3022E-01	1.0618E-02
Year-23 (m)	2.3340E-01	0.0000E+00	2.2529E-01	1.4634E-02
Year-24 (m)	2.2170E-01	0.0000E+00	2.0414E-01	1.0021E-02
Year-25 (m)	1.4510E-01	0.0000E+00	1.3452E-01	1.3558E-02
Year-26 (m)	2.0130E-01	1.2902E-06	1.7333E-01	1.3059E-02
Year-27 (m)	2.3200E-01	0.0000E+00	2.1409E-01	1.5689E-02
Year-28 (m)	1.9260E-01	0.0000E+00	1.8730E-01	9.9471E-03
Year-29 (m)	2.3390E-01	0.0000E+00	2.1475E-01	1.1847E-02
Year-30 (m)	1.8890E-01	0.0000E+00	1.7801E-01	1.8487E-02
Year-31 (m)	2.4520E-01	0.0000E+00	2.2175E-01	1.6094E-02
Year-32 (m)	2.2790E-01	0.0000E+00	2.0877E-01	1.2385E-02
Year-33 (m)	3.1730E-01	4.0020E-04	2.9335E-01	1.3069E-02
Year-34 (m)	2.1170E-01	0.0000E+00	1.8598E-01	1.4984E-02
Year-35 (m)	2.7430E-01	0.0000E+00	2.6796E-01	1.6877E-02
Year-36 (m)	1.5090E-01	0.0000E+00	1.2899E-01	2.4361E-02
Year-37 (m)	2.1680E-01	0.0000E+00	2.1801E-01	1.6731E-02
Year-38 (m)	1.7490E-01	0.0000E+00	1.5227E-01	1.8959E-02
Year-39 (m)	2.1190E-01	0.0000E+00	1.6801E-01	1.5479E-02
Year-40 (m)	1.7540E-01	0.0000E+00	1.8233E-01	1.7584E-02
Total (m)	8.3887E+00	4.0149E-04	7.7796E+00	3.9958E-01

Average 0.01m

NWS Cooperator Climate Stations

Weather Data from Individual Stations Around New Mexico

Bloomfield 3-SE-Bloomfield, NM

Climate Data

NO PICTURE AVAILABLE

Location: From Bloomfield, NM go 1.7 miles south on HWY 44, turn east on Industrial BLVD and go 2.0 miles to gas compressor plant on right.

Elevation: 5806 feet

Latitude: 36°40'

Longitude: 107°58'

Ground Cover: Flat sandy plateau cut by broken terrain of sandstone hills and arroyos.

Cooperator Number: 29-1063-1

Questions or comments about this page can be directed to:

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NMSU MONITORED CLIMATE STATIONS
NMSU Weather Homepage

Western Regional Climate Center

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Division of Atmospheric Sciences

DRI Desert Research Institute

NEW MEXICO

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
ALAMOGORDO AIRPORT ASOS	KALM	1996-2006	5.1	6.3	7.1	7.9	7.1	6.9	6.1	5.3	5.2	5.2	5.0	5.0	6.0
ALAMOGORDO-HOLLOMAN AFB	KHMN	1996-2006	8.5	9.7	10.6	11.8	10.8	10.6	9.8	9.1	8.8	8.5	8.1	8.3	9.6
ALBUQUERQUE AP ASOS	KABQ	1996-2006	7.0	8.2	9.3	11.1	10.0	10.0	8.7	8.3	8.0	7.9	7.2	6.9	8.5
ALBUQUERQUE-DBLE EAGLE	KAEG	1999-2006	7.1	7.9	9.0	10.6	9.5	8.6	7.0	6.2	7.0	6.5	6.5	6.1	7.7
ARTESIA AIRPORT ASOS	KATS	1997-2006	7.8	9.1	10.1	10.9	10.2	9.9	7.8	6.9	7.6	7.8	7.6	7.4	8.5
CARLSBAD AIRPORT ASOS	KCNM	1996-2006	9.2	9.8	10.9	11.4	10.4	9.9	8.5	7.7	8.2	8.5	8.4	8.8	9.3
CLAYTON MUNI AP ASOS	KCAO	1996-2006	11.9	12.7	13.4	14.6	13.4	13.0	11.7	10.8	11.8	12.1	12.1	12.0	12.4
CLINES CORNERS	KCQC	1998-2006	16.2	16.1	15.7	16.9	14.6	13.5	10.6	10.1	11.8	13.3	15.0	16.0	14.1
CLOVIS AIRPORT AWOS	KCVN	1996-2006	12.3	12.3	13.4	13.8	12.4	11.9	9.7	8.9	9.7	10.9	11.6	12.2	11.6
CLOVIS-CANNON AFB	KCVS	1996-2006	12.5	12.6	13.6	13.8	12.2	12.5	10.7	10.0	10.2	11.3	11.7	12.4	12.0
DEMING AIRPORT ASOS	KDMN	1996-2006	8.7	9.7	10.9	12.0	10.6	10.1	8.9	8.1	8.4	8.2	8.5	8.1	9.3
FARMINGTON AIRPORT ASOS	KFMN	1996-2006	7.3	8.3	9.0	9.8	9.4	9.4	8.7	8.2	8.0	7.8	7.6	7.3	8.4
GALLUP AIRPORT ASOS	KGUP	1996-2006	5.7	6.9	7.8	10.0	9.0	8.8	6.9	6.0	6.5	6.1	5.6	5.3	7.0
GRANTS-MILAN AP ASOS	KGNT	1997-2006	7.8	8.8	9.6	10.9	10.0	9.8	8.1	7.2	7.9	8.4	8.0	7.6	8.7
HOBBS AIRPORT AWOS	KHOB	1996-2006	11.3	11.9	12.6	13.4	12.5	12.3	11.0	10.0	10.2	10.6	10.7	11.1	11.4
LAS CRUCES AIRPORT AWOS	KLRU	2000-2006	6.4	7.5	8.8	10.1	8.7	8.2	6.8	6.0	6.2	6.1	6.4	6.0	7.3
LAS VEGAS AIRPORT ASOS	KLVS	1996-2006	10.9	12.2	12.5	14.3	12.4	11.8	10.0	9.2	10.9	10.8	11.0	10.9	11.4
LOS ALAMOS AP AWOS	KLAM	2005-2006	3.9	5.7	7.5	8.1	7.1	7.3	5.3	4.8	5.7	5.1	4.4	3.2	5.4
RATON AIRPORT ASOS	KRTN	1998-2006	8.9	9.4	10.4	12.2	10.8	10.2	8.4	8.1	8.6	9.0	8.6	8.5	9.4
ROSWELL AIRPORT ASOS	KROW	1996-2006	7.4	8.9	9.9	11.1	10.3	10.2	8.8	7.9	8.3	8.0	7.5	7.3	8.8
RUIDOSO AIRPORT AWOS	KSRR	1996-2006	8.8	9.6	10.0	11.6	10.0	8.4	5.9	5.3	6.4	7.4	7.9	8.7	8.3
SANTA FE AIRPORT ASOS	KSAF	1996-2006	8.9	9.5	9.9	11.2	10.6	10.5	9.2	8.8	8.8	9.1	8.7	8.5	9.5
SILVER CITY AP AWOS	KSVC	1999-2006	8.1	8.7	9.9	10.8	10.2	9.9	8.5	7.2	6.9	7.6	7.9	7.7	8.5
TAOS AIRPORT AWOS	KSKX	1996-2006	5.8	6.5	7.7	9.1	8.6	8.5	7.1	6.6	6.7	6.6	6.0	5.7	7.0
TRUTH OR CONSEQ AP ASOS	KTCS	1996-2006	7.4	8.7	9.9	11.1	10.4	9.8	8.1	7.4	7.7	8.0	7.7	7.3	8.6
TUCUMCARI AIRPORT ASOS	KTCC	1999-2006	10.0	11.2	11.9	13.6	11.9	11.6	9.9	9.3	10.0	10.0	10.4	10.2	10.8

$8.4 \frac{\text{miles}}{\text{hr}} \times \frac{1\text{klo}}{.62\text{miles}} = 13.5\ \text{km/hr}$

NEVADA

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
DESERT ROCK AP-MERCURY	KDRA	1996-2006	8.0	8.8	9.2	10.7	10.5	10.5	9.6	9.1	8.8	8.2	7.7	8.4	9.1
ELKO AIRPORT ASOS	KEKO	1996-2006	4.6	5.3	5.9	6.7	6.4	6.3	5.7	5.3	5.0	4.6	4.6	4.8	5.4
ELY AIRPORT ASOS	KELY	1996-2006	9.0	9.0	9.6	10.3	9.8	10.2	9.8	9.9	9.6	9.5	8.8	9.2	9.5

BLOOMFIELD 3 SE, NEW MEXICO (291063)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1914 to 12/31/2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	41.0	48.6	57.4	67.2	77.4	88.0	92.0	89.0	81.8	69.4	54.4	43.4	67.5
Average Min. Temperature (F)	16.2	22.4	27.8	35.0	43.8	52.1	59.6	57.7	49.5	37.7	25.7	18.0	37.1
Average Total Precipitation (in.)	0.55	0.56	0.63	0.60	0.52	0.38	0.99	1.27	0.95	0.95	0.63	0.57	8.61
Average Total SnowFall (in.)	3.8	2.2	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.6	3.4	11.4
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 92.9% Min. Temp.: 93.2% Precipitation: 95.4% Snowfall: 79% Snow Depth: 70.2%
Check Station Metadata or Metadata graphics for more detail about data completeness.

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Back to:
State Map | Western U.S. map | Home Page

NOTE:
To print data frame (right side), click on right frame before printing.

1971 - 2000

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1971-2000 Normals (~3 KB)

1961 - 1990

- Daily Temp. & Precip.
- Daily Tabular data (~23 KB)
- Monthly Tabular data (~1 KB)
- NCDC 1961-1990 Normals (~3 KB)

Period of Record

- Station Metadata
- Station Metadata Graphics

General Climate Summary Tables
- Temperature
- Precipitation
- Heating Degree Days
- Cooling Degree Days
- Growing Degree Days

ALBUQUERQUE, NEW MEXICO (290222)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1932 to 1/31/1954

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	49.9	53.6	60.8	72.4	80.1	91.1	93.2	92.0	84.8	74.4	59.5	49.8	71.8
Average Min. Temperature (F)	20.9	23.7	30.2	38.7	46.8	56.3	62.0	60.5	52.5	40.3	26.4	21.6	40.0
Average Total Precipitation (in.)	0.32	0.29	0.46	0.61	0.70	0.87	1.30	1.57	1.03	0.63	0.43	0.46	8.67
Average Total SnowFall (in.)	2.3	1.5	1.0	0.9	0.2	0.0	0.0	0.0	0.0	0.0	1.2	2.0	9.3
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 26.1% Min. Temp.: 26.1% Precipitation: 72.2% Snowfall: 26.1% Snow Depth: 26.1%
Check Station Metadata or Metadata graphics for more detail about data completeness.

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Appendix H

Quality Assurance/Quality Control Review

1.0 Data Validation Introduction

This summary presents data verification results for soil and ground water samples collected from soil boring and monitoring wells installed at the Bloomfield Refinery in accordance with the approved Investigation Work Plan - Group 3. The data review was performed in accordance with the procedures specified in the Order issued by NMED (NMED, 2007), USEPA Functional Guidelines for Organic and Inorganic Data Review, and quality assurance and control parameters set by the project laboratory Hall Environmental Analysis Laboratory, Inc.

A total of 109 soil samples and 18 ground water samples were collected between April 2009 and July 2009 in accordance with the Group 3 Investigation Work Plan. Soil and ground water samples were submitted to Hall Environmental Analysis Laboratory for the following parameters in accordance with the approved Work Plan:

- Volatile organic compounds (VOCs) by USEPA Method 8260B;
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270;
- Gasoline, diesel, and motor oil range organics by SW-846 Method 8015B;
- Ethanol by SW-846 Method 8015B (AOC 26 samples only);
- Total recoverable metals (Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, nickel, selenium, silver, vanadium, and zinc) by SW846 Method 6010/6020;
- Cyanide by SW-846 method 9012; and
- Mercury by EPA Method 7470.

In addition as stated in the approved Work Plan, ground water samples submitted to Hall Environmental Analysis Laboratory were analyzed for the following additional analytes:

- Anions (chloride, Nitrate/Nitrite, and sulfate) by USEPA Method 300.0;
- Alkalinity (total alkalinity, carbonate, and bicarbonate) by USEPA Method 310.1;
- Dissolved metals (iron, calcium, magnesium, potassium, and sodium) by USEPA Method 6010B; and
- Total dissolved solids by SM-2540C

Additional analytes reported by the lab, including the analysis of ethanol for designated soil samples, were not required by the Work Plan, and therefore are not listed in their entirely in the summary above. The soil and ground water sample analyses were completed as required by the approved Group 3 Site Investigation Work Plan, with the following exceptions:

Soil Sample Exceptions:

- AOC 22-12 (36-37.75') was inadvertently not analyzed for cyanide due to laboratory miscommunication;

- AOC 22-13 (37-39') was not analyzed for total metals due to limited sample recovery.

- AOC 22-13 (37-39') was not analyzed for SVOCs due to limited sample recovery.

Ground Water Sample Exceptions:

- NO_2+NO_3 was reported for sample MW-59, MW-60, MW-61, MW-62, MW-63, MW-64, MW-65, and MW-66 for at least one sample event in order to report results within the accepted holding time.

- Dissolved manganese was not reported for sample MW-61, MW-62, and MW-65; however total manganese was reported for each of the above mentioned samples.

Additionally, 80 quality assurance samples consisting of trip blanks, field blanks, equipment rinsate blanks, and field duplicates were collected and analyzed as part of the investigation activities. Table A-1 presents a summary of the sample identifications, laboratory sample identifications, and requested analytical parameters.

2.0 Quality Control Parameters Reviewed

Sample results were subject to a Level II data review that includes an evaluation of the following quality control (QC) parameters:

- Chain-of-Custody;
- Sample Preservation and Temperature Upon Laboratory Receipt;
- Holding Times;
- Blank Contamination (method blanks, trip blanks, field blanks, and equipment rinsate blanks);
- Surrogate Recovery (for organic parameters);
- Laboratory Control Sample (LCS) Recovery and Relative Percent Difference (RPD);
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recovery and RPD;
- Duplicates (field duplicate, laboratory duplicate); and
- Other Applicable QC Parameters.

The data qualifiers used to qualify the analytical results associated with QC parameters outside of the established data quality objectives are defined below:

J+ The analyte was positively identified; however, the result should be considered an estimated value with a potential high bias.

J- The analyte was positively identified; however, the result should be considered an estimated value with a potential low bias.

UJ The reporting limit is considered an estimated value.

R Quality control indicates that the data is not usable.

Results qualified as "J+", "J-", or "UJ" are of acceptable data quality and may be used quantitatively to fulfill the objectives of the analytical program, per EPA guidelines.

Results for the performance monitoring events that required qualification based on the data verification are summarized in Table A-2.

2.1 Chain-Of-Custody

The chain-of-custody documentation associated with project samples was found to be complete. Chain-of-custodies included sample identifications, date and time of collection, requested parameters, and relinquished/received signatures.

2.2 Sample Preservation and Temperature Upon Laboratory Receipt

Samples collected were received preserved and intact by Hall Environmental Laboratories, Inc. Samples were received by the laboratory at a temperature of 6.0 degrees Celsius or lower. Data qualification on lower temperature samples was not required.

2.3 Holding Times

All samples were extracted and analyzed within method-specified holding time limits with the exception of the following:

- Orthophosphate was analyzed past its holding time by over 10 days for numerous ground water samples collected from the new monitoring wells. Associated field sample results were rejected, and qualified "R." Orthophosphate was not a required analyte per the approved Work Plan.

2.4 Blank Contamination

2.4.1 Method Blank

Method blanks were analyzed at the appropriate frequency. Target compounds were not detected in the method blanks, with the exception of the following:

- Methylene chloride was detected in numerous analytical method blanks. Associated field sample detections of methylene chloride were most likely the result of laboratory contamination. The analytical laboratory noted issues with their new air ventilation system during the same time frame the samples for Group 3 were being analyzed. This issue was further confirmed by the methylene chloride detections in numerous field method blanks. Refer to **Section 2.4.4 Common Laboratory Contaminants** for additional data qualification information.

- Acetone was detected in numerous analytical method blanks. Associated field sample detections of acetone were most likely the result of laboratory contamination. The analytical laboratory noted issues with their new air ventilation system during the same time frame the samples for Group 3 were being analyzed. This issue was further confirmed by the acetone detections in numerous field method blanks. Refer to **Section 2.4.4 Common Laboratory Contaminants** for additional data qualification information.

2.4.2 Trip Blank

Trip blanks were analyzed at the appropriate frequency as specified in the Order. Target compounds were not detected in the trip blanks.

2.4.3 Field Blanks/Equipment Rinsate Blank

Field and equipment rinsate blanks were collected at the appropriate frequency as specified in the Group 3 Investigation Work Plan. Target compounds were not detected in the field blanks and equipment rinsate blank, with the exception of the following:

- Bromodichloromethane was detected in several field and equipment rinsate blanks. Data qualification was not required because associated samples were non-detect for this analyte.

- Bromoform was detected in the following field and equipment blanks:

  - EBS-041509 at 1.3 ug/L
  - FB-041409 at 1.1 ug/L
  - FB-041509 at 1.5 ug/L
  - FB-042009 at 1.1 ug/L
  - FB-042309 at 1.0 ug/L
  - FB-051409 at 1.0 ug/L

  Data qualification was not required because associated field samples were non-detect for this analyte.

- Chloroform was detected in several field and equipment rinsate blanks. Associated field samples with detected concentrations of chloroform less than 10 time the blank concentration were qualified "J+" to account for a potential high bias.

- Dibromochloromethane was detected in several field and equipment blanks. Data qualification was not required because associated field samples were non-detect for this analyte.

- Chloride was detected in the following field and equipment blanks:

  - EBW-051209 at 2.2 mg/L
  - EBW-051309 at 2.5 mg/L
  - EBW-051409 at 2.2 mg/L
  - EBW-071509 at 1.8 mg/L
  - EBW-071609 at 0.62 mg/L
  - FB-040909 at 0.68 mg/L
  - FB-051209 at 2.2 mg/L
  - FB-051309 at 2.2 mg/L
  - FB-051409 at 2.5 mg/L

- Data qualification was not required because detected concentrations in associated field samples were more than 10 times the blank detected concentration for this analyte.

- Sulfate was detected in the following field and equipment blanks:

  - EBW-051309 at 1.0 mg/L
  - EBW-051409 at 1.1 mg/L
  - FB-051209 at 0.52 mg/L
  - FB-051309 at 0.99

mg/L

- EBW-071509 at 1.0 mg/L - FB-051409 at 1.0 mg/L
- EBW-071609 at 1.0 mg/L - FB-071509 at 1.0 mg/L

Data qualification was not required because associated sample results were at concentrations greater than 10 times the blank detected concentration for this analyte.

- Manganese was detected in field blank FB-071509 (0.0034 mg/L). Data qualification was not required because associated samples results were of concentrations greater than 10 times the field blank concentration for this analyte.

- Zinc was detected in field blank FB-051309 (0.021 mg/L). The associated field sample results for MW-63 and MW-64 were qualified "J+" to account for a potential high bias.

2.4.4 Common Laboratory Contaminants

Per USEPA guidelines, common laboratory contaminants for VOC analysis are acetone, 2-butanone (MEK), cyclohexane, and methylene chloride. Common laboratory contaminants for SVOC analysis include phthalates. Analytical results were qualified if the detected sample concentration is less than 10 times the method reporting limit.

- Methylene chloride was detected in several soil samples at concentrations less than 10 times the method reporting limit; therefore the associated field data results were qualified "J+" due to potential laboratory contamination.

- Acetone was detected in several soil samples at concentrations less than 10 times the method reporting limit; therefore the associated data results were qualified "J+" due to potential laboratory contamination.

2.5 Surrogate Recovery

Surrogate recoveries for the organic and inorganic analyses were performed at the required frequency and were within laboratory acceptance limits, with the following exceptions:

- Surrogate recovery for DNOP (0%) was below the lower acceptance limit of 61.7% for the following field samples:

  - AOC 22-14 (1.5-2.0')
  - SWMU 4-1 (6-8')
  - AOC 24-6 (1.5-2.0') - AOC 22-13 (37-39')
  - AOC 22-13 (0-0.5') - AOC 22-16 (1.5-2.0')
  - AOC 22-11 (1.5-2.0') - AOC 22-4 (1.5-2.0')
  - SWMU 5-1 (0-0.5') - SWMU 5-3 (0-0.5')

  Low surrogate recovery was due to required sample dilution for analytical analysis; therefore data qualification was not required.

- Surrogate recovery for BFB (218%) was above the upper acceptance limit of 123% for sample AOC 22-4 (1.5-2.0'). Associated data was qualified "J+" to account for the potential high bias.

- Surrogate recovery for BFB (206%) was above the upper acceptance limit of 123% for sample AOC 22-13 (0-0.5'). Associated data was qualified "J+" to account for a potential high bias.

- Surrogate recovery for BFB (364%) was above the upper acceptance limit of 123% for sample AOC 22-13 (18-20'). Associated field data result was qualified "J+" to account for a potential high bias.

- Surrogate recovery for BFB (279%) was above the upper acceptance limit of 123% for sample AOC 22-13 (37-39'). Associated data was qualified "J+" to account for a potential high bias.

- Surrogate recovery for BFB (304%) was above the upper acceptance limit of 123% for sample AOC 22-15 (34-36'). Associated data was qualified "J+" to account for the potential high bias.

- Surrogate recovery for BFB (311%) was above the upper acceptance limit of 122% for sample MW-60. Associated field data was qualified "J+" to account for the potential high bias.

- Surrogate recovery for 2,4,6-Tribromophenol (24.7%) was below the lower acceptance limits of 35.5% for soil sample SWMU 4-1 (6-8'). Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recover for 2,4,6-tribromophenol (30.4%) was below the lower acceptance limit of 35.5% for sample AOC 22-4 (1.5-2.0'). Data qualification was not required and all other surrogates were within acceptance limits.

- Surrogate recovery for 2,4,6-Tribromophenol (32.4%) was below the lower acceptance limit of 35.5% for soil sample AOC 22-13 (1.5-2.0'). Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recovery for 2,4,6-Tribromophenol (32.4%) was below the lower acceptance limits of 35.5% for soil sample AOC 22-13 (1.5-2.0). Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recovery for 2,4,6-Tribromophenol (0%), 2-Fluorophenol (0%), and Nitrobenzene-d5 (0%) were below the lower acceptance limits of 16.6%, 9.5%, and 14.6%, respectively. The low recovery was due to the required dilution for sample analysis; therefore data qualification was not required.

- Surrogate recovery for 2,4,6-Tribromophenol (5.44%) and 2-Fluorophenol (0%) were below the lower acceptance limit of 16.6% and 9.54%, respectively, for ground water sample MW-66. Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recovery for 2,4,6-Tribromophenol (8.94%) was below the lower acceptance limit of 16.6% for ground water sample MW-66. Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recovery for 2-Fluorophenol (0%) was below the lower acceptance limit of 9.54% for ground water sample MW-65 and MW-65 (DUP). Data qualification was not required because all other acid and base/neutral fractions were within acceptance limits.

- Surrogate recovery for 4-Bromofluorobenzene (116%) was above the upper acceptance limit of 111% for sample AOC 22-13 (32-34.5'). Data qualification was not required because remaining acid and base/neutral fractions were within acceptance limits.

- Surrogate recoveries for 4-Bromofluorobenzene (125%) and dibromofluoromethane (114%) were above the upper acceptance limits of 111% and 105%, respectively for field sample AOC 22-13 (18-20'). Data qualification was not required because the other two surrogates were within acceptance limits.

- Surrogate recoveries for 4-Bromofluorobenzene (145%) was above the upper acceptance limits of 130% for field sample AOC 22-13 (0-0.5'). Data qualification was not required because other three surrogates were within acceptance limits.

- Surrogate recoveries for 4-Bromofluorobenzene (67.9%) and Toluene-d8 (68.4%) were below the lower acceptance limits of 70% for sample AOC 22-16 (36-38'). Data qualification was not required because other surrogates were within acceptance limits.

- Surrogate recovery for 4-Bromofluorobenzene (48.1%) was below the lower acceptance limit of 70% for sample AOC 22-15 (34-36'). Data qualification was not required because the other three surrogates were within acceptance limits.

- Surrogate recovery for 4-Bromofluorobenzene (114%) was above the upper acceptance limit of 111% for sample AOC 22-4 (1.5-2.0'). Data qualification was not required because the other three surrogates were within acceptance limits.

- Surrogate recoveries for 4-Bromofluorobenzene (136%) and Toluene-d8 (132%) were above the upper acceptance limits of 130% for analytical bath 18990. Data qualification was not required because other surrogates were within acceptance limits.

- Surrogate recovery for 4-Terphenyl-d14 was below the lower acceptance limit of 22% for sample MW-60. The surrogate recovery was caused by emulsion of the sample during extraction. Data qualification was not required because all other surrogates were within acceptance limits.

- Surrogate recovery for Phenol-d5 (36.3%) is below the lower acceptance limit of 37.6% for sample AOC 22-9 (0-0.5'). Data qualification was not required because the other surrogates were within acceptance limits.

- Surrogate recovery for Toluene-d8 was below the lower acceptance limit of 70% for samples AOC 22-12 (0-0.5') DUP, AOC 22-12 (36-37.75'), and AOC 22-12 (32-35'). Data qualification was not required because the other three surrogates were within acceptance limits.

- Surrogate recovery for toluene-d8 (67.8%) is below the lower acceptance limit of 70% for sample AOC 22-8 (0-0.5'). Data qualification was not required because the other surrogates were within acceptance limits.

- Surrogate recovery for toluene-d8 (69.4%) was below the lower acceptance limit of 70% for sample AOC 22-11 (0-0.5'). Data qualification was not required because the other surrogates were within acceptance limits.

2.6 LCS Recovery and Relative Percent Difference

LCS/LCS duplicates were performed at the required frequency and were evaluated based on the following criteria:

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate, but the analyte was not detected in the associated batch, then data qualification was not required.

- If the analyte recovery was above acceptance limits for the LCS or LCS duplicate and the analyte was detected in the associated batch, then the analyte results were qualified "J+" to account for a potential high bias.

- If the analyte recovery was below acceptance limits for LCS or LCS duplicate then the analyte results in the associated analytical batch were qualified ("UJ" for non-detects and "J-" for detected results) to account for a potential low bias.

LCS/LCSD percent recoveries and relative percent differences (RPDs) were within acceptance limits except for the following:

- The LCS recovery for 1,1-Dichloroethene (93.9%) and trichloroethene (88.1%) was below the lower acceptance limit of 97.9% and 90.5%, respectively, for analytical batch 33138. The associated field data was non-detect, and therefore qualified "UJ" to account for potential low bias.

- The LCS percent recovery for 1,1-Dichloroethene (95.6%) was below the lower limit of 97.9% for analytical batch 33198. The associated field data was non-detect, and therefore was qualified "UJ" to account for a potential low bias.

- The LCS recovery for 1,1-Dichloroethene (132%) was above the upper acceptance limit of 130% for analytical batch 18946. Data qualification was not required because all associated field samples were non-detect.

- The LCS recovery for 1,1-Dichloroethene (86.1%) was below the lower acceptance limit of 97.9% for analytical batch R33263. The associated field data was non-detect, and therefore qualified "UJ" to account for a potential low bias.

- The LCS recovery for 4-Bromofluorobenzene (136%) and toluene-d8 (132%) were above the upper acceptance limit of 130% for analytical batch 18990. Data qualification was not required because other two surrogates were within acceptance limits.

- The LCS percent recovery for 4-bromofluorobenzene (137%) and dibromofluoromethane (131%) was above the upper acceptance limit of 130% for analytical batch 19000. Data qualification was not required because the other two surrogates were within limits.

- The LCS percent recovery for chlorobenzene (80.2%) was below the lower acceptance limit of 80.7% for analytical batch R34645. Associated field sample results were qualified "UJ" to account for a potential low bias.

- The LCS percent recovery for trichloroethene (142%) was above the upper acceptance limit of 130% for batch 18838. Data qualification was not required because all associated field samples were non-detect.

- The LCS percent recovery for trichloroethene (140%) was above the upper acceptance limit of 130% for batch 19000. Data qualification was not required because all associated field samples were non-detect.

- The LCS recovery for Antimony (121%) was above the upper acceptance limit of 115% for analytical batch ICPMS4-c_090414A. Data qualification was not required because all associated samples were non-detect.

- The LCS recovery for Antimony (116%) was above the upper acceptance limit of 115% for batch ICPMS4-C_090415A. Data qualification was not required because all associated samples were non-detect.

- The LCS percent recovery for chloride (112%) was above the upper acceptance limit of 110% for analytical batch 33842. Associated field sample results were qualified "J+" to account for a potential high bias.

- The LCS percent recovery for fluoride (112% and 120%) was above the upper acceptance limit of 110% for analytical batch R33842 and R33861, respectively. Associated field sample results were qualified "J+" to account for a potential high bias.

2.7 MS/MSD Recovery and Relative Percent Difference

MS/MSD samples were performed at the required frequency and were evaluated by the following criteria:

- If the MS or MSD recovery for an analyte was above acceptance limits but the analyte was not detected in the associated analytical batch, then data qualification was not required.

- If the MS or MSD recovery for an analyte was above acceptance limits and the analyte was detected in the associated analytical batch, then analyte results were qualified "J+" to account for a potential low bias.

- Low MS/MSD recoveries for inorganic parameters result in sample qualification of the associated analytical batch.

- Results were not qualified based on non-project specific MS/MSD (i.e., batch QC) recoveries.

MS/MSD percent recoveries and RPDs were within acceptance limits except for the following:

- MS/MSD recoveries for Antimony (14.1% / 14.5%) were below the lower The acceptance limit of 75% for analytical batch 18855. Associated field sample results for Antimony were non-detect. Data qualification "UJ" was required to indicate a potential bias for the associated samples.

- The MS/MS duplicate percent recoveries for Antimony (19.9%/32.7%) were below the lower acceptance limit of 75% for analytical batch 18890. The associated field data was qualified "UJ" to account for potential low bias.

- The MS duplicate recovery for selenium (71.3%) and antimony (12.3%) were below the respective low acceptance limit of 75%. Data qualification was not required because the MS recovery and relative percent difference were within acceptance limits.

- The MS/MS duplicate percent recoveries for Antimony (20.3% / 0%) and Selenium (50.6% / 57.6%) were below the lower acceptance limit of 75% for analytical batch 18924. The associated field data was qualified "UJ" to account for potential low bias.

- The MS/MS duplicate recovery for antimony (16.3%/14.6%) were below the lower acceptance limit of 75% for analytical batch 18967. Associated field data results was non-detect; therefore the results were qualified "UJ" for potential low bias.

- The MS/MS duplicate recoveries for antimony (14.6% / 16.3%) were below the lower acceptance limit of 75% for analytical batch 18967. Associated field data was qualified "UJ" for potential low bias.

- The MS/MSD recovery for antimony (25.9%/22.8%) and selenium (57.5%/51.0%) were below the lower acceptance limit of 75% for analytical batch 19089. Associated field samples were non-detect and where therefore qualified "UJ" to account for potential low bias.

- The MS/MSD recovery for antimony (72%/73%) was below the lower acceptance limit of 75% for analytical batch B09071596. Ground water field data was qualified "UJ" for non-detects (MW-64) and "J-" for detected concentrations (MW-66) to account for a potential low bias.

- The MS duplicate recovery for cyanide (111%) was above the upper acceptance limit of 110% for analytical batch B09041656-005MSD. Data qualification was not required because the MS percent recovery was within acceptance limits.

- The MS duplicate percent recovery for cyanide (112%) was above the upper acceptance limit of 110% for analytical batch B09041381-001. Data qualification was not required because the MS percent recovery was within limits.

- The MS duplicate recovery for cyanide (113%) was above the upper acceptance limit of 110% for analytical batch B09042019-006. Data qualification was not required by the MS percent recovery was within acceptance limits.

- The MS recovery for cyanide (89%) was below the lower acceptance limit of 90% for analytical batch 09051460-001. Data qualification was not required because the MSD recovery was within limits.

- The MSD recovery for cyanide (114% and 113%) was above the upper acceptance limit of 110% for analytical batch B09051459 and B09051454. Data qualification was not required because MS recoveries were within acceptance limits.

- The MS/MSD recovery for cyanide (111%/112%) was above the upper acceptance limit of 110% for analytical batch B09051662. Data qualification was not required because the associated field samples were non-detect.

- The MS/MSD recovery for cyanide (81%/82%) was below the lower acceptance limit of 90% for analytical batch AUTOAN201-B_090720A. Associated field data was qualified "UJ" for associated ground water samples to account for a potential low bias.

- The MS/MSD recoveries for cyanide (114%/114%) were above the upper acceptance limit of 110% for analytical batch B09051662-002. Data qualification was not required because all associated field data was non-detect.

- The MS/MSD recoveries for cyanide (117%/117%) were above the upper acceptance limit of 110% for analytical batch B09051671-001. Data qualification was not required because all associated field data was non-detect.

- The MS recovery for selenium (67.9%) was below the lower acceptance limit of 75% for analytical batch 18967. Data qualification was not required because the MS duplicate recovery was within limits.

- The MS recovery for selenium (67.9%) was below the lower acceptance limit of 75% for analytical batch 18967. Data qualification was not required because the MSD recoveries were within acceptance limits.

- The MS/MS duplicate recovery for mercury (152%/133%) was above the upper acceptance limit of 125% for analytical batch 18995. Data qualification was not required because associated sample results were non-detect.

- The MSD recovery for trichloroethene (85.8%) was below the lower acceptance limit of 87.1% for analytical batch R33223. Data qualification was not required because the associated MS recovery was within the acceptance limits.

- The MS duplicate recovery for Gasoline Range Organics (121%) was above the upper acceptance limit of 120% for analytical batch R33224. Data qualification was not required since the MS and relative percent difference were within acceptance limits.

- The MS/MSD percent recoveries for 2,4-Dinitrotoluene (0%), N-Nitrosodi-n-prypylamine (0%), and 1,2,4-Trichlorobenzene (0%) were below the lower acceptance limits of 28%, 28%, and 17.9% respectively, for analytical batch 18828. The relative percent differences were within limits. The associated field sample data was qualified "UJ" to account for potential low bias.

- The MS/MSD surrogate recoveries for 2,4,6-tribromophenol (31.3%/26.0%) and phenol-d5 (34.0%/34.1%) were below the lower acceptance limit of 35.5% and 37.6%, respectively for analytical batch 18828. Data qualification was not required because the remaining surrogates were within acceptance limits.

- The MS/MSD recoveries for benzene (79.6%/80%) and 1,1-Dichloroethene (83.1%/84.4%) were below the lower acceptance limit of 84.9% and 88%, respectively for analytical batch R34645. The associated field data was qualified UJ to account for the potential low bias.

- The MS/MS duplicate relative percent difference for analytical batch R33310 (17.8%) was above the acceptance limit of 15%. Data qualification was not required because the MS/MSD percent recoveries were within acceptance limits.

- The MSD recoveries for toluene (78.1%) and trichloroethene (86.0%) were below the lower acceptance limits of 80.3% and 87.1%, respectively. Data qualification was not required because MS recoveries were within acceptance limits.

- The MS recovery for trichloroethene (115%) was above the upper acceptance limit of 114% for analytical batch 33452. Data qualification was not required because the associated sample results were non-detect.

- The MS recovery for trichloroethene (115%) was above the upper acceptance limit of 114% for analytical batch 33452. Data qualification was not required because the associated field sample results were non-detect.

- The MS duplicate recovery for BFB (118%) was above the upper acceptance limit of 116% for analytical batch R33510. Data qualification was not required because the MS recovery was within acceptance limits.

- The MS/MSD recovery for gasoline range organics (124%/124%) was above the upper acceptance limit of 120% for analytical batch 33529. Data qualification was not required because the associated field samples were non-detect.

- The MS/MS duplicate recovery for gasoline range organics (138%/143%) was above the upper acceptance limit of 115% for analytical batch 33820. Associated field data for MW-59 and MW-60 was qualified J+ due to potential high bias.

2.8 Duplicates

2.8.1 Field Duplicates

Field duplicates were collected at a rate of 10 percent and submitted for analysis. The RPDs between the field duplicate and its associated sample were calculated and are presented in Table A-3. The field duplicates were evaluated by the following criteria:

- If an analyte was detected at a concentration greater than five times the method reporting limit, the RPD should be less than 35 percent for soil and 25 percent for ground water samples.

- If an analyte was detected at a concentration that is less than five times the method reporting limit, then the difference between the sample and the field duplicate should not exceed the method reporting limit.

- Duplicate RPDs are calculated by dividing the difference of the concentrations by the average of the concentrations.

Field duplicate RPDs were within acceptance limits except for the following:

- Chromium for field sample AOC 25-2 (0-0.5');

- Lead for field sample AOC 22-8 (1.5-2.0');

- TPH-MRO, 1,2,4-trimethylbenzene, and barium for field sample AOC 26-8 (0-1.0');

- Chromium and lead for field sample AOC 26-3 (1.5-2.0');

- Acetone for field sample AOC 23-1 (0-0.5');

- Chromium, cobalt, and zinc for field sample AOC 24-4 (1.5-2.0');

- Arsenic for field sample MW-65; and

- Iron for field sample MW-63.

2.9 Other Applicable qc parameters

2.9.1 Calibration

- The 5 ppb continuing standard had a high recovery for acetone at 142.7%. Data qualification was not required because the percent different between the initial and continuing RRFs was less than 25%.

- Bis(2-ethylbexyl)phthalate failed high on the opening standard at 142%. The laboratory acceptance range is 60-140% of the expected value. Data qualification was not required because all other calibration standard recoveries were within acceptance limits.

3.0 Completeness Summary

Two types of completeness were calculated for this project: contract and technical. The following equations were used to calculate the two types of completeness:

$$\%\ \text{Contract Completeness} = \left(\frac{\text{Number of contract compliant results}}{\text{Number of reported results}}\right)\times 100$$

$$\%\ \text{Technical Completeness} = \left(\frac{\text{Number of usable results}}{\text{Number of reported results}}\right)\times 100$$

The overall contract completeness, which includes the evaluation of protocol and contract deviations, which includes the evaluation of the QC parameters listed in Section 2.0, was approximately 94 percent for soil analysis and 96 percent for ground water analysis. The technical completeness attained for Group 3 RCRA Investigation activities was 100 percent. The completeness results are provided in Table A-4. The analytical results for the required analytes per the approved Group 3 Work Plan were considered usable for the intended purposes and the project DQOs have been met.

TABLE A-1
Sampling and Analysis Schedule

Table A-1
Sampling and Analysis Schedule
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
EBS-040509	0907095-01	4/5/2009	EB-Soil
AOC 25-2 (0-0.5')	0904095-02	4/5/2009	N
AOC 25-2 (0-0.5')-DUP	0904095-03	4/5/2009	N
Methanol Blank	0904095-04	na	MB
Trip Blank	0904095-05	na	TB
AOC 25-2 (36-38')	0904095-06	4/5/2009	N
AOC 25-2 (1.5-2.0')	0904095-07	4/5/2009	N
FB-040509	0904095-08	4/5/2009	FB
SWMU 4-1 (0-0.5')	0904098-01	4/6/2009	N
SWMU 4-1 (1.5-2.0')	0904098-02	4/6/2009	N
SWMU 4-1 (6-8')	0904098-03	4/6/2009	N
Methanol Blank	0904098-04	na	MB
Trip Blank	0904098-05	na	TB
FB-040609	0904098-06	4/6/2009	FB
EBS-040609	0904098-07	4/6/2009	EB-Soil
SWMU 4-1 (36-38')	0904107-01	4/6/2009	N
AOC 24-7 (0-0.5')	0904107-02	4/7/2009	N
AOC 24-7 (1.5-2.0')	09047107-03	4/7/2009	N
FB-040709	0904107-04	4/7/2009	FB
EBS-040709	0904107-05	4/7/2009	EB-Soil
Methanol Blank	0904107-06	na	MB
Trip Blank	0904107-07	na	TB
AOC 24-7 (39-42')	0904143-01	4/7/2009	N
AOC 24-5 (0-0.5')	0904143-02	4/8/2009	N
AOC 24-5 (0-0.5') DUP	0904143-03	4/8/2009	N
AOC 24-5 (1.5-2.0')	0904143-04	4/8/2009	N
Methanol Blank	0904143-05	na	MB
AOC 24-6 (0-0.5')	0904143-06	4/8/2009	N
AOC 24-6 (1.5-2.0')	0904143-07	4/8/2009	N
AOC 22-14 (1.5-2.0')	0904153-01	4/8/2009	N
AOC 22-14 (0-0.5')	0904153-02	4/8/2009	N
FB 040809	0904153-03	4/8/2009	FB
Methanol Blank	0904153-04	na	MB
EBS-040809	0904153-05	4/8/2009	EB-Soil
Trip Blank	0904153-06	na	TB
AOC 22-13 (1.5-2.0')	0904155-01	4/8/2009	N
AOC 22-13 (32-34.5')	0904155-02	4/8/2009	N
AOC 22-13 (18-20')	0904155-03	4/8/2009	N
AOC 22-13 (37-39')	0904155-04	4/8/2009	N
Methanol Blank	0904155-05	na	MB
AOC 22-13 (GW)	0904155-06	4/9/2009	N
AOC 22-13 (0-0.5')	0904155-07	4/8/2009	N
Trip Blank	0904155-08	na	TB
FB-040909	0904155-08	4/9/2009	FB
AOC 22-12 (0-0.5')	0904193-01	4/13/2009	N
AOC 22-12 (0-0.5)-DUP	0904193-02	4/13/2009	N
AOC 22-12 (1.5-2.0')	0904193-03	4/13/2009	N
AOC 22-12 (32-35')	0904193-04	4/13/2009	N
AOC 22-12 (36-37.75')	0904193-05	4/13/2009	N
Methanol Blank	0904193-06	na	MB
Trip Blank	0904193-07	na	TB
EBS-041309	0904193-08	4/13/2009	EB-Soil
FB-041309	0904194-01	4/13/2009	FB
AOC 22-16 (0-0.5')	0904194-02	4/13/2009	N
AOC 22-16 (1.5-2.0')	0904194-03	4/13/2009	N
Trip Blank	0904194-04	na	TB
Methanol Blank	0904194-05	na	MB
AOC 22-12 (GW)	0904212-01	4/14/2009	N
Trip Blank	0904212-02	na	TB
AOC 22-16 (36-38')	0904212-03	4/14/2009	N
Methanol Blank	0904212-04	na	MB
AOC 22-8 (1.5-2.0')	0904214-01	4/13/2009	N
AOC 22-8 (1.5-2.0') DUP	0904214-02	4/13/2009	N
AOC 22-9 (0-0.5')	0904214-03	4/13/2009	N
Methanol Blank	0904214-04	na	MB

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Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
AOC 22-9 (1.5-2.0')	0904214-05	4/13/2009	N
AOC 22-7 (1.5-2.0')	09042014-06	4/13/2009	N
AOC 22-7 (0-0.5')	0904214-07	4/13/2009	N
AOC 22-8 (0-0.5')	0904214-08	4/13/2009	N
AOC 22-10 (0-0.5')	0904240-01	4/14/2009	N
AOC 22-10 (1.5-2.0')	0904240-02	4/14/2009	N
AOC 22-11 (0-0.5')	0904240-03	4/14/2009	N
AOC 22-11 (1.5-2.0')	0904240-04	4/14/2009	N
FB-041409	0904240-05	4/14/2009	FB
EBS-041409	0904240-06	4/14/2009	EB-Soil
Trip Blank	0904240-07	na	TB
Methanol Blank	0904240-08	na	MB
AOC 22-15 (1.0-0.5')	0904241-01	4/15/2009	N
AOC 22-15 (1.5-2.0')	0904241-02	4/15/2009	N
AOC 22-15 (1.5-2.0') DUP	0904241-03	4/15/2009	N
Methanol Blank	0904241-04	na	MB
AOC 22-15 (30-32')	0904241-05	4/15/2009	N
FB-041509	0904241-06	4/15/2009	FB
Trip Blank	0904241-07	na	TB
AOC 22-15 (34-36')	0904241-08	4/15/2009	N
EBS-041509	0904241-09	4/15/2009	EB-Soil
AOC 26-8 (0-1.0')	0904265-01	4/16/2009	N
AOC 26-8 (0-1.0') DUP	0904265-02	4/16/2009	N
AOC 26-8 (1.5-2.0')	0904265-03	4/16/2009	N
Methanol Blank	0904265-04	na	MB
Trip Blank	0904265-05	na	TB
FB-041609	0904265-06	4/16/2009	FB
EBS-041609	0904265-07	4/16/2009	EB-Soil
AOC 26-8 (32-36')	0904265-08	4/16/2009	N
AOC 22-1 (1.5-2.0')	0904266-01	4/15/2009	N
AOC 22-1 (0-0.5')	0904266-02	4/15/2009	N
AOC 22-2 (0-0.5')	0904266-03	4/15/2009	N
AOC 22-2 (1.5-2.0')	0904266-04	4/15/2009	N
AOC 22-3 (0-0.5')	0904266-05	4/15/2009	N
AOC 22-3 (1.5-2.0')	0904266-06	4/15/2009	N
AOC 22-4 (0-0.5')	0904266-07	4/15/2009	N
AOC 22-4 (1.5-2.0')	0904266-08	4/15/2009	N
Methanol Blank	0904266-09	na	MB
AOC 26-3 (0-0.5')	0904311-01	4/20/2009	N
AOC 26-3 (1.5-2.0')	0904311-02	4/20/2009	N
AOC 26-3 (1.5-2.0') DUP	0904311-03	4/20/2009	N
AOC 26-4 (0-0.5')	0904311-04	4/20/2009	N
AOC 26-4 (1.5-2.0')	0904311-05	4/20/2009	N
Methanol Blank	0904311-06	na	MB
EBS-042009	0904311-07	4/20/2009	EB-Soil
Trip Blank	0904311-08	na	TB
AOC 26-9 (0-0.5')	0904315-01	4/20/2009	N
AOC 26-9 (1.5-2.0')	0904315-02	4/20/2009	N
AOC 26-1 (0-0.5')	0904315-03	4/20/2009	N
AOC 26-1 (1.5-2.0')	0904315-04	4/20/2009	N
FB-042009	0904315-05	4/20/2009	FB
AOC 26-2 (0-0.5')	0904315-06	4/20/2009	N
AOC 26-2 (1.5-2.0')	0904315-07	4/20/2009	N
Trip Blank	0904315-08	na	TB
Methanol Blank	0904315-09	na	MB
AOC 26-5 (0-0.5')	0904356-01	4/20/2009	N
AOC 26-5 (1.5-2.0')	0904356-02	4/20/2009	N
AOC 26-6 (0-0.5')	0904356-03	4/20/2009	N
AOC 26-6 (1.5-2.0')	0904356-04	4/20/2009	N
AOC 26-7 (0-0.5')	0904356-05	4/20/2009	N
AOC 26-7 (1.5-2.0')	0904356-06	4/20/2009	N
AOC 26-9 (36-38')	0904356-08	4/20/2009	N
AOC 23-1 (0-0.5')	0904359-01	4/21/2009	N
AOC 23-1 (0-0.5') DUP	0904359-02	4/21/2009	N
AOC 23-1 (1.5-2.0')	0904359-03	4/21/2009	N
AOC 24-1 (0-0.5')	0904397-01	4/23/2009	N

Table A-1
Sampling and Analysis Schedule
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
AOC 24-1 (1.5-2.0')	0904397-02	4/23/2009	N
AOC 24-2 (0-0.5')	0904397-03	4/23/2009	N
AOC 24-2 (1.5-2.0')	0904397-04	4/23/2009	N
AOC 24-3 (0-0.5')	0904397-05	4/23/2009	N
AOC 24-3 (1.5-2.0')	0904397-06	4/23/2009	N
AOC 24-4 (0-0.5')	0904397-07	4/23/2009	N
AOC 24-4 (1.5-2.0')	0904397-08	4/23/2009	N
AOC 24-4 (1.5-2.0) DUP	0904397-09	4/23/2009	N
Methanol Blank	0904397-10	na	MB
FB-042109	0904399-01	4/21/2009	FB
FB-042209	0904399-02	4/22/2009	FB
EBS-042209	0904699-03	4/22/2009	EB-Soil
EBS-042109	0904399-04	4/21/2009	EB-Soil
Trip Blank	0904399-05	na	TB
Methanol Blank	0904399-06	na	MB
AOC 23-1 (52-53')	0904399-07	4/22/2009	N
EBS-042309	0904414-01	4/23/2009	EB-Soil
FB-042309	0904414-02	4/23/2009	FB
Trip Blank	0904414-03	na	TB
Methanol Blank	0904414-04	na	MB
AOC 25-1 (0-0.5')	0904414-05	4/23/2009	N
AOC 25-1 (1.5-2.0')	0904414-06	4/23/2009	N
SWMU 5-1 (0-0.5')	0904415-01	4/23/2009	N
SWMU 5-1 (1.5-2.0')	0904415-02	4/23/2009	N
SWMU 5-2 (0-0.5')	0904415-03	4/23/2009	N
SWMU 5-2 (1.5-2.0')	0904415-04	4/23/2009	N
SWMU 5-3 (0-0.5')	0904415-05	4/23/2009	N
SWMU 5-3 (1.5-2.0')	0904415-06	4/23/2009	N
SWMU 5-4 (0-0.5')	0904415-07	4/23/2009	N
SWMU 5-4 (1.5-2.0')	0904415-08	4/23/2009	N
SWMU 5-5 (0-0.5')	0904415-09	4/23/2009	N
Methanol Blank	0904415-10	na	MB
AOC 22-5 (0-0.5')	0904416-01	4/23/2009	N
AOC 22-5 (1.5-2.0')	0904416-02	4/23/2009	N
AOC 22-6 (0-0.5')	0904416-03	4/23/2009	N
AOC 22-6 (1.5-2.0')	0904416-04	4/23/2009	N
SWMU 5-5 (1.5-2.0')	0904416-05	4/23/2009	N
SWMU 5-5 (1.5-2.0') DUP	0904416-06	4/23/2009	N
SWMU 5-6 (0-0.5')	0904416-07	4/23/2009	N
SWMU 5-6 (1.5-2.0')	0904416-08	4/23/2009	N
Methanol Blank	0904416-09	na	MB
MW-62	0905247-01	5/13/2009	N
EBW-051209	0905247-02	5/12/2009	EB-Water
MW-61	0905247-03	5/13/2009	N
Trip Blank	0905247-04	na	TB
FB-051209	0905247-05	5/12/2009	FB
MW-59	0905297-01	5/14/2009	N
EBW-051409	0905297-02	5/14/2009	EB-Water
MW-60	0905297-03	5/14/2009	N
FB-051409	0905297-04	5/14/2009	FB
Trip Blank	0905297-05	na	TB
MW-66	0905258-01	5/12/2009	N
Trip Blank	0905258-02	na	TB
MW-65	0905258-03	5/12/2009	N
MW-65 (DUP)	0905258-04	5/12/2009	N
MW-64	0905299-01	5/13/2009	N
FB-051309	0905299-02	5/13/2009	FB
MW-63	0905299-03	5/13/2009	N
EBW-051309	0905299-04	5/13/2009	EB-Water
Trip Blank	0905299-05	na	TB
MW-64	0907285-01	7/15/2009	N
Trip Blank	0907285-02	na	TB
MW-66	0907285-03	7/15/2009	N
MW-63	0907286-01	7/15/2009	N

Table A-1
Sampling and Analysis Schedule
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Lab ID	Date Collected	Sample Type
Trip Blank	0907286-02	na	TB
MW-63 (DUP)	0907286-03	7/15/2009	N
MW-61	0907314-01	7/16/2009	N
Trip Blank	0907314-02	na	TB
MW-65	0907314-03	7/16/2009	N
MW-59	0907314-04	7/16/2009	N
MW-62	0907315-01	7/16/2009	N
EBW-071509	0907315-02	7/15/2009	EB-Water
FB-071509	0907315-03	7/15/2009	FB
Trip Blank	0907315-04	na	TB
EBW-071609	0907318-01	7/16/2009	EB-Water
FB-071609	0907318-02	7/16/2009	FB
TW-01	0907559-01	7/29/2009	N
Trip Blank	0907559-02	na	TB

Notes:
VOCs = Volatile Organic Compounds
N = Normal field sample
FD = Field duplicate
na = not applicable
TB = Trip Blank
EB = Equipment Blank
MB = Methanol Blank

TABLE A-2
Qualified Data

Table A-2
Qualified Data
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

Sample ID	Date Collected	Analyte	Result	Units	Matrix	Qualifier	Comments
AOC 22-13 (0-0.5')	4/8/2009	1,1-Dichloroethene	< 1.10	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
AOC 22-13 (1.5-2.0')	4/8/2009	1,1-Dichloroethene	< 1.0	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
AOC 22-13 (18-20')	4/8/2009	1,1-Dichloroethene	< 0.50	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
AOC 22-13 (32-34.5')	4/8/2009	1,1-Dichloroethene	< 0.050	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
AOC 22-13 (37-39')	4/8/2009	1,1-Dichloroethene	< 5.0	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
AOC 22-16 (36-38')	4/14/2009	1,1-Dichloroethene	< 0.965	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
MW-62	7/16/2009	1,1-Dichloroethene	< 1.0	µg/L	GW	UJ	Qualified due to low MS/MSD recovery
SWMU 4-1 (0-0.5')	4/6/2009	1,1-Dichloroethene	< 0.050	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (0-0.5')	4/6/2009	1,1-Dichloroethene	< 0.933	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (1.5-2.0')	4/6/2009	1,1-Dichloroethene	< 0.050	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (1.5-2.0')	4/6/2009	1,1-Dichloroethene	< 0.991	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (36-38')	4/6/2008	1,1-Dichloroethene	< 1.02	ug/kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (6-8')	4/6/2009	1,1-Dichloroethene	< 0.10	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
AOC 22-13 (0-0.5')	4/8/2009	1,2,4-Trichlorobenzene	< 1.10	µg/Kg-dry	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (1.5-2.0')	4/8/2009	1,2,4-Trichlorobenzene	< 1.0	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (18-20')	4/8/2009	1,2,4-Trichlorobenzene	< 0.50	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (32-34.5')	4/8/2009	1,2,4-Trichlorobenzene	< 0.050	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (0-0.5')	4/8/2009	2,4-Dinitrotoluene	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (1.5-2.0')	4/8/2009	2,4-Dinitrotoluene	< 5.0	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (18-20')	4/8/2009	2,4-Dinitrotoluene	< 0.50	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (32-34.5')	4/8/2009	2,4-Dinitrotoluene	< 0.50	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-12 (32-35')	4/13/2009	Acetone	30.1	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (36-37.75')	4/13/2009	Acetone	21.0	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (0-0.5')	4/21/2009	Acetone	13.6	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (0-0.5') DUP	4/21/2009	Acetone	25.4	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (1.5-2.0')	4/21/2009	Acetone	26.2	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (52-53')	4/22/2009	Acetone	16.2	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-7 (39-42')	4/7/2009	Acetone	7.80	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 25-1 (0-0.5')	4/23/2009	Acetone	176	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 25-1 (1.5-2.0')	4/23/2009	Acetone	33.9	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 25-2 (36-38')	4/5/2009	Acetone	4.21	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-1 (0-0.5')	4/20/2009	Acetone	15.9	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-1 (1.5-2.0')	4/20/2009	Acetone	9.75	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-2 (0.0.5')	4/20/2009	Acetone	15.3	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-2 (1.5-2.0')	4/20/2009	Acetone	10.6	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-4 (1.5-2.0')	4/20/2009	Acetone	5.06	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-5 (0-0.5')	4/20/2009	Acetone	44.8	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-5 (1.5-2.0')	4/20/2009	Acetone	7.14	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-6 (0-0.5')	4/20/2009	Acetone	49.8	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-6 (1.5-2.0')	4/20/2009	Acetone	6.34	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-7 (0-0.5')	4/20/2009	Acetone	78.0	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-7 (1.5-2.0')	4/20/2009	Acetone	25.8	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-9 (0-0.5')	4/20/2009	Acetone	7.73	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-9 (1.5-2.0')	4/20/2009	Acetone	6.71	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-1 (0-0.5')	4/23/2009	Acetone	8.35	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-1 (1.5-2.0')	4/23/2009	Acetone	5.74	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.

Table A-2
Qualified Data
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

SWMU 5-2 (0-0.5')	4/23/2009	Acetone	7.89	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-2 (1.5-2.0')	4/23/2009	Acetone	6.05	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-3 (0-0.5')	4/23/2009	Acetone	8.43	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-3 (1.5-2.0')	4/23/2009	Acetone	7.89	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-4 (0-0.5')	4/23/2009	Acetone	11.1	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-4 (1.5-2.0')	4/23/2009	Acetone	19.6	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-5 (0-0.5')	4/23/2009	Acetone	20.7	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-7 (0-0.5')	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 22-7 (1.5-2.0)	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 22-8 (1.5-2.0)	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 22-8 (1.5-2.0) DUP	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 22-9 (0-0.5)	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 22-9 (1.5-2.0')	4/13/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 23-1 (0-0.5')	4/21/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 23-1 (0-0.5') DUP	4/21/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 23-1 (1.5-2.0')	4/21/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 23-1 (52-53')	4/22/2009	Antimony	<2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 25-2 (0-0.5')	4/5/2009	Antimony	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 25-2 (0-0.5')-DUP	4/5/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 25-2 (1.5-2.0')	4/5/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 25-2 (36-38')	4/5/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 26-3 (0-0.5')	4/20/2009	Antimony	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 26-3 (1.5-2.0')	4/20/2009	Antimony	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 26-3 (1.5-2.0') DUP	4/20/2009	Antimony	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 26-4 (0-0.5')	4/20/2009	Antimony	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
AOC 26-4 (1.5-2.0')	4/20/2009	Antimony	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
MW-63	7/15/2009	Antimony	<0.001	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-63 (DUP)	7/15/2009	Antimony	<0.001	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-64	7/15/2009	Antimony	<0.001	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-66	7/15/2009	Antimony	0.004	mg/L	GW	J-	Qualified due to low MS/MSD recovery.
SWMU 5-6 (1.5-2.0')	4/23/2009	Antimony	< 2.5	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery.
MW-62	7/16/2009	Benzene	< 1.0	µg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-61	5/13/2009	Chloride	67	mg/L	GW	J+	Qualified due to high LCS recovery.
MW-62	5/13/2009	Chloride	15	mg/L	GW	J+	Qualified due to high LCS recovery.
MW-62	5/13/2009	Chlorobenzene	< 1.0	µg/L	GW	UJ	Qualified due to low LCS recovery.
MW-60	5/14/2009	Chloroform	1.2	ug/L	GW	J+	Qualified due to equipment blank detection.
MW-63	7/15/2009	Cyanide	<0.005	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-63 (DUP)	7/15/2009	Cyanide	<0.005	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-64	7/15/2009	Cyanide	<0.005	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-66	7/15/2009	Cyanide	<0.005	mg/L	GW	UJ	Qualified due to low MS/MSD recovery.
MW-65	5/12/2009	Fluoride	0.21	mg/L	GW	J+	Qualified due to high LCS recovery
MW-65 (DUP)	5/12/2009	Fluoride	0.22	mg/L	GW	J+	Qualified due to high LCS recovery
MW-66	5/12/2009	Fluoride	0.22	mg/L	GW	J+	Qualified due to high LCS recovery
AOC 22-13 (0-0.5')	4/8/2009	Gasoline Range Organics (GRO)	180	mg/Kg	Soil	J+	Qualified due to high surrogate recovery
AOC 22-13 (18-20')	4/8/2009	Gasoline Range Organics (GRO)	1300	mg/Kg	Soil	J+	Qualified due to high surrogate recovery
AOC 22-13 (37-39')	4/8/2009	Gasoline Range Organics (GRO)	5500	mg/Kg	Soil	J+	Qualified due to high surrogate recovery
AOC 22-15 (34-36')	4/15/2009	Gasoline Range Organics (GRO)	15	mg/Kg	Soil	J+	Qualified due to high surrogate recovery

Table A-2
Qualified Data
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

AOC 22-4 (1.5-2.0)	4/15/2009	Gasoline Range Organics (GRO)	2200	mg/Kg	Soil	J+	Qualified due to high surrogate recovery
MW-59	5/14/2009	Gasoline Range Organics (GRO)	2.6	mg/L	GW	J+	Qualified due to high MS/MSD recovery
MW-60	5/14/2009	Gasoline Range Organics (GRO)	0.15	mg/L	GW	J+	Qualified due to high surrogate recovery, and high MS/MSD recovery
AOC 22-1 (0.0.5')	4/15/2009	Methylene chloride	8.24	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-1 (1.5-2.0')	4/15/2009	Methylene chloride	10.3	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-10 (0-0.5')	4/14/2009	Methylene chloride	10.6	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-10 (1.5'-2.0')	4/14/2009	Methylene chloride	9.42	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-11 (0-0.5')	4/14/2009	Methylene chloride	9.64	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-11 (1.5'-2.0')	4/14/2009	Methylene chloride	11.4	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (0-0.5')	4/13/2009	Methylene Chloride	6.76	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (0-0.5') DUP	4/13/2009	Methylene Chloride	5.77	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (1.5-2.0')	4/13/2009	Methylene Chloride	7.36	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (32-35')	4/13/2009	Methylene Chloride	7.43	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-12 (36-37.75')	4/13/2009	Methylene Chloride	8.30	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-13 (0-0.5')	4/8/2009	Methylene Chloride	14	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-14 (1.5-2.0')	4/8/2009	Methylene Chloride	2.02	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-15 (1.0-1.5')	4/15/2009	Methylene chloride	16.3	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-15 (1.5-2.0')	4/15/2009	Methylene chloride	11.0	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-15 (1.5-2.0') DUP	4/15/2009	Methylene chloride	9.09	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-15 (30-32')	4/15/2009	Methylene chloride	12.1	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-15 (34-36')	4/15/2009	Methylene chloride	15.6	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-16 (0-0.5')	4/13/2009	Methylene Chloride	8.85	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-16 (1.5-2.0')	4/13/2009	Methylene Chloride	7.26	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-16 (36-38')	4/14/2009	Methylene Chloride	13.2	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-2 (0-0.5')	4/15/2009	Methylene chloride	7.26	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-2 (1.5-2.0')	4/15/2009	Methylene chloride	9.35	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-3 (0-0.5')	4/15/2009	Methylene chloride	8.30	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-3 (1.5'-2.0')	4/15/2009	Methylene chloride	11.0	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-4 (0-0.5')	4/15/2009	Methylene chloride	8.26	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-5 (0-0.5')	4/23/2009	Methylene chloride	2.02	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-5 1.5-2.0')	4/23/2009	Methylene chloride	2.22	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-6 (1.5-2.0')	4/23/2009	Methylene chloride	7.05	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-7 (0-0.5')	4/13/2009	Methylene chloride	9.29	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-7 (1.5-2.0)	4/13/2009	Methylene chloride	12.3	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-8 (0-0.5')	4/13/2009	Methylene chloride	3.29	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-8 (1.5-2.0)	4/13/2009	Methylene chloride	9.01	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-8 (1.5-2.0) DUP	4/13/2009	Methylene chloride	8.71	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-9 (0-0.5)	4/13/2009	Methylene chloride	8.83	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 22-9 (1.5-2.0')	4/13/2009	Methylene chloride	11.1	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (0-0.5')	4/21/2009	Methylene chloride	8.75	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (0-0.5') DUP	4/21/2009	Methylene chloride	8.12	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (1.5-2.0')	4/21/2009	Methylene chloride	8.91	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 23-1 (52-53')	4/22/2009	Methylene Chloride	113	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-1 (0-0.5')	4/23/2009	Methylene chloride	2.59	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-1 (1.5-2.0')	4/23/2009	Methylene chloride	2.77	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-2 (0-0.5')	4/23/2009	Methylene chloride	3.11	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-2 (1.5-2.0')	4/23/2009	Methylene chloride	4.46	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.

Table A-2
Qualified Data
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

AOC 24-3 (0-0.5')	4/23/2009	Methylene chloride	2.13	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-4 (0-0.5')	4/23/2009	Methylene chloride	3.48	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-4 (1.5-2.0')	4/23/2009	Methylene chloride	5.49	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-4 (1.5-2.0') DUP	4/23/2009	Methylene chloride	3.85	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-5 (0-0.5')	4/8/2009	Methylene Chloride	2.42	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-5 (1.5-2.0')	4/8/2009	Methylene Chloride	2.18	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-7 (0-0.5')	4/7/2009	Methylene Chloride	2.37	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-7 (1.5-2.0')	4/7/2009	Methylene Chloride	2.39	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 24-7 (39-42')	4/7/2009	Methylene Chloride	2.71	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 25-1 (0-0.5')	4/23/2009	Methylene Chloride	8.39	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 25-1 (1.5-2.0')	4/23/2009	Methylene Chloride	25.8	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-1 (0-0.5')	4/20/2009	Methylene chloride	7.64	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-1 (1.5-2.0')	4/20/2009	Methylene chloride	5.85	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-2 (0.0.5')	4/20/2009	Methylene chloride	5.81	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-2 (1.5-2.0')	4/20/2009	Methylene chloride	6.43	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-3 (0-0.5')	4/20/2009	Methylene chloride	8.97	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-3 (1.5-2.0')	4/20/2009	Methylene chloride	9.83	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-3 (1.5-2.0') DUP	4/20/2009	Methylene chloride	10.8	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-4 (0.0.5')	4/20/2009	Methylene chloride	7.78	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-4 (1.5-2.0')	4/20/2009	Methylene chloride	7.58	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-5 (0-0.5')	4/20/2009	Methylene chloride	6.28	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-5 (1.5-2.0')	4/20/2009	Methylene chloride	7.83	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-6 (0-0.5')	4/20/2009	Methylene chloride	4.63	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-6 (1.5-2.0')	4/20/2009	Methylene chloride	7.82	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-7 (0-0.5')	4/20/2009	Methylene chloride	5.14	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-7 (1.5-2.0')	4/20/2009	Methylene chloride	6.38	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-8 (0-1.0')	4/16/2009	Methylene chloride	8.24	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-8 (0-1.0') DUP	4/16/2009	Methylene chloride	9.76	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-8 (32-36')	4/16/2009	Methylene chloride	8.38	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-9 (0-0.5')	4/20/2009	Methylene chloride	5.73	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-9 (1.5-2.0')	4/20/2009	Methylene chloride	6.57	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-8 (0-1.0') DUP	4/16/2009	Methylene chloride	10.5	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
AOC 26-8 (1.5-2.0')	4/16/2009	Methylene chloride	9.76	µg/Kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 4-1 (1.5-2.0')	4/6/2009	Methylene Chloride	2.29	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 4-1 (36-38')	4/6/2008	Methylene Chloride	2.29	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-1 (0-0.5')	4/23/2009	Methylene chloride	4.05	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-1 (1.5-2.0')	4/23/2009	Methylene chloride	2.49	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-2 (0-0.5')	4/23/2009	Methylene chloride	14.3	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-2 (1.5-2.0')	4/23/2009	Methylene chloride	3.28	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-3 (0-0.5')	4/23/2009	Methylene chloride	20.1	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-3 (1.5-2.0')	4/23/2009	Methylene chloride	2.98	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-4 (0-0.5')	4/23/2009	Methylene chloride	10.9	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-4 (1.5-2.0')	4/23/2009	Methylene chloride	7.32	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-5 (0-0.5')	4/23/2009	Methylene chloride	5.72	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-5 (1.5-2.0')	4/23/2009	Methylene chloride	6.70	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-5 (1.5-2.0') DUP	4/23/2009	Methylene chloride	4.67	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 5-6 (0-0.5')	4/23/2009	Methylene chloride	5.68	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.

Table A-2
Qualified Data
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

SWMU 5-6 (1.5-2.0')	4/23/2009	Methylene chloride	2.52	ug/kg-dry	Soil	J+	Qualified due to potential laboratory contamination.
SWMU 4-1 (6-8')	4/6/2009	Motor Oil Range Organics (MRO)	4000	mg/Kg	Soil	J-	Qualified due to low surrogate recovery
AOC 22-13 (0-0.5')	4/8/2009	N-Nitrosodi-n-propylamine	< 1.0	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (1.5-2.0')	4/8/2009	N-Nitrosodi-n-propylamine	< 2.0	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (18-20')	4/8/2009	N-Nitrosodi-n-propylamine	< 0.20	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 22-13 (32-34.5')	4/8/2009	N-Nitrosodi-n-propylamine	< 0.20	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
MW-59	5/14/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-59	7/16/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-60	5/14/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-61	5/13/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-61	7/16/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-62	5/13/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-63	7/16/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-64	5/13/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-65	5/12/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-65	7/16/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-65 (DUP)	7/16/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
MW-66	5/12/2009	Phosphorus, Orthophosphate (As P)	< 0.50	mg/L	GW	R	Rejected due to analyzed past holding time
AOC 26-3 (0-0.5')	4/20/2009	Selenium	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 26-3 (1.5-2.0')	4/20/2009	Selenium	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 26-3 (1.5-2.0') DUP	4/20/2009	Selenium	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 26-4 (0.0.5')	4/20/2009	Selenium	< 12	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
AOC 26-4 (1.5-2.0')	4/20/2009	Selenium	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 5-5 (1.5-2.0')	4/23/2009	Selenium	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 5-6 (1.5-2.0')	4/23/2009	Selenium	< 13	mg/Kg	Soil	UJ	Qualified due to low MS/MSD recovery
SWMU 4-1 (0-0.5')	4/6/2009	Trichloroethene (TCE)	< 0.050	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (0-0.5')	4/6/2009	Trichloroethene (TCE)	< 0.933	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (1.5-2.0')	4/6/2009	Trichloroethene (TCE)	< 0.050	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (1.5-2.0')	4/6/2009	Trichloroethene (TCE)	< 0.991	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (36-38')	4/6/2008	Trichloroethene (TCE)	< 1.02	µg/Kg-dry	Soil	UJ	Qualified due to low LCS recovery
SWMU 4-1 (6-8')	4/6/2009	Trichloroethene (TCE)	< 0.10	mg/Kg	Soil	UJ	Qualified due to low LCS recovery
MW-63	5/13/2009	Zinc	0.074	mg/L	GW	J+	Qualified due to detection in associated field blank
MW-64	5/13/2009	Zinc	0.085	mg/L	GW	J+	Qualified due to detection in associated field blank
AOC 24-4 (1.5-2.0')	4/23/2009	Chromium	4.1	mg/kg	Soil	J-	Qualified due to field duplicate outlier.
AOC 24-4 (1.5-2.0')	4/23/2009	Lead	3.3	mg/kg	Soil	J-	Qualified due to field duplicate outlier.
AOC 24-4 (1.5-2.0')	4/23/2009	Zinc	18	mg/kg	Soil	J-	Qualified due to field duplicate outlier.
MW-63	7/15/2009	Iron	0.028	mg/L	GW	J-	Qualified due to field duplicate outlier.
MW-65	5/12/2009	Arsenic	0.021	mg/L	GW	J-	Qualified due to field duplicate outlier.

Notes:
mg/L - milligrams per liter
ug/L - microgram per liter
UJ - Estimated reporting limit
J - potential bias

RPD - Relative Percent Difference
MS/MSD - Matrix spike/matrix spike duplicate

TABLE A-3
Field Duplicate Summary

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-63 Sample Result	MW-63 (DUP) Sample Result	RPD (%)
TPH (mg/L):	Diesel Range Organics (DRO)	< 1.0	< 1.0	NC
	Motor Oil Range Organics (MRO)	< 5.0	< 5.0	NC
	Gasoline Range Organics (GRO)	0.077	0.073	5.3
VOCs (ug/L):	1,1,1,2-Tetrachloroethane	< 1.0	< 1.0	NC
	1,1,1-Trichloroethane	< 1.0	< 1.0	NC
	1,1,2,2-Tetrachloroethane	< 2.0	< 2.0	NC
	1,1,2-Trichloroethane	< 1.0	< 1.0	NC
	1,1-Dichloroethane	< 1.0	< 1.0	NC
	1,1-Dichloroethene	< 1.0	< 1.0	NC
	1,1-Dichloropropene	< 1.0	< 1.0	NC
	1,2,3-Trichlorobenzene	< 1.0	< 1.0	NC
	1,2,3-Trichloropropane	< 2.0	< 2.0	NC
	1,2,4-Trichlorobenzene	< 1.0	< 1.0	NC
	1,2,4-Trimethylbenzene	< 1.0	< 1.0	NC
	1,2-Dibromo-3-chloropropane	< 2.0	< 2.0	NC
	1,2-Dibromoethane (EDB)	< 1.0	< 1.0	NC
	1,2-Dichlorobenzene	< 1.0	< 1.0	NC
	1,2-Dichloroethane (EDC)	1.4	1.6	13.3
	1,2-Dichloropropane	< 1.0	< 1.0	NC
	1,3,5-Trimethylbenzene	< 1.0	< 1.0	NC
	1,3-Dichlorobenzene	< 1.0	< 1.0	NC
	1,3-Dichloropropane	< 1.0	< 1.0	NC
	1,4-Dichlorobenzene	< 1.0	< 1.0	NC
	1-Methylnaphthalene	< 4.0	< 4.0	NC
	2,2-Dichloropropane	< 2.0	< 2.0	NC
	2-Butanone	< 10	< 10	NC
	2-Chlorotoluene	< 1.0	< 1.0	NC
	2-Hexanone	< 10	< 10	NC
	2-Methylnaphthalene	< 4.0	< 4.0	NC
	4-Chlorotoluene	< 1.0	< 1.0	NC
	4-Isopropyltoluene	< 1.0	< 1.0	NC
	4-Methyl-2-pentanone	< 10	< 10	NC
	Acetone	< 10	< 10	NC
	Benzene	< 1.0	< 1.0	NC
	Bromobenzene	< 1.0	< 1.0	NC
	Bromodichloromethane	< 1.0	< 1.0	NC
	Bromoform	< 1.0	< 1.0	NC
	Bromomethane	< 1.0	< 1.0	NC
	Carbon disulfide	< 10	< 10	NC
	Carbon Tetrachloride	< 1.0	< 1.0	NC
	Chlorobenzene	< 1.0	< 1.0	NC
	Chloroethane	< 2.0	< 2.0	NC
	Chloroform	< 1.0	< 1.0	NC
	Chloromethane	< 1.0	< 1.0	NC
	cis-1,2-DCE	< 1.0	< 1.0	NC
	cis-1,3-Dichloropropene	< 1.0	< 1.0	NC
	Dibromochloromethane	< 1.0	< 1.0	NC
	Dibromomethane	< 1.0	< 1.0	NC
	Dichlorodifluoromethane	< 1.0	< 1.0	NC
	Ethylbenzene	< 1.0	< 1.0	NC
	Hexachlorobutadiene	< 1.0	< 1.0	NC
	Isopropylbenzene	< 1.0	< 1.0	NC
	Methyl tert-butyl ether (MTBE)	54	61	12.2
	Methylene Chloride	< 3.0	< 3.0	NC
	Naphthalene	< 2.0	< 2.0	NC
	n-Butylbenzene	< 1.0	< 1.0	NC
	n-Propylbenzene	< 1.0	< 1.0	NC
	sec-Butylbenzene	< 1.0	< 1.0	NC
	Styrene	< 1.0	< 1.0	NC
	tert-Butylbenzene	< 1.0	< 1.0	NC
	Tetrachloroethene (PCE)	< 1.0	< 1.0	NC
	Toluene	< 1.0	< 1.0	NC
	trans-1,2-DCE	< 1.0	< 1.0	NC
	trans-1,3-Dichloropropene	< 1.0	< 1.0	NC
	Trichloroethene (TCE)	< 1.0	< 1.0	NC
	Trichlorofluoromethane	< 1.0	< 1.0	NC
	Vinyl chloride	< 1.0	< 1.0	NC
	Xylenes, Total	< 1.5	< 1.5	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-63 Sample Result	MW-63 (DUP) Sample Result	RPD (%)
SVOCs (ug/L):	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	2,4,5-Trichlorophenol	< 10	< 10	NC
	2,4,6-Trichlorophenol	< 10	< 10	NC
	2,4-Dichlorophenol	< 20	< 20	NC
	2,4-Dimethylphenol	< 10	< 10	NC
	2,4-Dinitrophenol	< 20	< 20	NC
	2,4-Dinitrotoluene	< 10	< 10	NC
	2,6-Dinitrotoluene	< 10	< 10	NC
	2-Chloronaphthalene	< 10	< 10	NC
	2-Chlorophenol	< 10	< 10	NC
	2-Methylnaphthalene	< 10	< 10	NC
	2-Methylphenol	< 10	< 10	NC
	2-Nitroaniline	< 10	< 10	NC
	2-Nitrophenol	< 10	< 10	NC
	3,3'-Dichlorobenzidine	< 10	< 10	NC
	3+4-Methylphenol	< 10	< 10	NC
	3-Nitroaniline	< 10	< 10	NC
	4,6-Dinitro-2-methylphenol	< 20	< 20	NC
	4-Bromophenyl phenyl ether	< 10	< 10	NC
	4-Chloro-3-methylphenol	< 10	< 10	NC
	4-Chloroaniline	< 10	< 10	NC
	4-Chlorophenyl phenyl ether	< 10	< 10	NC
	4-Nitroaniline	< 10	< 10	NC
	4-Nitrophenol	< 10	< 10	NC
	Acenaphthene	< 10	< 10	NC
	Acenaphthylene	< 10	< 10	NC
	Aniline	< 10	< 10	NC
	Anthracene	< 10	< 10	NC
	Azobenzene	< 10	< 10	NC
	Benz(a)anthracene	< 10	< 10	NC
	Benzo(a)pyrene	< 10	< 10	NC
	Benzo(b)fluoranthene	< 10	< 10	NC
	Benzo(g,h,i)perylene	< 10	< 10	NC
	Benzo(k)fluoranthene	< 10	< 10	NC
	Benzoic acid	< 20	< 20	NC
	Benzyl alcohol	< 10	< 10	NC
	Bis(2-chloroethoxy)methane	< 10	< 10	NC
	Bis(2-chloroethyl)ether	< 10	< 10	NC
	Bis(2-chloroisopropyl)ether	< 10	< 10	NC
	Bis(2-ethylhexyl)phthalate	< 10	< 10	NC
	Butyl benzyl phthalate	< 10	< 10	NC
	Carbazole	< 10	< 10	NC
	Chrysene	< 10	< 10	NC
	Dibenz(a,h)anthracene	< 10	< 10	NC
	Dibenzofuran	< 10	< 10	NC
	Diethyl phthalate	< 10	< 10	NC
	Dimethyl phthalate	< 10	< 10	NC
	Di-n-butyl phthalate	< 10	< 10	NC
	Di-n-octyl phthalate	< 10	< 10	NC
	Fluoranthene	< 10	< 10	NC
	Fluorene	< 10	< 10	NC
	Hexachlorobenzene	< 10	< 10	NC
	Hexachlorobutadiene	< 10	< 10	NC
	Hexachlorocyclopentadiene	< 10	< 10	NC
	Hexachloroethane	< 10	< 10	NC
	Indeno(1,2,3-cd)pyrene	< 10	< 10	NC
	Isophorone	< 10	< 10	NC
	Naphthalene	< 10	< 10	NC
	Nitrobenzene	< 10	< 10	NC
	N-Nitrosodimethylamine	< 10	< 10	NC
	N-Nitrosodi-n-propylamine	< 10	< 10	NC
	N-Nitrosodiphenylamine	< 10	< 10	NC
	Pentachlorophenol	< 20	< 20	NC
	Phenanthrene	< 10	< 10	NC
	Phenol	< 10	< 10	NC
	Pyrene	< 10	< 10	NC
	Pyridine	< 10	< 10	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-63 Sample Result	MW-63 (DUP) Sample Result	RPD (%)
Metals (mg/L):	Antimony	<0.001	<0.001	NC
	Arsenic	0.005	0.004	22.2
	Barium	0.027	0.026	3.8
	Beryllium	< 0.0030	< 0.0030	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Cyanide	<0.005	<0.005	NC
	Iron	1.5	1.3	14.3
	Lead	< 0.0050	0.0051	NC
	Magnesium	130	120	8.0
	Manganese	4.6	4.5	2.2
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	0.012	0.012	0.0
	Potassium	4.6	4.6	0.0
	Selenium	< 0.25	< 0.25	NC
	Silver	< 0.0050	< 0.0050	NC
	Vanadium	< 0.050	< 0.050	NC
	Zinc	< 0.020	< 0.020	NC
	Calcium	420	410	2.4
General Chemistry (mg/L):	Iron	0.028	0.044	44.4 *
	Magnesium	120	120	0.0
	Manganese	4.4	4.5	2.2
	Potassium	4.1	4.3	4.8
	Sodium	510	520	1.9
	Specific Conductance	4000	4000	0.0
	Total Dissolved Solids	3710	3700	0.3
	Chloride	240	240	0.0
	Fluoride	0.17	0.14	19.3
	Nitrate (As N)	74	75	1.3
	Nitrate (As N)+Nitrite (As N)	NA	NA	NC
	Phosphorus, Orthophosphate (As P)	< 0.50	< 0.50	NC
	Sulfate	1500	1500	0.0
	Alkalinity, Total (As $CaCO_3$)	630	640	1.6
	Bicarbonate	630	640	1.6
	Carbonate	< 2.0	< 2.0	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
NA = Not Analyzed
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-65 Sample Result	MW-65 (DUP) Sample Result	RPD (%)
TPH (mg/L):	Ethanol	<1.0	<1.0	NC
	Diesel Range Organics (DRO)	14	14	0.0
	Motor Oil Range Organics (MRO)	< 5.0	< 5.0	NC
	Gasoline Range Organics (GRO)	42	44	4.6
VOCs (ug/L):	1,1,1,2-Tetrachloroethane	< 20	< 20	NC
	1,1,1-Trichloroethane	< 20	< 20	NC
	1,1,2,2-Tetrachloroethane	< 40	< 40	NC
	1,1,2-Trichloroethane	< 20	< 20	NC
	1,1-Dichloroethane	< 20	< 20	NC
	1,1-Dichloroethene	< 20	< 20	NC
	1,1-Dichloropropene	< 20	< 20	NC
	1,2,3-Trichlorobenzene	< 20	< 20	NC
	1,2,3-Trichloropropane	< 40	< 40	NC
	1,2,4-Trichlorobenzene	< 20	< 20	NC
	1,2,4-Trimethylbenzene	1400	1500	6.9
	1,2-Dibromo-3-chloropropane	< 40	< 40	NC
	1,2-Dibromoethane (EDB)	< 20	< 20	NC
	1,2-Dichlorobenzene	< 20	< 20	NC
	1,2-Dichloroethane (EDC)	220	250	12.8
	1,2-Dichloropropane	< 20	< 20	NC
	1,3,5-Trimethylbenzene	500	510	1.9
	1,3-Dichlorobenzene	< 20	< 20	NC
	1,3-Dichloropropane	< 20	< 20	NC
	1,4-Dichlorobenzene	< 20	< 20	NC
	1-Methylnaphthalene	150	170	12.5
	2,2-Dichloropropane	< 40	< 40	NC
	2-Butanone	< 200	< 200	NC
	2-Chlorotoluene	< 20	< 20	NC
	2-Hexanone	< 200	< 200	NC
	2-Methylnaphthalene	220	230	4.4
	4-Chlorotoluene	< 20	< 20	NC
	4-Isopropyltoluene	< 20	< 20	NC
	4-Methyl-2-pentanone	< 200	< 200	NC
	Acetone	< 200	< 200	NC
	Benzene	6800	7100	4.3
	Bromobenzene	< 20	< 20	NC
	Bromodichloromethane	< 20	< 20	NC
	Bromoform	< 20	< 20	NC
	Bromomethane	< 20	< 20	NC
	Carbon disulfide	< 200	< 200	NC
	Carbon Tetrachloride	< 20	< 20	NC
	Chlorobenzene	< 20	< 20	NC
	Chloroethane	< 40	< 40	NC
	Chloroform	< 20	< 20	NC
	Chloromethane	< 20	< 20	NC
	cis-1,2-DCE	< 20	< 20	NC
	cis-1,3-Dichloropropene	< 20	< 20	NC
	Dibromochloromethane	< 20	< 20	NC
	Dibromomethane	< 20	< 20	NC
	Dichlorodifluoromethane	< 20	< 20	NC
	Ethylbenzene	1800	2000	10.5
	Hexachlorobutadiene	< 20	< 20	NC
	Isopropylbenzene	84	92	9.1
	Methyl tert-butyl ether (MTBE)	1700	1800	5.7
	Methylene Chloride	< 60	< 60	NC
	Naphthalene	480	520	8.0
	n-Butylbenzene	49	50	2.0
	n-Propylbenzene	230	240	4.3
	sec-Butylbenzene	< 20	< 20	NC
	Styrene	< 20	< 20	NC
	tert-Butylbenzene	< 20	< 20	NC
	Tetrachloroethene (PCE)	< 20	< 20	NC
	Toluene	2500	2800	11.3
	trans-1,2-DCE	< 20	< 20	NC
	trans-1,3-Dichloropropene	< 20	< 20	NC
	Trichloroethene (TCE)	< 20	< 20	NC
	Trichlorofluoromethane	< 20	< 20	NC
	Vinyl chloride	< 20	< 20	NC
	Xylenes, Total	8500	9200	7.9

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-65 Sample Result	MW-65 (DUP) Sample Result	RPD (%)
SVOCs (ug/L):	1,2,4-Trichlorobenzene	< 10	< 10	NC
	1,2-Dichlorobenzene	< 10	< 10	NC
	1,3-Dichlorobenzene	< 10	< 10	NC
	1,4-Dichlorobenzene	< 10	< 10	NC
	2,4,5-Trichlorophenol	< 10	< 10	NC
	2,4,6-Trichlorophenol	< 10	< 10	NC
	2,4-Dichlorophenol	< 20	< 20	NC
	2,4-Dimethylphenol	24	22	8.7
	2,4-Dinitrophenol	< 20	< 20	NC
	2,4-Dinitrotoluene	< 10	< 10	NC
	2,6-Dinitrotoluene	< 10	< 10	NC
	2-Chloronaphthalene	< 10	< 10	NC
	2-Chlorophenol	< 10	< 10	NC
	2-Methylnaphthalene	160	150	6.5
	2-Methylphenol	< 10	< 10	NC
	2-Nitroaniline	< 10	< 10	NC
	2-Nitrophenol	< 10	< 10	NC
	3,3'-Dichlorobenzidine	< 10	< 10	NC
	3+4-Methylphenol	< 10	< 10	NC
	3-Nitroaniline	< 10	< 10	NC
	4,6-Dinitro-2-methylphenol	< 20	< 20	NC
	4-Bromophenyl phenyl ether	< 10	< 10	NC
	4-Chloro-3-methylphenol	< 10	< 10	NC
	4-Chloroaniline	< 10	< 10	NC
	4-Chlorophenyl phenyl ether	< 10	< 10	NC
	4-Nitroaniline	< 10	< 10	NC
	4-Nitrophenol	< 10	< 10	NC
	Acenaphthene	< 10	< 10	NC
	Acenaphthylene	< 10	< 10	NC
	Aniline	< 10	< 10	NC
	Anthracene	< 10	< 10	NC
	Azobenzene	< 10	< 10	NC
	Benz(a)anthracene	< 10	< 10	NC
	Benzo(a)pyrene	< 10	< 10	NC
	Benzo(b)fluoranthene	< 10	< 10	NC
	Benzo(g,h,i)perylene	< 10	< 10	NC
	Benzo(k)fluoranthene	< 10	< 10	NC
	Benzoic acid	< 20	< 20	NC
	Benzyl alcohol	< 10	< 10	NC
	Bis(2-chloroethoxy)methane	< 10	< 10	NC
	Bis(2-chloroethyl)ether	< 10	< 10	NC
	Bis(2-chloroisopropyl)ether	< 10	< 10	NC
	Bis(2-ethylhexyl)phthalate	< 10	< 10	NC
	Butyl benzyl phthalate	< 10	< 10	NC
	Carbazole	< 10	< 10	NC
	Chrysene	< 10	< 10	NC
	Dibenz(a,h)anthracene	< 10	< 10	NC
	Dibenzofuran	< 10	< 10	NC
	Diethyl phthalate	< 10	< 10	NC
	Dimethyl phthalate	< 10	< 10	NC
	Di-n-butyl phthalate	< 10	< 10	NC
	Di-n-octyl phthalate	< 10	< 10	NC
	Fluoranthene	< 10	< 10	NC
	Fluorene	< 10	< 10	NC
	Hexachlorobenzene	< 10	< 10	NC
	Hexachlorobutadiene	< 10	< 10	NC
	Hexachlorocyclopentadiene	< 10	< 10	NC
	Hexachloroethane	< 10	< 10	NC
	Indeno(1,2,3-cd)pyrene	< 10	< 10	NC
	Isophorone	< 10	< 10	NC
	Naphthalene	370	350	5.6
	Nitrobenzene	< 10	< 10	NC
	N-Nitrosodimethylamine	< 10	< 10	NC
	N-Nitrosodi-n-propylamine	< 10	< 10	NC
	N-Nitrosodiphenylamine	< 10	< 10	NC
	Pentachlorophenol	< 20	< 20	NC
	Phenanthrene	< 10	< 10	NC
	Phenol	49	49	0.0
	Pyrene	< 10	< 10	NC
	Pyridine	< 10	< 10	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	MW-65 Sample Result	MW-65 (DUP) Sample Result	RPD (%)
Metals (mg/L):	Antimony	0.001	<0.001	NC
	Arsenic	0.021	0.015	33.3 *
	Barium	0.15	0.13	14.3
	Beryllium	< 0.0030	< 0.0030	NC
	Cadmium	< 0.0020	< 0.0020	NC
	Chromium	< 0.0060	< 0.0060	NC
	Cobalt	< 0.0060	< 0.0060	NC
	Cyanide	<0.005	<0.005	NC
	Iron	3.5	3.6	2.8
	Lead	< 0.0050	0.0060	NC
	Mercury	< 0.00020	< 0.00020	NC
	Nickel	< 0.010	< 0.010	NC
	Selenium	< 0.050	< 0.050	NC
	Silver	< 0.0050	< 0.0050	NC
	Vanadium	< 0.050	< 0.050	NC
	Zinc	< 0.020	< 0.020	NC
General Chemistry (mg/L):	Calcium	230	230	0.0
	Iron	0.98	1.1	11.5
	Magnesium	79	79	0.0
	Potassium	3.8	3.7	2.7
	Sodium	480	480	0.0
	Specific Conductance	2900	2800	3.5
	Total Dissolved Solids	2300	2400	4.2
	Chloride	140	130	7.4
	Fluoride	0.21	0.22	4.6
	Nitrate (As N)+Nitrite (As N)	< 1.0	< 1.0	NC
	Phosphorus, Orthophosphate (As P)	< 0.50	< 0.50	NC
	Sulfate	790	750	5.2
	Alkalinity, Total (As CaCO3)	1000	1000	0.0
	Bicarbonate	1000	1000	0.0
	Carbonate	< 2.0	< 2.0	NC

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/L = micrograms per liter
mg/L = milligrams per liter
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 5-5 (1.5-2.0') Sample Result	SWMU 5-5 (1.5-2.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	< 50	< 50	NC
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.951	< 0.966	NC
	1,1,1-Trichloroethane	< 0.951	< 0.966	NC
	1,1,2,2-Tetrachloroethane	< 0.951	< 0.966	NC
	1,1,2-Trichloroethane	< 0.951	< 0.966	NC
	1,1-Dichloroethane	< 0.951	< 0.966	NC
	1,1-Dichloroethene	< 0.951	< 0.966	NC
	1,1-Dichloropropene	< 0.951	< 0.966	NC
	1,2,3-Trichlorobenzene	< 0.951	< 0.966	NC
	1,2,3-Trichloropropane	< 0.951	< 0.966	NC
	1,2,4-Trichlorobenzene	< 0.951	< 0.966	NC
	1,2,4-Trimethylbenzene	< 0.951	< 0.966	NC
	1,2-Dibromo-3-chloropropane	< 0.951	< 0.966	NC
	1,2-Dibromoethane (EDB)	< 0.951	< 0.966	NC
	1,2-Dichlorobenzene	< 0.951	< 0.966	NC
	1,2-Dichloroethane (EDC)	< 0.951	< 0.966	NC
	1,2-Dichloropropane	< 0.951	< 0.966	NC
	1,3,5-Trimethylbenzene	< 0.951	< 0.966	NC
	1,3-Dichlorobenzene	< 0.951	< 0.966	NC
	1,3-Dichloropropane	< 0.951	< 0.966	NC
	1,4-Dichlorobenzene	< 0.951	< 0.966	NC
	2,2-Dichloropropane	< 0.951	< 0.966	NC
	2-Butanone	< 3.80	< 3.87	NC
	2-Chlorotoluene	< 0.951	< 0.966	NC
	2-Hexanone	< 3.80	< 3.87	NC
	4-Chlorotoluene	< 0.951	< 0.966	NC
	4-Isopropyltoluene	< 0.951	< 0.966	NC
	4-Methyl-2-pentanone	< 3.80	< 3.87	NC
	Acetone	< 3.80	< 3.87	NC
	Benzene	< 0.951	< 0.966	NC
	Bromobenzene	< 0.951	< 0.966	NC
	Bromodichloromethane	< 0.951	< 0.966	NC
	Bromoform	< 0.951	< 0.966	NC
	Bromomethane	< 0.951	< 0.966	NC
	Carbon disulfide	< 3.80	< 3.87	NC
	Carbon tetrachloride	< 0.951	< 0.966	NC
	Chlorobenzene	< 0.951	< 0.966	NC
	Chloroethane	< 0.951	< 0.966	NC
	Chloroform	< 0.951	< 0.966	NC
	Chloromethane	< 0.951	< 0.966	NC
	cis-1,2-DCE	< 0.951	< 0.966	NC
	cis-1,3-Dichloropropene	< 0.951	< 0.966	NC
	Dibromochloromethane	< 0.951	< 0.966	NC
	Dibromomethane	< 0.951	< 0.966	NC
	Dichlorodifluoromethane	< 0.951	< 0.966	NC
	Ethylbenzene	< 0.951	< 0.966	NC
	Hexachlorobutadiene	< 0.951	< 0.966	NC
	Isopropylbenzene	< 0.951	< 0.966	NC
	Methyl tert-butyl ether (MTBE)	< 0.951	< 0.966	NC
	Methylene chloride	6.70	4.67	35.7 (2)
	Naphthalene	< 0.951	< 0.966	NC
	n-Butylbenzene	< 0.951	< 0.966	NC
	n-Propylbenzene	< 0.951	< 0.966	NC
	sec-Butylbenzene	< 0.951	< 0.966	NC
	Styrene	< 0.951	< 0.966	NC
	tert-Butylbenzene	< 0.951	< 0.966	NC
	Tetrachloroethene (PCE)	< 0.951	< 0.966	NC
	Toluene	1.94	1.10	55.2 (1)
	trans-1,2-DCE	< 0.951	< 0.966	NC
	trans-1,3-Dichloropropene	< 0.951	< 0.966	NC
	Trichloroethene (TCE)	< 0.951	< 0.966	NC
	Trichlorofluoromethane	< 0.951	< 0.966	NC
	Vinyl chloride	< 0.951	< 0.966	NC
	Xylenes, Total	< 0.951	< 0.966	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 5-5 (1.5-2.0') Sample Result	SWMU 5-5 (1.5-2.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	SWMU 5-5 (1.5-2.0') Sample Result	SWMU 5-5 (1.5-2.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 13	< 2.5	NC
	Arsenic	< 2.5	< 2.5	NC
	Barium	160	140	13.3
	Beryllium	0.32	0.34	6.1
	Cadmium	< 0.10	< 0.10	NC
	Chromium	4.2	4.3	2.3
	Cobalt	4.2	4.5	6.9
	Cyanide	<0.5	<0.5	NC
	Lead	3.9	3.2	19.7
	Mercury	< 0.033	0.27	NC
	Nickel	6.5	4.8	30.1
	Selenium	< 13	< 13	NC
	Silver	< 0.25	< 0.25	NC
	Vanadium	14	14	0.0
	Zinc	19	19	0.0

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier
(1) = Not an RPD outlier since the difference between the field sample and duplicate sample is less than the method reporting limit.
(2) = Not an RPD outlier since analyte is previously noted as a laboratory contaminant.

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-4 (1.5-2.0') Sample Result	AOC 24-4 (1.5-2.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	< 50	< 50	NC
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.946	< 0.961	NC
	1,1,1-Trichloroethane	< 0.946	< 0.961	NC
	1,1,2,2-Tetrachloroethane	< 0.946	< 0.961	NC
	1,1,2-Trichloroethane	< 0.946	< 0.961	NC
	1,1-Dichloroethane	< 0.946	< 0.961	NC
	1,1-Dichloroethene	< 0.946	< 0.961	NC
	1,1-Dichloropropene	< 0.946	< 0.961	NC
	1,2,3-Trichlorobenzene	< 0.946	< 0.961	NC
	1,2,3-Trichloropropane	< 0.946	< 0.961	NC
	1,2,4-Trichlorobenzene	< 0.946	< 0.961	NC
	1,2,4-Trimethylbenzene	< 0.946	< 0.961	NC
	1,2-Dibromo-3-chloropropane	< 0.946	< 0.961	NC
	1,2-Dibromoethane (EDB)	< 0.946	< 0.961	NC
	1,2-Dichlorobenzene	< 0.946	< 0.961	NC
	1,2-Dichloroethane (EDC)	< 0.946	< 0.961	NC
	1,2-Dichloropropane	< 0.946	< 0.961	NC
	1,3,5-Trimethylbenzene	< 0.946	< 0.961	NC
	1,3-Dichlorobenzene	< 0.946	< 0.961	NC
	1,3-Dichloropropane	< 0.946	< 0.961	NC
	1,4-Dichlorobenzene	< 0.946	< 0.961	NC
	2,2-Dichloropropane	< 0.946	< 0.961	NC
	2-Butanone	< 3.78	< 3.84	NC
	2-Chlorotoluene	< 0.946	< 0.961	NC
	2-Hexanone	< 3.78	< 3.84	NC
	4-Chlorotoluene	< 0.946	< 0.961	NC
	4-Isopropyltoluene	< 0.946	< 0.961	NC
	4-Methyl-2-pentanone	< 3.78	< 3.84	NC
	Acetone	5.19	6.95	29.0
	Benzene	< 0.946	< 0.961	NC
	Bromobenzene	< 0.946	< 0.961	NC
	Bromodichloromethane	< 0.946	< 0.961	NC
	Bromoform	< 0.946	< 0.961	NC
	Bromomethane	< 0.946	< 0.961	NC
	Carbon disulfide	< 3.78	< 3.84	NC
	Carbon tetrachloride	< 0.946	< 0.961	NC
	Chlorobenzene	< 0.946	< 0.961	NC
	Chloroethane	< 0.946	< 0.961	NC
	Chloroform	< 0.946	< 0.961	NC
	Chloromethane	< 0.946	< 0.961	NC
	cis-1,2-DCE	< 0.946	< 0.961	NC
	cis-1,3-Dichloropropene	< 0.946	< 0.961	NC
	Dibromochloromethane	< 0.946	< 0.961	NC
	Dibromomethane	< 0.946	< 0.961	NC
	Dichlorodifluoromethane	< 0.946	< 0.961	NC
	Ethylbenzene	< 0.946	< 0.961	NC
	Hexachlorobutadiene	< 0.946	< 0.961	NC
	Isopropylbenzene	< 0.946	< 0.961	NC
	Methyl tert-butyl ether (MTBE)	< 0.946	< 0.961	NC
	Methylene chloride	5.49	3.85	35.0
	Naphthalene	< 0.946	< 0.961	NC
	n-Butylbenzene	< 0.946	< 0.961	NC
	n-Propylbenzene	< 0.946	< 0.961	NC
	sec-Butylbenzene	< 0.946	< 0.961	NC
	Styrene	< 0.946	< 0.961	NC
	tert-Butylbenzene	< 0.946	< 0.961	NC
	Tetrachloroethene (PCE)	< 0.946	< 0.961	NC
	Toluene	< 0.946	< 0.961	NC
	trans-1,2-DCE	< 0.946	< 0.961	NC
	trans-1,3-Dichloropropene	< 0.946	< 0.961	NC
	Trichloroethene (TCE)	< 0.946	< 0.961	NC
	Trichlorofluoromethane	< 0.946	< 0.961	NC
	Vinyl chloride	< 0.946	< 0.961	NC
	Xylenes, Total	< 0.946	< 0.961	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-4 (1.5-2.0') Sample Result	AOC 24-4 (1.5-2.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3'-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-4 (1.5-2.0') Sample Result	AOC 24-4 (1.5-2.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.5	< 13	NC
	Arsenic	< 2.5	< 13	NC
	Barium	200	190	5.1
	Beryllium	0.31	< 0.75	NC
	Cadmium	< 0.10	< 0.50	NC
	Chromium	4.1	6.4	43.8 *
	Cobalt	3.2	4.8	40 *
	Cyanide	<0.5	<0.5	NC
	Lead	3.3	4.9	39 *
	Mercury	< 0.033	< 0.033	NC
	Nickel	4.5	6.2	31.2
	Selenium	< 13	< 13	NC
	Silver	< 0.25	< 1.3	NC
	Vanadium	12	17	34.5
	Zinc	18	27	40 *

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 23-1 (0-0.5') Sample Result	AOC 23-1 (0-0.5') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	< 50	< 50	NC
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.978	< 0.991	NC
	1,1,1-Trichloroethane	< 0.978	< 0.991	NC
	1,1,2,2-Tetrachloroethane	< 0.978	< 0.991	NC
	1,1,2-Trichloroethane	< 0.978	< 0.991	NC
	1,1-Dichloroethane	< 0.978	< 0.991	NC
	1,1-Dichloroethene	< 0.978	< 0.991	NC
	1,1-Dichloropropene	< 0.978	< 0.991	NC
	1,2,3-Trichlorobenzene	< 0.978	< 0.991	NC
	1,2,3-Trichloropropane	< 0.978	< 0.991	NC
	1,2,4-Trichlorobenzene	< 0.978	< 0.991	NC
	1,2,4-Trimethylbenzene	< 0.978	< 0.991	NC
	1,2-Dibromo-3-chloropropane	< 0.978	< 0.991	NC
	1,2-Dibromoethane (EDB)	< 0.978	< 0.991	NC
	1,2-Dichlorobenzene	< 0.978	< 0.991	NC
	1,2-Dichloroethane (EDC)	< 0.978	< 0.991	NC
	1,2-Dichloropropane	< 0.978	< 0.991	NC
	1,3,5-Trimethylbenzene	< 0.978	< 0.991	NC
	1,3-Dichlorobenzene	< 0.978	< 0.991	NC
	1,3-Dichloropropane	< 0.978	< 0.991	NC
	1,4-Dichlorobenzene	< 0.978	< 0.991	NC
	2,2-Dichloropropane	< 0.978	< 0.991	NC
	2-Butanone	< 3.91	< 3.96	NC
	2-Chlorotoluene	< 0.978	< 0.991	NC
	2-Hexanone	< 3.91	< 3.96	NC
	4-Chlorotoluene	< 0.978	< 0.991	NC
	4-Isopropyltoluene	< 0.978	< 0.991	NC
	4-Methyl-2-pentanone	< 3.91	< 3.96	NC
	Acetone	13.6	25.4	60.5 *
	Benzene	< 0.978	< 0.991	NC
	Bromobenzene	< 0.978	< 0.991	NC
	Bromodichloromethane	< 0.978	< 0.991	NC
	Bromoform	< 0.978	< 0.991	NC
	Bromomethane	< 0.978	< 0.991	NC
	Carbon disulfide	< 3.91	< 3.96	NC
	Carbon tetrachloride	< 0.978	< 0.991	NC
	Chlorobenzene	< 0.978	< 0.991	NC
	Chloroethane	< 0.978	< 0.991	NC
	Chloroform	< 0.978	< 0.991	NC
	Chloromethane	< 0.978	< 0.991	NC
	cis-1,2-DCE	< 0.978	< 0.991	NC
	cis-1,3-Dichloropropene	< 0.978	< 0.991	NC
	Dibromochloromethane	< 0.978	< 0.991	NC
	Dibromomethane	< 0.978	< 0.991	NC
	Dichlorodifluoromethane	< 0.978	< 0.991	NC
	Ethylbenzene	< 0.978	< 0.991	NC
	Hexachlorobutadiene	< 0.978	< 0.991	NC
	Isopropylbenzene	< 0.978	< 0.991	NC
	Methyl tert-butyl ether (MTBE)	< 0.978	< 0.991	NC
	Methylene chloride	8.75	8.12	7.5
	Naphthalene	< 0.978	< 0.991	NC
	n-Butylbenzene	< 0.978	< 0.991	NC
	n-Propylbenzene	< 0.978	< 0.991	NC
	sec-Butylbenzene	< 0.978	< 0.991	NC
	Styrene	< 0.978	< 0.991	NC
	tert-Butylbenzene	< 0.978	< 0.991	NC
	Tetrachloroethene (PCE)	< 0.978	< 0.991	NC
	Toluene	< 0.978	< 0.991	NC
	trans-1,2-DCE	< 0.978	< 0.991	NC
	trans-1,3-Dichloropropene	< 0.978	< 0.991	NC
	Trichloroethene (TCE)	< 0.978	< 0.991	NC
	Trichlorofluoromethane	< 0.978	< 0.991	NC
	Vinyl chloride	< 0.978	< 0.991	NC
	Xylenes, Total	< 0.978	< 0.991	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 23-1 (0-0.5') Sample Result	AOC 23-1 (0-0.5') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 23-1 (0-0.5') Sample Result	AOC 23-1 (0-0.5') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.5	< 2.5	NC
	Arsenic	< 2.5	< 2.5	NC
	Barium	120	140	15.4
	Beryllium	0.28	0.28	0.0
	Cadmium	< 0.10	< 0.10	NC
	Chromium	3.2	3.4	6.1
	Cobalt	2.9	3.0	3.4
	Cyanide	<0.5	<0.5	NC
	Lead	4.7	4.9	4.2
	Mercury	< 0.032	< 0.033	NC
	Nickel	4.6	4.7	2.2
	Selenium	< 13	< 13	NC
	Silver	< 0.25	< 0.25	NC
	Vanadium	9.4	11	15.7
	Zinc	15	17	12.5

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
mg/kg = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-3 (1.5-2.0') Sample Result	AOC 26-3 (1.5-2.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	56	67	17.9
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 1.01	< 0.962	NC
	1,1,1-Trichloroethane	< 1.01	< 0.962	NC
	1,1,2,2-Tetrachloroethane	< 1.01	< 0.962	NC
	1,1,2-Trichloroethane	< 1.01	< 0.962	NC
	1,1-Dichloroethane	< 1.01	< 0.962	NC
	1,1-Dichloroethene	< 1.01	< 0.962	NC
	1,1-Dichloropropene	< 1.01	< 0.962	NC
	1,2,3-Trichlorobenzene	< 1.01	< 0.962	NC
	1,2,3-Trichloropropane	< 1.01	< 0.962	NC
	1,2,4-Trichlorobenzene	< 1.01	< 0.962	NC
	1,2,4-Trimethylbenzene	< 1.01	< 0.962	NC
	1,2-Dibromo-3-chloropropane	< 1.01	< 0.962	NC
	1,2-Dibromoethane (EDB)	< 1.01	< 0.962	NC
	1,2-Dichlorobenzene	< 1.01	< 0.962	NC
	1,2-Dichloroethane (EDC)	< 1.01	< 0.962	NC
	1,2-Dichloropropane	< 1.01	< 0.962	NC
	1,3,5-Trimethylbenzene	< 1.01	< 0.962	NC
	1,3-Dichlorobenzene	< 1.01	< 0.962	NC
	1,3-Dichloropropane	< 1.01	< 0.962	NC
	1,4-Dichlorobenzene	< 1.01	< 0.962	NC
	2,2-Dichloropropane	< 1.01	< 0.962	NC
	2-Butanone	< 4.05	< 3.85	NC
	2-Chlorotoluene	< 1.01	< 0.962	NC
	2-Hexanone	< 4.05	< 3.85	NC
	4-Chlorotoluene	< 1.01	< 0.962	NC
	4-Isopropyltoluene	< 1.01	< 0.962	NC
	4-Methyl-2-pentanone	< 4.05	< 3.85	NC
	Acetone	< 4.05	< 3.85	NC
	Benzene	< 1.01	< 0.962	NC
	Bromobenzene	< 1.01	< 0.962	NC
	Bromodichloromethane	< 1.01	< 0.962	NC
	Bromoform	< 1.01	< 0.962	NC
	Bromomethane	< 1.01	< 0.962	NC
	Carbon disulfide	< 4.05	< 3.85	NC
	Carbon tetrachloride	< 1.01	< 0.962	NC
	Chlorobenzene	< 1.01	< 0.962	NC
	Chloroethane	< 1.01	< 0.962	NC
	Chloroform	< 1.01	< 0.962	NC
	Chloromethane	< 1.01	< 0.962	NC
	cis-1,2-DCE	< 1.01	< 0.962	NC
	cis-1,3-Dichloropropene	< 1.01	< 0.962	NC
	Dibromochloromethane	< 1.01	< 0.962	NC
	Dibromomethane	< 1.01	< 0.962	NC
	Dichlorodifluoromethane	< 1.01	< 0.962	NC
	Ethylbenzene	< 1.01	< 0.962	NC
	Hexachlorobutadiene	< 1.01	< 0.962	NC
	Isopropylbenzene	< 1.01	< 0.962	NC
	Methyl tert-butyl ether (MTBE)	< 1.01	< 0.962	NC
	Methylene chloride	9.83	10.8	9.4
	Naphthalene	< 1.01	< 0.962	NC
	n-Butylbenzene	< 1.01	< 0.962	NC
	n-Propylbenzene	< 1.01	< 0.962	NC
	sec-Butylbenzene	< 1.01	< 0.962	NC
	Styrene	< 1.01	< 0.962	NC
	tert-Butylbenzene	< 1.01	< 0.962	NC
	Tetrachloroethene (PCE)	< 1.01	< 0.962	NC
	Toluene	< 1.01	< 0.962	NC
	trans-1,2-DCE	< 1.01	< 0.962	NC
	trans-1,3-Dichloropropene	< 1.01	< 0.962	NC
	Trichloroethene (TCE)	< 1.01	< 0.962	NC
	Trichlorofluoromethane	< 1.01	< 0.962	NC
	Vinyl chloride	< 1.01	< 0.962	NC
	Xylenes, Total	< 1.01	< 0.962	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-3 (1.5-2.0') Sample Result	AOC 26-3 (1.5-2.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-3 (1.5-2.0') Sample Result	AOC 26-3 (1.5-2.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 12	< 13	NC
	Arsenic	< 12	< 13	NC
	Barium	190	180	5.4
	Beryllium	< 0.75	< 0.75	NC
	Cadmium	< 0.50	< 0.50	NC
	Chromium	13	9.0	36.4*
	Cobalt	4.9	4.7	4.2
	Cyanide	<0.5	<0.5	NC
	Lead	25	4.6	137.8 *
	Mercury	< 0.033	< 0.033	NC
	Nickel	6.4	6.2	3.2
	Selenium	< 12	< 13	NC
	Silver	< 1.2	< 1.3	NC
	Vanadium	19	20	5.1
	Zinc	47	34	32.1

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-8 (0-1.0') Sample Result	AOC-26-8 (0-1.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Ethanol	<1.0	<1.0	NC
	Diesel Range Organics (DRO)	11	< 10	NC
	Motor Oil Range Organics (MRO)	160	79	67.8 *
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.928	< 0.991	NC
	1,1,1-Trichloroethane	< 0.928	< 0.991	NC
	1,1,2,2-Tetrachloroethane	< 0.928	< 0.991	NC
	1,1,2-Trichloroethane	< 0.928	< 0.991	NC
	1,1-Dichloroethane	< 0.928	< 0.991	NC
	1,1-Dichloroethene	< 0.928	< 0.991	NC
	1,1-Dichloropropene	< 0.928	< 0.991	NC
	1,2,3-Trichlorobenzene	< 0.928	< 0.991	NC
	1,2,3-Trichloropropane	< 0.928	< 0.991	NC
	1,2,4-Trichlorobenzene	< 0.928	< 0.991	NC
	1,2,4-Trimethylbenzene	4.33	1.60	92.1 *
	1,2-Dibromo-3-chloropropane	< 0.928	< 0.991	NC
	1,2-Dibromoethane (EDB)	< 0.928	< 0.991	NC
	1,2-Dichlorobenzene	< 0.928	< 0.991	NC
	1,2-Dichloroethane (EDC)	< 0.928	< 0.991	NC
	1,2-Dichloropropane	< 0.928	< 0.991	NC
	1,3,5-Trimethylbenzene	< 0.928	< 0.991	NC
	1,3-Dichlorobenzene	< 0.928	< 0.991	NC
	1,3-Dichloropropane	< 0.928	< 0.991	NC
	1,4-Dichlorobenzene	< 0.928	< 0.991	NC
	2,2-Dichloropropane	< 0.928	< 0.991	NC
	2-Butanone	< 3.71	< 3.97	NC
	2-Chlorotoluene	< 0.928	< 0.991	NC
	2-Hexanone	< 3.71	< 3.97	NC
	4-Chlorotoluene	< 0.928	< 0.991	NC
	4-Isopropyltoluene	< 0.928	< 0.991	NC
	4-Methyl-2-pentanone	< 3.71	< 3.97	NC
	Acetone	< 3.71	< 3.97	NC
	Benzene	< 0.928	< 0.991	NC
	Bromobenzene	< 0.928	< 0.991	NC
	Bromodichloromethane	< 0.928	< 0.991	NC
	Bromoform	< 0.928	< 0.991	NC
	Bromomethane	< 0.928	< 0.991	NC
	Carbon disulfide	< 3.71	< 3.97	NC
	Carbon tetrachloride	< 0.928	< 0.991	NC
	Chlorobenzene	< 0.928	< 0.991	NC
	Chloroethane	< 0.928	< 0.991	NC
	Chloroform	< 0.928	< 0.991	NC
	Chloromethane	< 0.928	< 0.991	NC
	cis-1,2-DCE	< 0.928	< 0.991	NC
	cis-1,3-Dichloropropene	< 0.928	< 0.991	NC
	Dibromochloromethane	< 0.928	< 0.991	NC
	Dibromomethane	< 0.928	< 0.991	NC
	Dichlorodifluoromethane	< 0.928	< 0.991	NC
	Ethylbenzene	< 0.928	< 0.991	NC
	Hexachlorobutadiene	< 0.928	< 0.991	NC
	Isopropylbenzene	< 0.928	< 0.991	NC
	Methyl tert-butyl ether (MTBE)	< 0.928	< 0.991	NC
	Methylene chloride	8.24	10.5	24.1
	Naphthalene	1.82	< 0.991	NC
	n-Butylbenzene	< 0.928	< 0.991	NC
	n-Propylbenzene	< 0.928	< 0.991	NC
	sec-Butylbenzene	< 0.928	< 0.991	NC
	Styrene	< 0.928	< 0.991	NC
	tert-Butylbenzene	< 0.928	< 0.991	NC
	Tetrachloroethene (PCE)	< 0.928	< 0.991	NC
	Toluene	3.92	3.55	9.9
	trans-1,2-DCE	< 0.928	< 0.991	NC
	trans-1,3-Dichloropropene	< 0.928	< 0.991	NC
	Trichloroethene (TCE)	< 0.928	< 0.991	NC
	Trichlorofluoromethane	< 0.928	< 0.991	NC
	Vinyl chloride	< 0.928	< 0.991	NC
	Xylenes, Total	< 0.928	< 0.991	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-8 (0-1.0') Sample Result	AOC-26-8 (0-1.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3′-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 26-8 (0-1.0') Sample Result	AOC-26-8 (0-1.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 13	< 12	NC
	Arsenic	< 13	< 12	NC
	Barium	380	240	45.2*
	Beryllium	< 0.75	< 0.75	NC
	Cadmium	< 0.50	< 0.50	NC
	Chromium	2.4	2.1	13.3
	Cobalt	3.1	3.1	0.0
	Cyanide	<0.5	<0.5	NC
	Lead	2.8	2.8	0.0
	Mercury	< 0.033	< 0.033	NC
	Nickel	3.0	2.8	6.9
	Selenium	< 13	< 12	NC
	Silver	< 1.3	< 1.2	NC
	Vanadium	< 13	< 12	NC
	Zinc	22	20	9.5

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-15 (1.5-2.0') Sample Result	AOC 22-15 (1.5-2.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	< 50	< 50	NC
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 1.00	< 0.918	NC
	1,1,1-Trichloroethane	< 1.00	< 0.918	NC
	1,1,2,2-Tetrachloroethane	< 1.00	< 0.918	NC
	1,1,2-Trichloroethane	< 1.00	< 0.918	NC
	1,1-Dichloroethane	< 1.00	< 0.918	NC
	1,1-Dichloroethene	< 1.00	< 0.918	NC
	1,1-Dichloropropene	< 1.00	< 0.918	NC
	1,2,3-Trichlorobenzene	< 1.00	< 0.918	NC
	1,2,3-Trichloropropane	< 1.00	< 0.918	NC
	1,2,4-Trichlorobenzene	< 1.00	< 0.918	NC
	1,2,4-Trimethylbenzene	< 1.00	< 0.918	NC
	1,2-Dibromo-3-chloropropane	< 1.00	< 0.918	NC
	1,2-Dibromoethane (EDB)	< 1.00	< 0.918	NC
	1,2-Dichlorobenzene	< 1.00	< 0.918	NC
	1,2-Dichloroethane (EDC)	< 1.00	< 0.918	NC
	1,2-Dichloropropane	< 1.00	< 0.918	NC
	1,3,5-Trimethylbenzene	< 1.00	< 0.918	NC
	1,3-Dichlorobenzene	< 1.00	< 0.918	NC
	1,3-Dichloropropane	< 1.00	< 0.918	NC
	1,4-Dichlorobenzene	< 1.00	< 0.918	NC
	2,2-Dichloropropane	< 1.00	< 0.918	NC
	2-Butanone	< 4.01	< 3.67	NC
	2-Chlorotoluene	< 1.00	< 0.918	NC
	2-Hexanone	< 4.01	< 3.67	NC
	4-Chlorotoluene	< 1.00	< 0.918	NC
	4-Isopropyltoluene	< 1.00	< 0.918	NC
	4-Methyl-2-pentanone	< 4.01	< 3.67	NC
	Acetone	6.14	4.35	34.1
	Benzene	< 1.00	< 0.918	NC
	Bromobenzene	< 1.00	< 0.918	NC
	Bromodichloromethane	< 1.00	< 0.918	NC
	Bromoform	< 1.00	< 0.918	NC
	Bromomethane	< 1.00	< 0.918	NC
	Carbon disulfide	< 4.01	< 3.67	NC
	Carbon tetrachloride	< 1.00	< 0.918	NC
	Chlorobenzene	< 1.00	< 0.918	NC
	Chloroethane	< 1.00	< 0.918	NC
	Chloroform	< 1.00	< 0.918	NC
	Chloromethane	< 1.00	< 0.918	NC
	cis-1,2-DCE	< 1.00	< 0.918	NC
	cis-1,3-Dichloropropene	< 1.00	< 0.918	NC
	Dibromochloromethane	< 1.00	< 0.918	NC
	Dibromomethane	< 1.00	< 0.918	NC
	Dichlorodifluoromethane	< 1.00	< 0.918	NC
	Ethylbenzene	< 1.00	< 0.918	NC
	Hexachlorobutadiene	< 1.00	< 0.918	NC
	Isopropylbenzene	< 1.00	< 0.918	NC
	Methyl tert-butyl ether (MTBE)	< 1.00	< 0.918	NC
	Methylene chloride	11.0	9.09	19.0
	Naphthalene	< 1.00	< 0.918	NC
	n-Butylbenzene	< 1.00	< 0.918	NC
	n-Propylbenzene	< 1.00	< 0.918	NC
	sec-Butylbenzene	< 1.00	< 0.918	NC
	Styrene	< 1.00	< 0.918	NC
	tert-Butylbenzene	< 1.00	< 0.918	NC
	Tetrachloroethene (PCE)	< 1.00	< 0.918	NC
	Toluene	< 1.00	< 0.918	NC
	trans-1,2-DCE	< 1.00	< 0.918	NC
	trans-1,3-Dichloropropene	< 1.00	< 0.918	NC
	Trichloroethene (TCE)	< 1.00	< 0.918	NC
	Trichlorofluoromethane	< 1.00	< 0.918	NC
	Vinyl chloride	< 1.00	< 0.918	NC
	Xylenes, Total	< 1.00	< 0.918	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-15 (1.5-2.0') Sample Result	AOC 22-15 (1.5-2.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-15 (1.5-2.0') Sample Result	AOC 22-15 (1.5-2.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.5	< 2.5	NC
	Arsenic	< 2.5	< 2.5	NC
	Barium	160	180	11.7
	Beryllium	0.39	0.37	5.3
	Cadmium	< 0.10	< 0.10	NC
	Chromium	4.8	4.9	2.1
	Cobalt	3.8	3.7	2.7
	Cyanide	<0.5	<0.5	NC
	Lead	4.3	4.4	2.3
	Mercury	< 0.033	< 0.033	NC
	Nickel	5.7	5.6	1.8
	Selenium	< 13	< 13	NC
	Silver	< 0.25	< 0.25	NC
	Vanadium	15	14	6.9
	Zinc	24	23	4.2

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-8 (1.5-2.0') Sample Result	AOC 22-8 (1.5-2.0') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	180	190	5.4
	Motor Oil Range Organics (MRO)	510	580	12.8
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 1.03	< 0.875	NC
	1,1,1-Trichloroethane	< 1.03	< 0.875	NC
	1,1,2,2-Tetrachloroethane	< 1.03	< 0.875	NC
	1,1,2-Trichloroethane	< 1.03	< 0.875	NC
	1,1-Dichloroethane	< 1.03	< 0.875	NC
	1,1-Dichloroethene	< 1.03	< 0.875	NC
	1,1-Dichloropropene	< 1.03	< 0.875	NC
	1,2,3-Trichlorobenzene	< 1.03	< 0.875	NC
	1,2,3-Trichloropropane	< 1.03	< 0.875	NC
	1,2,4-Trichlorobenzene	< 1.03	< 0.875	NC
	1,2,4-Trimethylbenzene	< 1.03	< 0.875	NC
	1,2-Dibromo-3-chloropropane	< 1.03	< 0.875	NC
	1,2-Dibromoethane (EDB)	< 1.03	< 0.875	NC
	1,2-Dichlorobenzene	< 1.03	< 0.875	NC
	1,2-Dichloroethane (EDC)	< 1.03	< 0.875	NC
	1,2-Dichloropropane	< 1.03	< 0.875	NC
	1,3,5-Trimethylbenzene	< 1.03	< 0.875	NC
	1,3-Dichlorobenzene	< 1.03	< 0.875	NC
	1,3-Dichloropropane	< 1.03	< 0.875	NC
	1,4-Dichlorobenzene	< 1.03	< 0.875	NC
	2,2-Dichloropropane	< 1.03	< 0.875	NC
	2-Butanone	< 4.10	< 3.50	NC
	2-Chlorotoluene	< 1.03	< 0.875	NC
	2-Hexanone	< 4.10	< 3.50	NC
	4-Chlorotoluene	< 1.03	< 0.875	NC
	4-Isopropyltoluene	< 1.03	< 0.875	NC
	4-Methyl-2-pentanone	< 4.10	< 3.50	NC
	Acetone	< 4.10	< 3.50	NC
	Benzene	< 1.03	< 0.875	NC
	Bromobenzene	< 1.03	< 0.875	NC
	Bromodichloromethane	< 1.03	< 0.875	NC
	Bromoform	< 1.03	< 0.875	NC
	Bromomethane	< 1.03	< 0.875	NC
	Carbon disulfide	< 4.10	< 3.50	NC
	Carbon tetrachloride	< 1.03	< 0.875	NC
	Chlorobenzene	< 1.03	< 0.875	NC
	Chloroethane	< 1.03	< 0.875	NC
	Chloroform	< 1.03	< 0.875	NC
	Chloromethane	< 1.03	< 0.875	NC
	cis-1,2-DCE	< 1.03	< 0.875	NC
	cis-1,3-Dichloropropene	< 1.03	< 0.875	NC
	Dibromochloromethane	< 1.03	< 0.875	NC
	Dibromomethane	< 1.03	< 0.875	NC
	Dichlorodifluoromethane	< 1.03	< 0.875	NC
	Ethylbenzene	< 1.03	< 0.875	NC
	Hexachlorobutadiene	< 1.03	< 0.875	NC
	Isopropylbenzene	< 1.03	< 0.875	NC
	Methyl tert-butyl ether (MTBE)	< 1.03	< 0.875	NC
	Methylene chloride	9.01	8.71	3.4
	Naphthalene	< 1.03	< 0.875	NC
	n-Butylbenzene	< 1.03	< 0.875	NC
	n-Propylbenzene	< 1.03	< 0.875	NC
	sec-Butylbenzene	< 1.03	< 0.875	NC
	Styrene	< 1.03	< 0.875	NC
	tert-Butylbenzene	< 1.03	< 0.875	NC
	Tetrachloroethene (PCE)	< 1.03	< 0.875	NC
	Toluene	< 1.03	< 0.875	NC
	trans-1,2-DCE	< 1.03	< 0.875	NC
	trans-1,3-Dichloropropene	< 1.03	< 0.875	NC
	Trichloroethene (TCE)	< 1.03	< 0.875	NC
	Trichlorofluoromethane	< 1.03	< 0.875	NC
	Vinyl chloride	< 1.03	< 0.875	NC
	Xylenes, Total	< 1.03	< 0.875	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-8 (1.5-2.0') Sample Result	AOC 22-8 (1.5-2.0') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-8 (1.5-2.0') Sample Result	AOC 22-8 (1.5-2.0') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 2.5	< 2.5	NC
	Arsenic	< 2.5	< 2.5	NC
	Barium	110	150	30.8
	Beryllium	0.26	0.30	14.3
	Cadmium	< 0.10	< 0.10	NC
	Chromium	11	11	0.0
	Cobalt	3.1	3.5	12.1
	Cyanide	<0.5	<0.5	NC
	Lead	3.9	7.3	60.7 *
	Mercury	< 0.033	< 0.033	NC
	Nickel	3.8	4.3	12.3
	Selenium	< 13	< 12	NC
	Silver	< 0.25	< 0.25	NC
	Vanadium	10	12	18.2
	Zinc	23	24	4.3

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-12 (0-0.5') Sample Result	AOC 22-12 (0-0.5') DUP Sample Result	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	56	63	11.8
	Motor Oil Range Organics (MRO)	62	67	7.8
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 1.11	< 1.01	NC
	1,1,1-Trichloroethane	< 1.11	< 1.01	NC
	1,1,2,2-Tetrachloroethane	< 1.11	< 1.01	NC
	1,1,2-Trichloroethane	< 1.11	< 1.01	NC
	1,1-Dichloroethane	< 1.11	< 1.01	NC
	1,1-Dichloroethene	< 1.11	< 1.01	NC
	1,1-Dichloropropene	< 1.11	< 1.01	NC
	1,2,3-Trichlorobenzene	< 1.11	< 1.01	NC
	1,2,3-Trichloropropane	< 1.11	< 1.01	NC
	1,2,4-Trichlorobenzene	< 1.11	< 1.01	NC
	1,2,4-Trimethylbenzene	< 1.11	< 1.01	NC
	1,2-Dibromo-3-chloropropane	< 1.11	< 1.01	NC
	1,2-Dibromoethane (EDB)	< 1.11	< 1.01	NC
	1,2-Dichlorobenzene	< 1.11	< 1.01	NC
	1,2-Dichloroethane (EDC)	< 1.11	< 1.01	NC
	1,2-Dichloropropane	< 1.11	< 1.01	NC
	1,3,5-Trimethylbenzene	< 1.11	< 1.01	NC
	1,3-Dichlorobenzene	< 1.11	< 1.01	NC
	1,3-Dichloropropane	< 1.11	< 1.01	NC
	1,4-Dichlorobenzene	< 1.11	< 1.01	NC
	2,2-Dichloropropane	< 1.11	< 1.01	NC
	2-Butanone	< 4.45	< 4.04	NC
	2-Chlorotoluene	< 1.11	< 1.01	NC
	2-Hexanone	< 4.45	< 4.04	NC
	4-Chlorotoluene	< 1.11	< 1.01	NC
	4-Isopropyltoluene	< 1.11	< 1.01	NC
	4-Methyl-2-pentanone	< 4.45	< 4.04	NC
	Acetone	< 4.45	< 4.04	NC
	Benzene	< 1.11	< 1.01	NC
	Bromobenzene	< 1.11	< 1.01	NC
	Bromodichloromethane	< 1.11	< 1.01	NC
	Bromoform	< 1.11	< 1.01	NC
	Bromomethane	< 1.11	< 1.01	NC
	Carbon disulfide	< 4.45	< 4.04	NC
	Carbon tetrachloride	< 1.11	< 1.01	NC
	Chlorobenzene	< 1.11	< 1.01	NC
	Chloroethane	< 1.11	< 1.01	NC
	Chloroform	< 1.11	< 1.01	NC
	Chloromethane	< 1.11	< 1.01	NC
	cis-1,2-DCE	< 1.11	< 1.01	NC
	cis-1,3-Dichloropropene	< 1.11	< 1.01	NC
	Dibromochloromethane	< 1.11	< 1.01	NC
	Dibromomethane	< 1.11	< 1.01	NC
	Dichlorodifluoromethane	< 1.11	< 1.01	NC
	Ethylbenzene	< 1.11	< 1.01	NC
	Hexachlorobutadiene	< 1.11	< 1.01	NC
	Isopropylbenzene	< 1.11	< 1.01	NC
	Methyl tert-butyl ether (MTBE)	< 1.11	< 1.01	NC
	Methylene chloride	6.76	5.77	15.8
	Naphthalene	< 1.11	< 1.01	NC
	n-Butylbenzene	< 1.11	< 1.01	NC
	n-Propylbenzene	< 1.11	< 1.01	NC
	sec-Butylbenzene	< 1.11	< 1.01	NC
	Styrene	< 1.11	< 1.01	NC
	tert-Butylbenzene	< 1.11	< 1.01	NC
	Tetrachloroethene (PCE)	< 1.11	< 1.01	NC
	Toluene	< 1.11	< 1.01	NC
	trans-1,2-DCE	< 1.11	< 1.01	NC
	trans-1,3-Dichloropropene	< 1.11	< 1.01	NC
	Trichloroethene (TCE)	< 1.11	< 1.01	NC
	Trichlorofluoromethane	< 1.11	< 1.01	NC
	Vinyl chloride	< 1.11	< 1.01	NC
	Xylenes, Total	< 1.11	< 1.01	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-12 (0-0.5') Sample Result	AOC 22-12 (0-0.5') DUP Sample Result	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 22-12 (0-0.5') Sample Result	AOC 22-12 (0-0.5') DUP Sample Result	RPD (%)
Metals (mg/kg-dry):	Antimony	< 13	< 2.5	NC
	Arsenic	< 13	< 13	NC
	Barium	230	220	4.4
	Beryllium	< 0.75	0.38	NC
	Cadmium	< 0.50	< 0.10	NC
	Chromium	6.7	6.0	11.0
	Cobalt	5.0	3.5	35 (1)
	Cyanide	<0.5	<0.5	NC
	Lead	6.5	5.5	16.7
	Mercury	< 0.033	< 0.033	NC
	Nickel	6.9	5.5	22.6
	Selenium	< 13	< 13	NC
	Silver	< 1.3	< 0.25	NC
	Vanadium	16	14	13.3
	Zinc	32	26	20.7

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier
(1) = Not an RPD outlier since the difference between the field sample and duplicate sample is less than the method reporting limit.

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-5 (0-0.5') Sample Result	AOC 24-5 (0-0.5') DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	360	330	8.7
	Motor Oil Range Organics (MRO)	670	610	9.4
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.898	< 1.04	NC
	1,1,1-Trichloroethane	< 0.898	< 1.04	NC
	1,1,2,2-Tetrachloroethane	< 0.898	< 1.04	NC
	1,1,2-Trichloroethane	< 0.898	< 1.04	NC
	1,1-Dichloroethane	< 0.898	< 1.04	NC
	1,1-Dichloroethene	< 0.898	< 1.04	NC
	1,1-Dichloropropene	< 0.898	< 1.04	NC
	1,2,3-Trichlorobenzene	< 0.898	< 1.04	NC
	1,2,3-Trichloropropane	< 0.898	< 1.04	NC
	1,2,4-Trichlorobenzene	< 0.898	< 1.04	NC
	1,2,4-Trimethylbenzene	< 0.898	< 1.04	NC
	1,2-Dibromo-3-chloropropane	< 0.898	< 1.04	NC
	1,2-Dibromoethane (EDB)	< 0.898	< 1.04	NC
	1,2-Dichlorobenzene	< 0.898	< 1.04	NC
	1,2-Dichloroethane (EDC)	< 0.898	< 1.04	NC
	1,2-Dichloropropane	< 0.898	< 1.04	NC
	1,3,5-Trimethylbenzene	< 0.898	< 1.04	NC
	1,3-Dichlorobenzene	< 0.898	< 1.04	NC
	1,3-Dichloropropane	< 0.898	< 1.04	NC
	1,4-Dichlorobenzene	< 0.898	< 1.04	NC
	2,2-Dichloropropane	< 0.898	< 1.04	NC
	2-Butanone	< 3.59	< 4.17	NC
	2-Chlorotoluene	< 0.898	< 1.04	NC
	2-Hexanone	< 3.59	< 4.17	NC
	4-Chlorotoluene	< 0.898	< 1.04	NC
	4-Isopropyltoluene	< 0.898	< 1.04	NC
	4-Methyl-2-pentanone	< 3.59	< 4.17	NC
	Acetone	< 3.59	< 4.17	NC
	Benzene	< 0.898	< 1.04	NC
	Bromobenzene	< 0.898	< 1.04	NC
	Bromodichloromethane	< 0.898	< 1.04	NC
	Bromoform	< 0.898	< 1.04	NC
	Bromomethane	< 0.898	< 1.04	NC
	Carbon disulfide	< 3.59	< 4.17	NC
	Carbon tetrachloride	< 0.898	< 1.04	NC
	Chlorobenzene	< 0.898	< 1.04	NC
	Chloroethane	< 0.898	< 1.04	NC
	Chloroform	< 0.898	< 1.04	NC
	Chloromethane	< 0.898	< 1.04	NC
	cis-1,2-DCE	< 0.898	< 1.04	NC
	cis-1,3-Dichloropropene	< 0.898	< 1.04	NC
	Dibromochloromethane	< 0.898	< 1.04	NC
	Dibromomethane	< 0.898	< 1.04	NC
	Dichlorodifluoromethane	< 0.898	< 1.04	NC
	Ethylbenzene	< 0.898	< 1.04	NC
	Hexachlorobutadiene	< 0.898	< 1.04	NC
	Isopropylbenzene	< 0.898	< 1.04	NC
	Methyl tert-butyl ether (MTBE)	< 0.898	< 1.04	NC
	Methylene chloride	2.42	< 2.09	NC
	Naphthalene	< 0.898	< 1.04	NC
	n-Butylbenzene	< 0.898	< 1.04	NC
	n-Propylbenzene	< 0.898	< 1.04	NC
	sec-Butylbenzene	< 0.898	< 1.04	NC
	Styrene	< 0.898	< 1.04	NC
	tert-Butylbenzene	< 0.898	< 1.04	NC
	Tetrachloroethene (PCE)	< 0.898	< 1.04	NC
	Toluene	< 0.898	< 1.04	NC
	trans-1,2-DCE	< 0.898	< 1.04	NC
	trans-1,3-Dichloropropene	< 0.898	< 1.04	NC
	Trichloroethene (TCE)	< 0.898	< 1.04	NC
	Trichlorofluoromethane	< 0.898	< 1.04	NC
	Vinyl chloride	< 0.898	< 1.04	NC
	Xylenes, Total	< 0.898	< 1.04	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-5 (0-0.5') Sample Result	AOC 24-5 (0-0.5') DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 24-5 (0-0.5') Sample Result	AOC 24-5 (0-0.5') DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 13	< 2.5	NC
	Arsenic	< 13	< 2.5	NC
	Barium	160	170	6.1
	Beryllium	< 0.75	0.28	NC
	Cadmium	< 0.50	< 0.10	NC
	Chromium	11	9.4	15.7
	Cobalt	4.7	4.4	6.6
	Cyanide	<0.5	<0.5	NC
	Lead	5.8	4.7	20.9
	Mercury	< 0.033	< 0.033	NC
	Nickel	5.3	4.4	18.6
	Selenium	< 13	< 2.5	NC
	Silver	< 1.3	< 0.25	NC
	Vanadium	15	13	14.3
	Zinc	40	36	10.5

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 25-2 (0-0.5') Sample Result	AOC 25-2 (0-0.5')-DUP Field Duplicate	RPD (%)
TPH (mg/kg-dry):	Diesel Range Organics (DRO)	< 10	< 10	NC
	Motor Oil Range Organics (MRO)	< 50	< 50	NC
	Gasoline Range Organics (GRO)	< 5.0	< 5.0	NC
VOCs (ug/kg-dry)	1,1,1,2-Tetrachloroethane	< 0.898	< 0.902	NC
	1,1,1-Trichloroethane	< 0.898	< 0.902	NC
	1,1,2,2-Tetrachloroethane	< 0.898	< 0.902	NC
	1,1,2-Trichloroethane	< 0.898	< 0.902	NC
	1,1-Dichloroethane	< 0.898	< 0.902	NC
	1,1-Dichloroethene	< 0.898	< 0.902	NC
	1,1-Dichloropropene	< 0.898	< 0.902	NC
	1,2,3-Trichlorobenzene	< 0.898	< 0.902	NC
	1,2,3-Trichloropropane	< 0.898	< 0.902	NC
	1,2,4-Trichlorobenzene	< 0.898	< 0.902	NC
	1,2,4-Trimethylbenzene	< 0.898	< 0.902	NC
	1,2-Dibromo-3-chloropropane	< 0.898	< 0.902	NC
	1,2-Dibromoethane (EDB)	< 0.898	< 0.902	NC
	1,2-Dichlorobenzene	< 0.898	< 0.902	NC
	1,2-Dichloroethane (EDC)	< 0.898	< 0.902	NC
	1,2-Dichloropropane	< 0.898	< 0.902	NC
	1,3,5-Trimethylbenzene	< 0.898	< 0.902	NC
	1,3-Dichlorobenzene	< 0.898	< 0.902	NC
	1,3-Dichloropropane	< 0.898	< 0.902	NC
	1,4-Dichlorobenzene	< 0.898	< 0.902	NC
	2,2-Dichloropropane	< 0.898	< 0.902	NC
	2-Butanone	< 3.59	< 3.61	NC
	2-Chlorotoluene	< 0.898	< 0.902	NC
	2-Hexanone	< 3.59	< 3.61	NC
	4-Chlorotoluene	< 0.898	< 0.902	NC
	4-Isopropyltoluene	< 0.898	< 0.902	NC
	4-Methyl-2-pentanone	< 3.59	< 3.61	NC
	Acetone	< 3.59	< 3.61	NC
	Benzene	< 0.898	< 0.902	NC
	Bromobenzene	< 0.898	< 0.902	NC
	Bromodichloromethane	< 0.898	< 0.902	NC
	Bromoform	< 0.898	< 0.902	NC
	Bromomethane	< 0.898	< 0.902	NC
	Carbon disulfide	< 3.59	< 3.61	NC
	Carbon tetrachloride	< 0.898	< 0.902	NC
	Chlorobenzene	< 0.898	< 0.902	NC
	Chloroethane	< 0.898	< 0.902	NC
	Chloroform	< 0.898	< 0.902	NC
	Chloromethane	< 0.898	< 0.902	NC
	cis-1,2-DCE	< 0.898	< 0.902	NC
	cis-1,3-Dichloropropene	< 0.898	< 0.902	NC
	Dibromochloromethane	< 0.898	< 0.902	NC
	Dibromomethane	< 0.898	< 0.902	NC
	Dichlorodifluoromethane	< 0.898	< 0.902	NC
	Ethylbenzene	< 0.898	< 0.902	NC
	Hexachlorobutadiene	< 0.898	< 0.902	NC
	Isopropylbenzene	< 0.898	< 0.902	NC
	Methyl tert-butyl ether (MTBE)	< 0.898	< 0.902	NC
	Methylene chloride	< 1.80	< 1.80	NC
	Naphthalene	< 0.898	< 0.902	NC
	n-Butylbenzene	< 0.898	< 0.902	NC
	n-Propylbenzene	< 0.898	< 0.902	NC
	sec-Butylbenzene	< 0.898	< 0.902	NC
	Styrene	< 0.898	< 0.902	NC
	tert-Butylbenzene	< 0.898	< 0.902	NC
	Tetrachloroethene (PCE)	< 0.898	< 0.902	NC
	Toluene	< 0.898	< 0.902	NC
	trans-1,2-DCE	< 0.898	< 0.902	NC
	trans-1,3-Dichloropropene	< 0.898	< 0.902	NC
	Trichloroethene (TCE)	< 0.898	< 0.902	NC
	Trichlorofluoromethane	< 0.898	< 0.902	NC
	Vinyl chloride	< 0.898	< 0.902	NC
	Xylenes, Total	< 0.898	< 0.902	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 25-2 (0-0.5') Sample Result	AOC 25-2 (0-0.5')-DUP Field Duplicate	RPD (%)
SVOCs (mg/kg-dry):	1,2,4-Trichlorobenzene	< 0.20	< 0.20	NC
	1,2-Dichlorobenzene	< 0.20	< 0.20	NC
	1,3-Dichlorobenzene	< 0.20	< 0.20	NC
	1,4-Dichlorobenzene	< 0.20	< 0.20	NC
	2,4,5-Trichlorophenol	< 0.20	< 0.20	NC
	2,4,6-Trichlorophenol	< 0.20	< 0.20	NC
	2,4-Dichlorophenol	< 0.40	< 0.40	NC
	2,4-Dimethylphenol	< 0.30	< 0.30	NC
	2,4-Dinitrophenol	< 0.40	< 0.40	NC
	2,4-Dinitrotoluene	< 0.50	< 0.50	NC
	2,6-Dinitrotoluene	< 0.50	< 0.50	NC
	2-Chloronaphthalene	< 0.25	< 0.25	NC
	2-Chlorophenol	< 0.20	< 0.20	NC
	2-Methylnaphthalene	< 0.25	< 0.25	NC
	2-Methylphenol	< 0.50	< 0.50	NC
	2-Nitroaniline	< 0.20	< 0.20	NC
	2-Nitrophenol	< 0.20	< 0.20	NC
	3,3´-Dichlorobenzidine	< 0.25	< 0.25	NC
	3+4-Methylphenol	< 0.20	< 0.20	NC
	3-Nitroaniline	< 0.20	< 0.20	NC
	4,6-Dinitro-2-methylphenol	< 0.50	< 0.50	NC
	4-Bromophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Chloro-3-methylphenol	< 0.50	< 0.50	NC
	4-Chloroaniline	< 0.50	< 0.50	NC
	4-Chlorophenyl phenyl ether	< 0.20	< 0.20	NC
	4-Nitroaniline	< 0.25	< 0.25	NC
	4-Nitrophenol	< 0.20	< 0.20	NC
	Acenaphthene	< 0.20	< 0.20	NC
	Acenaphthylene	< 0.20	< 0.20	NC
	Aniline	< 0.20	< 0.20	NC
	Anthracene	< 0.20	< 0.20	NC
	Azobenzene	< 0.20	< 0.20	NC
	Benz(a)anthracene	< 0.20	< 0.20	NC
	Benzo(a)pyrene	< 0.20	< 0.20	NC
	Benzo(b)fluoranthene	< 0.20	< 0.20	NC
	Benzo(g,h,i)perylene	< 0.50	< 0.50	NC
	Benzo(k)fluoranthene	< 0.20	< 0.20	NC
	Benzoic acid	< 0.50	< 0.50	NC
	Benzyl alcohol	< 0.20	< 0.20	NC
	Bis(2-chloroethoxy)methane	< 0.20	< 0.20	NC
	Bis(2-chloroethyl)ether	< 0.20	< 0.20	NC
	Bis(2-chloroisopropyl)ether	< 0.20	< 0.20	NC
	Bis(2-ethylhexyl)phthalate	< 0.50	< 0.50	NC
	Butyl benzyl phthalate	< 0.20	< 0.20	NC
	Carbazole	< 0.20	< 0.20	NC
	Chrysene	< 0.20	< 0.20	NC
	Dibenz(a,h)anthracene	< 0.20	< 0.20	NC
	Dibenzofuran	< 0.20	< 0.20	NC
	Diethyl phthalate	< 0.20	< 0.20	NC
	Dimethyl phthalate	< 0.20	< 0.20	NC
	Di-n-butyl phthalate	< 0.50	< 0.50	NC
	Di-n-octyl phthalate	< 0.20	< 0.20	NC
	Fluoranthene	< 0.25	< 0.25	NC
	Fluorene	< 0.50	< 0.50	NC
	Hexachlorobenzene	< 0.20	< 0.20	NC
	Hexachlorobutadiene	< 0.20	< 0.20	NC
	Hexachlorocyclopentadiene	< 0.20	< 0.20	NC
	Hexachloroethane	< 0.20	< 0.20	NC
	Indeno(1,2,3-cd)pyrene	< 0.25	< 0.25	NC
	Isophorone	< 0.50	< 0.50	NC
	Naphthalene	< 0.20	< 0.20	NC
	Nitrobenzene	< 0.50	< 0.50	NC
	N-Nitrosodi-n-propylamine	< 0.20	< 0.20	NC
	N-Nitrosodiphenylamine	< 0.20	< 0.20	NC
	Pentachlorophenol	< 0.40	< 0.40	NC
	Phenanthrene	< 0.20	< 0.20	NC
	Phenol	< 0.20	< 0.20	NC
	Pyrene	< 0.20	< 0.20	NC
	Pyridine	< 0.50	< 0.50	NC

Table A-3
Field Duplicate Summary
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	AOC 25-2 (0-0.5') Sample Result	AOC 25-2 (0-0.5')-DUP Field Duplicate	RPD (%)
Metals (mg/kg-dry):	Antimony	< 12	< 2.5	NC
	Arsenic	< 12	< 2.5	NC
	Barium	130	150	14.2
	Beryllium	< 0.75	0.26	NC
	Cadmium	< 0.50	< 0.10	NC
	Chromium	4.9	3.1	45 *
	Cobalt	4.0	2.6	42 (1)
	Cyanide	<0.5	<0.5	NC
	Lead	5.7	4.1	32.7
	Mercury	< 0.033	< 0.033	NC
	Nickel	6.0	4.2	35
	Selenium	< 12	< 13	NC
	Silver	< 1.2	< 0.25	NC
	Vanadium	15	9.3	47 (1)
	Zinc	28	20	33

Notes:
RPD = Relative percent difference; [(difference)/(average)]* 100
NC = Not calculated; RPD values were not calculated for non-detects
ug/kg-dry = micrograms per kilogram dry
mg/kg-dry = milligrams per kilogram
* = Field Duplicate RPD Outlier
(1) = Not an RPD outlier since the difference between the field sample and duplicate sample is less than the method reporting limit.

TABLE A-4
Completeness Summaries

Table A-4
Completeness Summary - Soil
Group 3 Investigation Report
Western Refining Southwest, Inc. - Bloomfield Refinery

	Parameter	Total Number of Results	Number of Contractual Compliance	Percent Contractural Compliance	Number of Usable Results	Percent Technical Compliance
TPH (mg/kg-dry):	Ethanol	15	15	100	15	100
	Diesel Range Organics (DRO)	109	111	100	109	100
	Motor Oil Range Organics (MRO)	109	110 [a]	99.1	109	100
	Gasoline Range Organics (GRO)	109	106 [b]	95.5	109	100
VOCs (ug/kg-dry)	1,1 Dichloroethene	109	98 [c,e]	88.3	109	100
	1,2,4-Trichlorobenzene	109	107 [e]	96.4	109	100
	Acetone	109	79 [f]	71.2	109	100
	Methylene chloride	109	19 [f]	17.1	109	100
	Trichloroethene (TCE)	109	105 [c]	94.6	109	100
	All remaining VOC analytes	109	109	100.0	109	100
SVOCs (mg/kg-dry):	2,4-Dinitrotoluene	108	106 [e]	96.4	108	100
	N-Nitrosodi-n-propylamine	108	106 [c]	96.4	108	100
	All remaining SVOC analytes	108	108	100.0	108	100
Metals (mg/kg-dry):	Mercury	108	108	100.0	108	100
	Antimony	108	90 [e]	81.8	108	100
	Arsenic	108	108	100.0	108	100
	Barium	108	108	100.0	108	100
	Beryllium	108	108	100.0	108	100
	Cadmium	108	108	100.0	108	100
	Chromium	108	109 [d]	99.1	108	100
	Cobalt	108	108	100.0	108	100
	Cyanide	108	106 [e]	96.4	108	100
	Lead	108	109 [d]	99.1	108	100
	Nickel	108	108	100.0	108	100
	Selenium	108	103 [c]	93.6	108	100
	Silver	108	108	100.0	108	100
	Vanadium	108	108	100.0	108	100
	Zinc	108	109 [d]	99.1	108	100

Notes:
Number of samples used in completeness calculations includes field duplicates but does not include equipment rinsate, field, or trip blanks.
Percent Contractural Compliance = (number of contract compliant results / Number of reported results)*100
Percent Technial Compliance = (Number of usable results / Number of reported results) * 100
a = Qualified due to low surrogate recoveries
b = Qualified due to high surrogate recoveries
c = Qualified due to low LCS recovery
d = Qualified due to high field duplicate relative percent difference.
e = Qualified due to low MS/MSD recovery
f = Qualified due to potential laboratory contamination.

Appendix I

TPH Screening Level Calculations and Laboratory Chromatograms

Equation 1
Combined Exposures to Noncarcinogenic Contaminants in Soil
Residential Scenario

$$C = \frac{THQ \times BW_c \times AT_n}{EF_r \times ED_c \left[\left(\frac{1}{RfD_o} \times \frac{IRS_c}{10^6\,mg/kg} \right) + \left(\frac{1}{RfD_o} \times \frac{SA_c \times AF_c \times ABS}{10^6\,mg/kg} \right) + \left(\frac{1}{RFD_i} \times \frac{IRA_c}{VF_s + PEF} \right) \right]}$$

Parameter	Definition (units)	NMED Default	TPH C11-C21 Aromatics
C	Contaminant concentration (mg/kg)	--	**1.83E+03**
THQ	Target hazard quotient	1	1
BW_c	Body weight, child (kg)	15	15
AT_n	Averaging time, noncarcinogens, ED x 365 (days)	2190	2190
EF_t	Exposure frequency, resident (days/yr)	350	350
ED_c	Exposure duration, child (yr)	6	6
IRS_c	Soil ingestion rate, child (mg/day)	200	200
RfDo	Oral reference dose (mg/kg-day)	--	**0.03**
SA_c	Dermal surface area, child (cm^2/day)	2800	2800
AF_c	Soil adherance factor, child (mg/cm^2)	0.2	0.2
ABS	Skin absorbtion factor (unitless)	--	**0.1**
IRA_c	Inhalation rate, child (m^3/day)	10	10
RfDi	Inhalation reference dose (mg/kg-day)	--	**0.05**
VFs	Volatilization factor, Equation 14 (mg^3/kg)	--	**8.10E+04**
PEF	Particulate emission factor, Equation 16 (m^3/kg)	--	**6.61E+09**

Ingestion	Dermal	Inhalation
2346.428571	8380.102041	5.17E+08

Equations and Default values from New Mexico Enviroment Department's Technical Background Document for Development of Soil Screening Levels, Revisions 5.0, August 2009

Toxicity factors from Massachusetts Department of Environmental Protection Masschusetts Contingency Plan Standards Spreadsheets 2009 (**bolded values**)

Equation 9
Combined Exposures to Noncarcinogenic Contaminants in Soil
Non-Residential Scenario - Commercial/Industrial Scenario

$$C = \frac{THQ \times AT_N \times BW_A}{EF_{CI} \times ED_{CI}\left[\left(\frac{IR_{CI}}{RfD_o \times 10^6}\right) + \left(\frac{SA_{CI} \times AF_{CI} \times ABS}{RfD_o \times 10^6}\right) + \left(\frac{ET_{CI}}{RFC \times (VF + PEF)}\right)\right]}$$

Parameter	Definition (units)	NMED Default	TPH C11-C21 Aromatics
C	Contaminant concentration (mg/kg)	--	**2.05E+04**
THQ	Target hazard quotient	1	1
BW_a	Body weight, adult(kg)	70	70
AT_n	Averaging time, noncarcinogens, ED x 365 (days)	9125	9125
EF_{CI}	Exposure frequency, commercial/industrial (days/yr)	225	225
ED_{CI}	Exposure duration, commercial/industrial(yr)	25	25
IR_{CI}	Soil ingestion rate, commercial/industrial (mg/day)	100	100
RfDo	Oral reference dose (mg/kg-day)	--	**0.03**
SA_{CI}	Dermal surface area, commercial/industial (cm^2/day)	3300	3300
AF_{CI}	Soil adherance factor, commercial/industrial (mg/cm^2)	0.2	0.2
ABS	Skin absorbtion factor (unitless)	--	**0.1**
ET_{CI}	Exposure time (8 hrs/day per 1 day/24 hr)	0.33	0.33
RfC	Reference concentration (mg/m^3)	--	**0.33**
VFs	Volatilization factor, Equation 14 (mg^3/kg)	--	**8.10E+04**
PEF	Particulate emission factor, Equation 16 (m^3/kg)	--	**6.61E+09**

Ingestion	Dermal	Inhalation
34066.66667	51616.16162	7.51E+11

Equations and Default values from New Mexico Enviroment Department's Technical Background Document for Development of Soil Screening Levels, Revisions 5.0, August 2009

Toxicity factors from Massachusetts Department of Environmental Protection Masschusetts Contingency Plan Standards Spreadsheets 2009 (**bolded values**)

Equation 11
Combined Exposures to Noncarcinogenic Contaminants in Soil
Non-Residential Scenario - Construction Worker Scenario

$$C = \frac{THQ \times AT_N \times BW_A}{EF_{CW} \times ED_{CW}\left[\left(\frac{IR_{CW}}{RfD_o \times 10^6}\right)+\left(\frac{SA_{CW} \times AF_{CW} \times ABS}{RfD_o \times 10^6}\right)+\left(\frac{ET_{CW}}{RFC \times (VF+PEF)}\right)\right]}$$

Parameter	Definition (units)	NMED Default	TPH C11-C21 Aromatics
C	Contaminant concentration (mg/kg)	--	**7.15E+03**
THQ	Target hazard quotient	1	1
BW_a	Body weight, adult(kg)	70	70
AT_n	Averaging time, noncarcinogens, ED x 365 (days)	365	365
EF_{CW}	Exposure frequency, commercial/industrial (days/yr)	250	250
ED_{CW}	Exposure duration, commercial/industrial(yr)	1	1
IR_{CW}	Soil ingestion rate, commercial/industrial (mg/day)	330	330
RfDo	Oral reference dose (mg/kg-day)	--	**0.03**
SA_{CW}	Dermal surface area, commercial/industial (cm^2/day)	3300	3300
AF_{CW}	Soil adherance factor, commercial/industrial (mg/cm^2)	0.3	0.3
ABS	Skin absorbtion factor (unitless)	--	**0.1**
ET_{CW}	Exposure time (8 hrs/day per 1 day/24 hr)	0.33	0.33
RfC	Reference concentration (mg/m^3)	--	**0.33**
VFs	Volatilization factor, Equation 14 (mg^3/kg)	--	**8.10E+04**
PEF	Particulate emission factor, Equation 16 (m^3/kg)	--	**6.61E+09**

Ingestion	Dermal	Inhalation
9290.9091	30969.7	6.76E+11

Equations and Default values from New Mexico Enviroment Department's Technical Background
Toxicity factors from Massachusetts Department of Environmental Protection Masschusetts

Equation 14

Derivation of the Volatilization Factor for Residential and Commercial/Industrial Scenarios

$$VF_s = \frac{Q/C_{col} \times (3.14 \times D_A \times T)^{0.5} \times 10^{-4}}{(2 \times \rho_b \times D_A)}$$

$$D_A = \frac{\left[\dfrac{\Theta_a^{10/3} D_a H' + \Theta_w^{10/3} D_w}{n^2}\right]}{\rho_b K_d + \Theta_w + \Theta_a H'}$$

Parameter	Definition (units)	NMED Default	TPH C11-C21 Aromatics
VF_s	Volatilization factor for soil (m^3/kg)	--	**8.10E+04**
D_A	Apparent diffusivity (cm^2/s)	--	**2.35E-06**
Q/C_{vol}	Inverse of mean concentration at the center of a 0.5 acre square source (g/m^2-s per kg/m^3)	68.18	68.18
T	Exposure interval (s)	9.5E+08	9.50E+08
ρb	Dry bulk soil density (g/cm^3)	1.5	1.5
n	Total soil porosity 1-(ρb/ρs)	0.43	0.43
Θa	Air-filled soil porosity (n-Θ_w)	0.17	0.17
Θw	Water-filled soil porosity	0.26	0.26
ρs	Soil particle density (g/cm^3)	2.65	2.65
D_a	Diffusivity in air (cm^2/s)	--	**0.06**
H'	Dimensionless Henry's Law Constant	--	**0.03**
D_w	Diffusivity in water (cm^2/s)	--	**1.00E-05**
K_d	Soil-water partition coefficient (cm^3/g) = K_{oc} x f_{oc} (organics)	--	**7.518**
K_{oc}	Soil organic carbon partition coefficient (cm^3/g)	--	**5012**
f_{oc}	Fraction organic carbon in soil (g/g)	0.0015	0.0015

Equations and Default values from New Mexico Enviroment Department's Technical Background Document for Development of Soil Screening Levels, Revisions 5.0, August 2009
Physical and chemical properties from Massachusetts Department of Environmental Protection Masschusetts Contingency Plan Standards Spreadsheets 2009 (**bolded values**)

Equation 16
Derivation of the Particulate Emission Factor
Residential and Commercial/Industrial Scenarios

$$PEF = Q / C_{wind} \times \frac{3{,}600\ \text{sec}/hr}{0.036 \times (1 - V) \times \left(\frac{U_m}{U_t}\right)^3 \times F(x)}$$

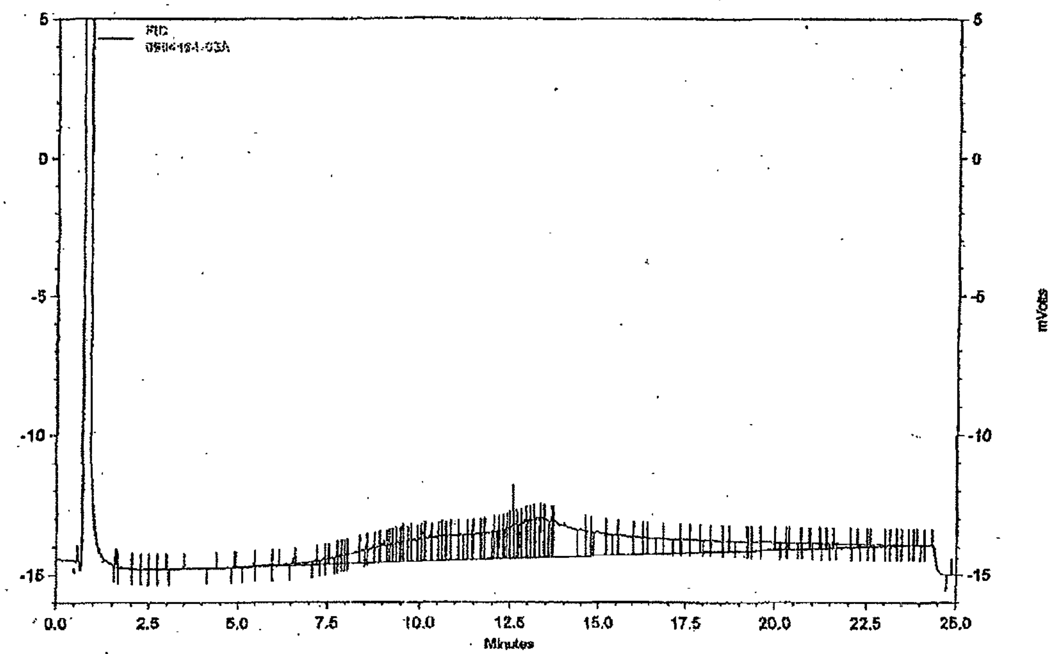
Parameter	Definition (units)	Default
PEF	Particulate emission factor (m^3/kg)	**6.61E+09**
Q/Cwind	Inverse of mean concentration at center of 0.5 acre square source (g/m^2-sec per kg/m^3)	81.85
V	Fraction of vegetative cover (unitless)	0.5
Um	Mean annual windspeed (m/s)	4.02
Ut	Equivalent threshold value of windspeed at 7 m (m/s)	11.32
F(x)	Function dependent on Um/Ut using Cowherd at al. 1985 (unitless)	0.0553

Equations and Default values from New Mexico Enviroment Department's Technical Background Document for Development of Soil Screening Levels, Revisions 5.0, August 2009

50

Instument: GC-17A FID#2 (Offline) Vial #: 51 User: System
Sample ID: 0904194-03A Data Descritpion: 20x Dilution

Method: H:\EZsemi\8015dro\Data 2008\Methods\FID #2\DRO FID #2 090319.met
File: H:\EZsemi\8015dro\Data 2008\Data\090417F\0904194-03A 04-18-09 8-15-07 AM.dat
Aquired: 04/18/09 8:25:01 AM



FID Results

Name	Retention Time	Area	ug/ml
DRO		165556	53.102
MRO		238876	35.997
DNOP		8372	~~2.263~~

DNOP Not Recovered Due To Dilution

Analyst ____

Reviewed By ____

Single Point From 200ppm Motor Oil

DRO → 50.5

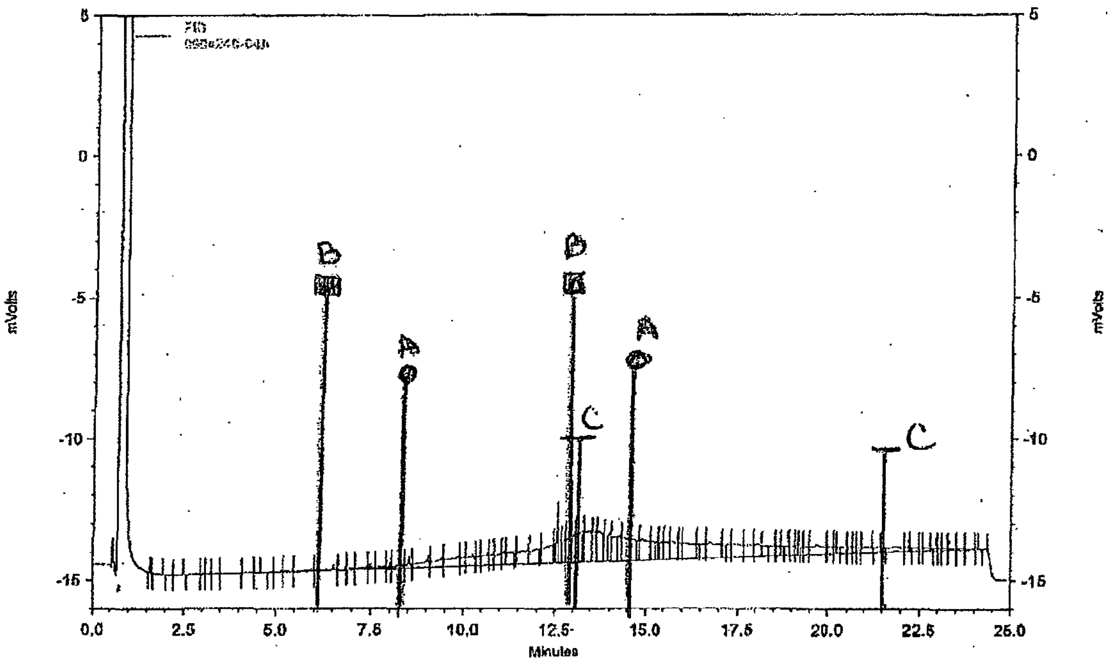
MRO → 62.12

Sample: AOC 22-16 (1.5-2.0') — DRO

54

Instument: **GC-17A FID#2 (Offline)** Vial #: **86** User: **System**
Sample ID: **0904240-04A** Data Descritpion: **20x Dilution**

Method: H:\EZsemi\8015dro\Data 2008\Methods\FID #2\DRO FID #2 090319.met
File: H:\EZsemi\8015dro\Data 2008\Data\0904240-04A 04-19-09 4-43-56 AM.dat
Aquired: 04/19/09 4:53:51 AM



FID Results

Name	Retention Time	Area	ug/ml
DRO		66985	23.783
MRO		204658	30.620
DNOP		5118	~~1.418~~

Sample: A = >50%
B = 40%
C = >50%

DNOP Not Recovered Due to Dilution

Analyst SC

Reviewed By

Single Point From 200ppm Motor Oil
DRO → 20.43
MRO → 53.22

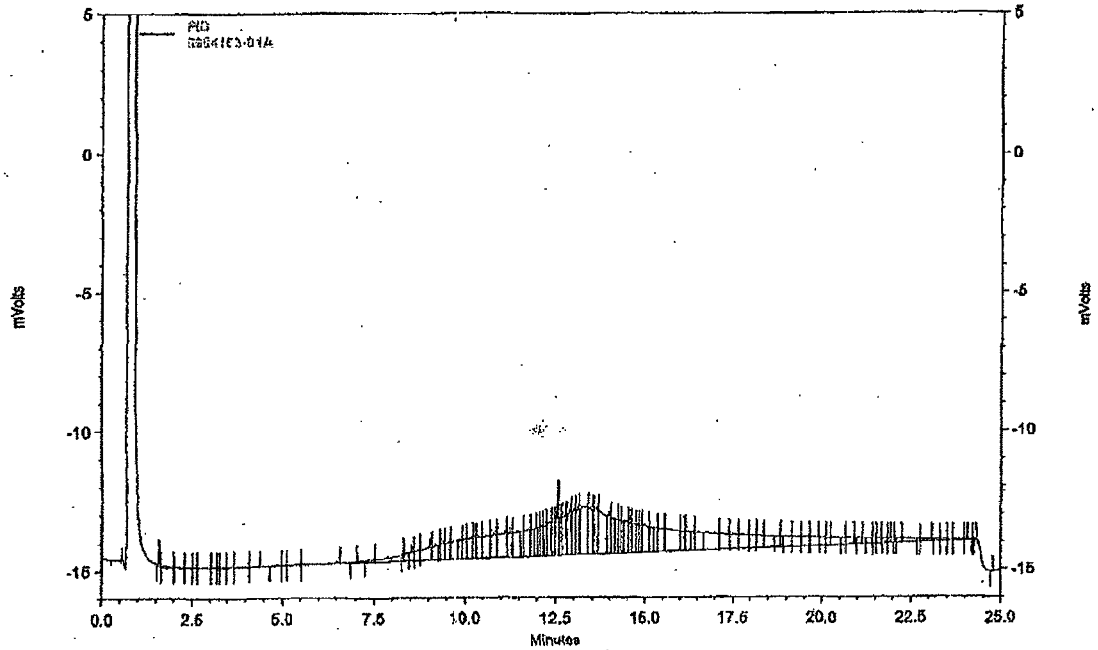
Lab Report: 0904240-04
Sample ID: AOC 22-11 (1.5-2.

(74)

Instument: **GC-17A FID#2 (Offline)** Vial #: **75** User: **System**
Sample ID: **0904153-01A** Data Descritpion: **20x Dilution**

Method: H:\EZsemi\8015dro\Data 2008\Methods\FID #2\DRO FID #2 090319.met
File: H:\EZsemi\8015dro\Data 2008\Data\0904153-01A 04-12-09 10-03-52 AM.dat
Aquired: 04/12/09 10:13:47 AM

DRO



FID Results

Name	Retention Time	Area	ug/ml
DRO		121867	40.132
MRO		291208	43.651
DNOP		8324	~~2.254~~

DNOP Not Recovered Due to Dilution

Analyst SC

Reviewed By JK

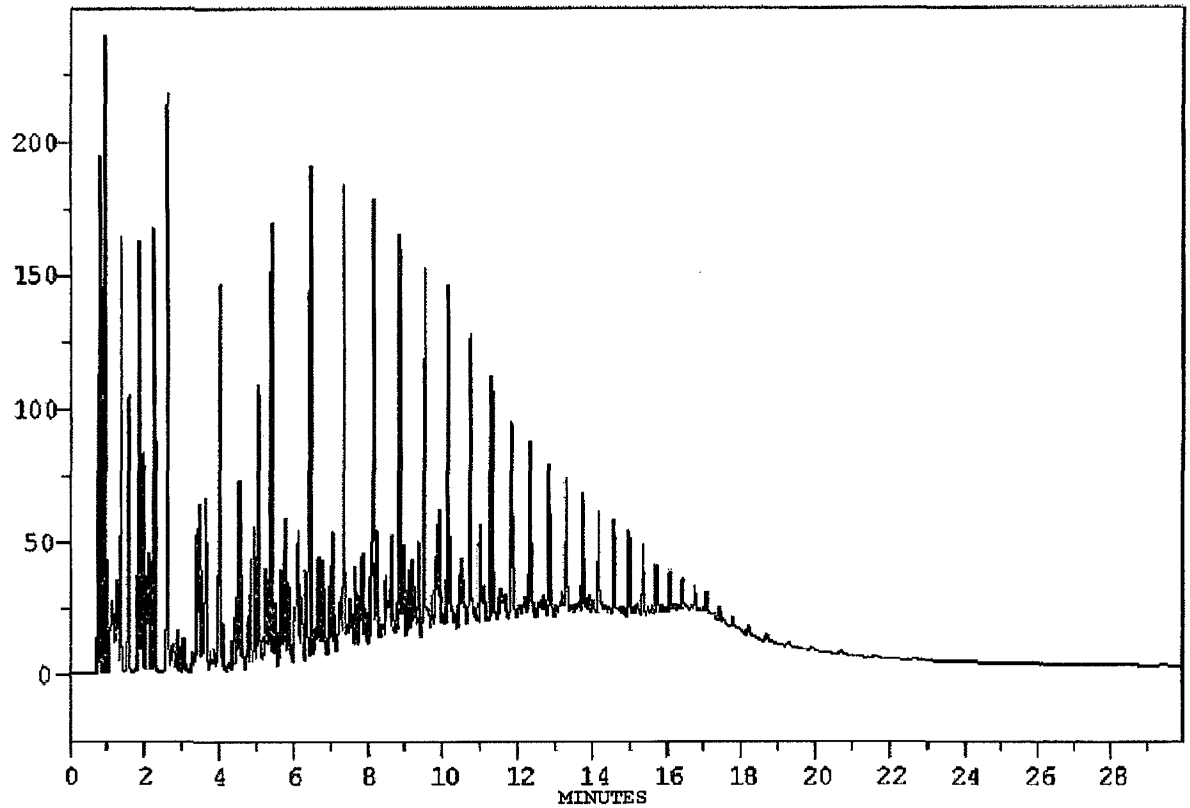
Single Point From
200ppm Motor Oil
DRO → 33.39
MRO → 88.55

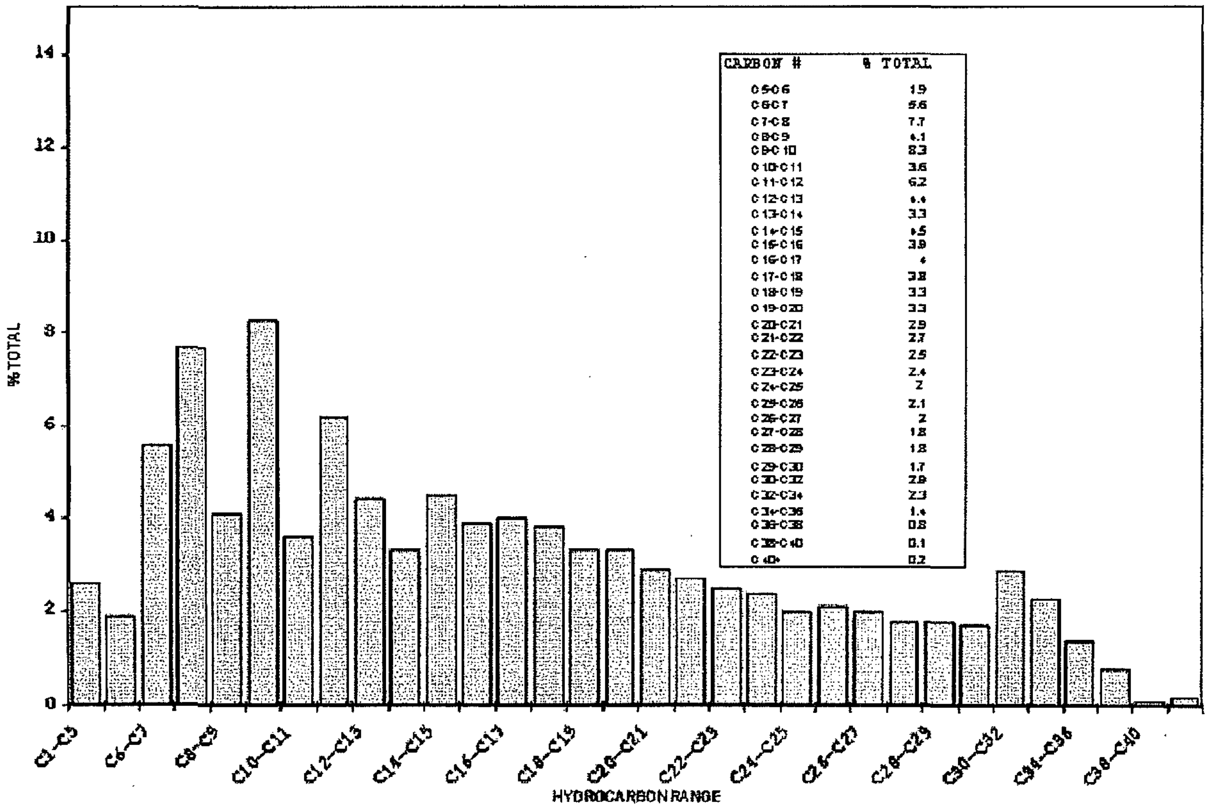
Sample: AOC 22-14(1.5-2.0')

Report: 0904153

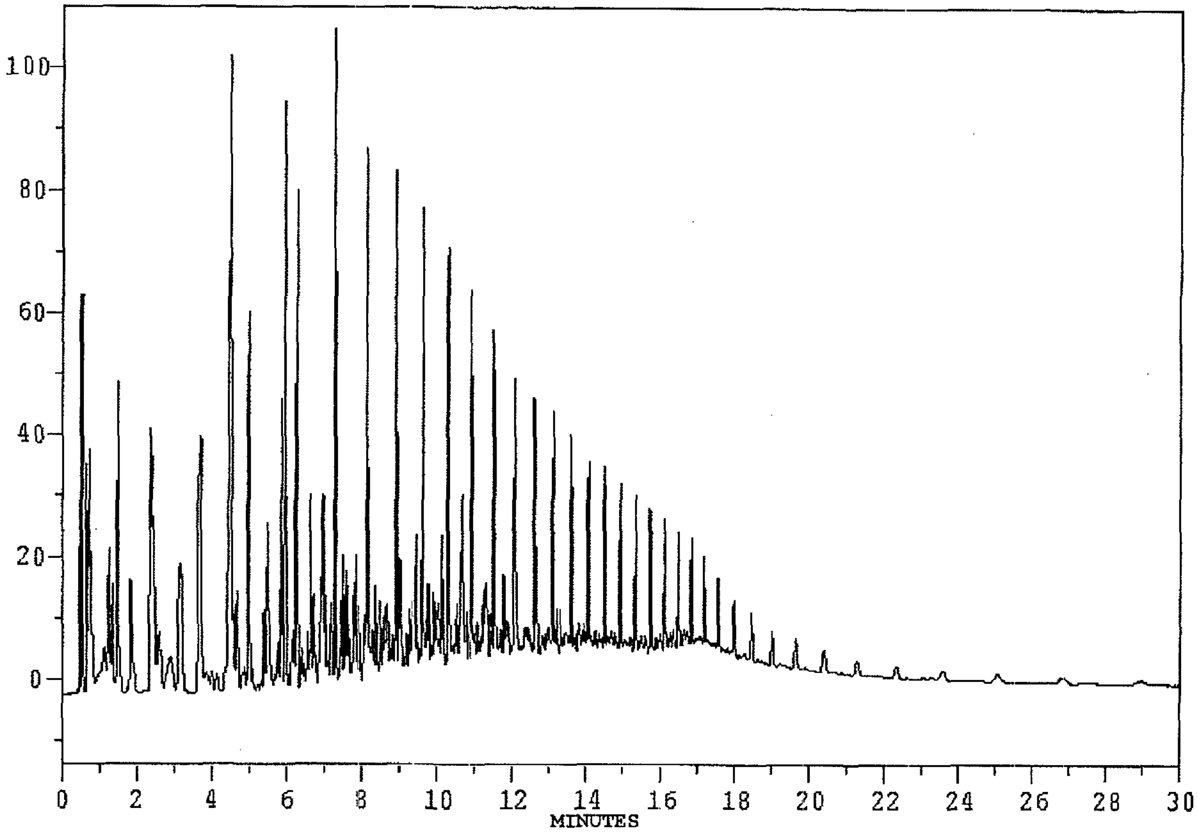
(57)

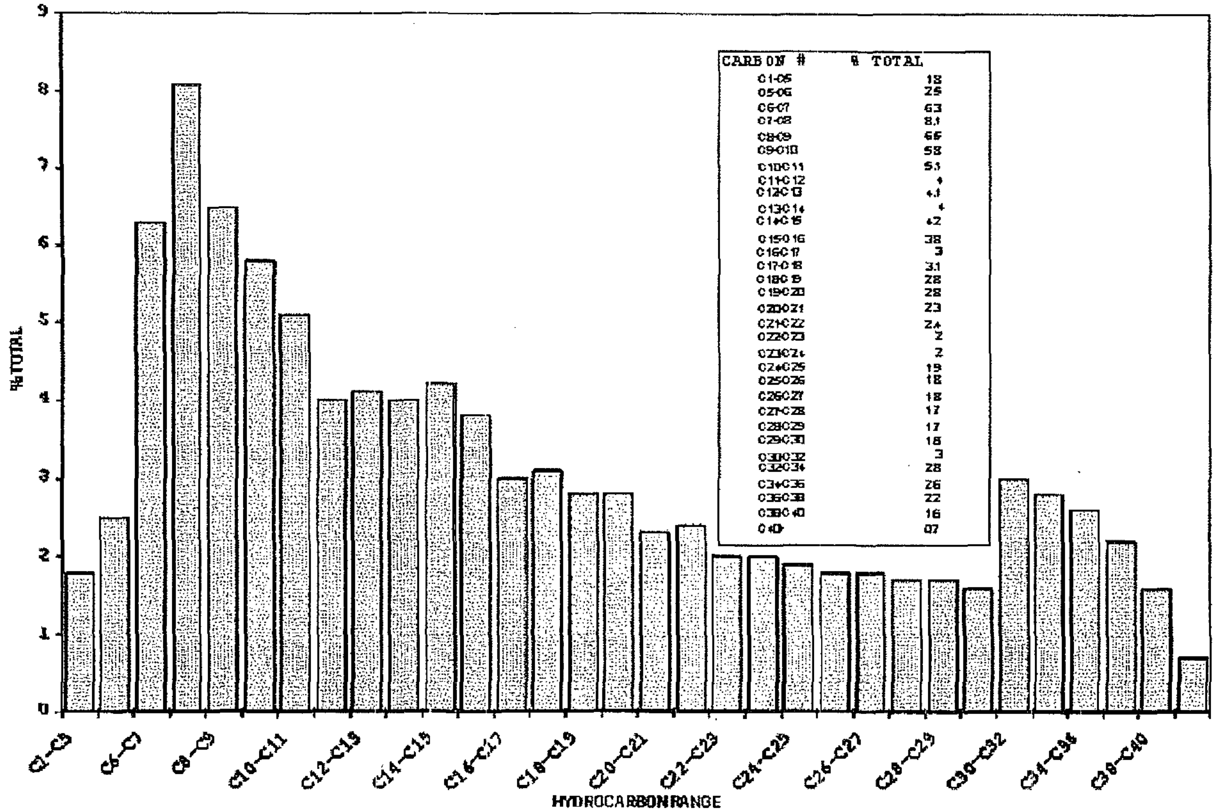
CRUDE OIL SUSSEX FORMATION CAMPBELL CO., WY



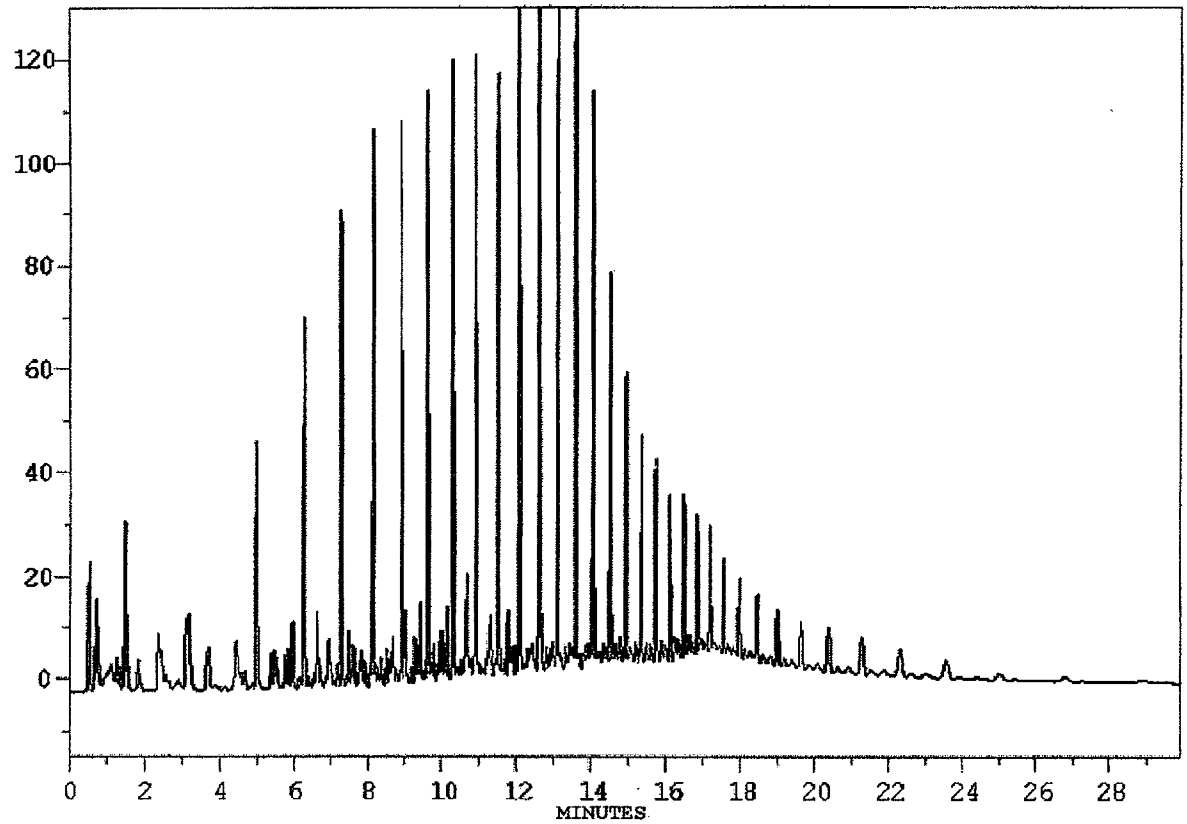


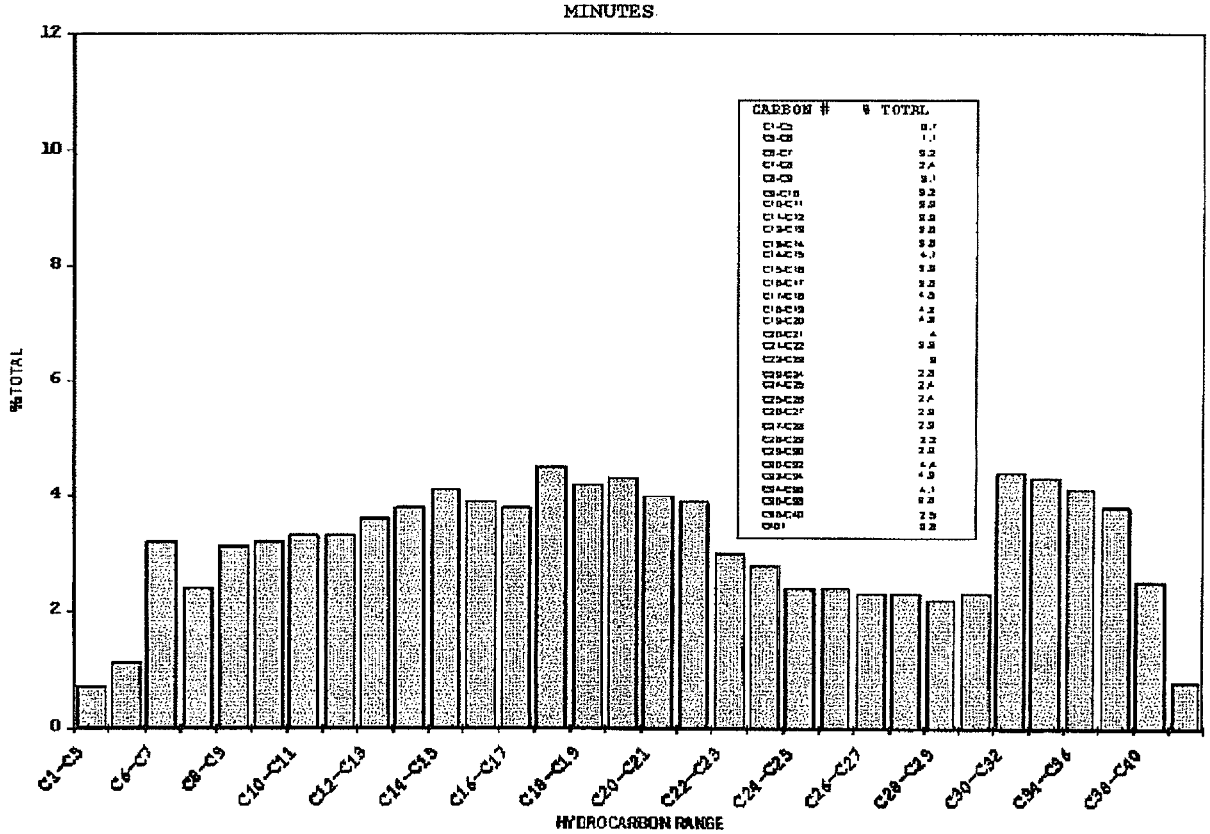
CRUDE OIL MISSION CANYON FORMATION
BILLINGS CO., ND

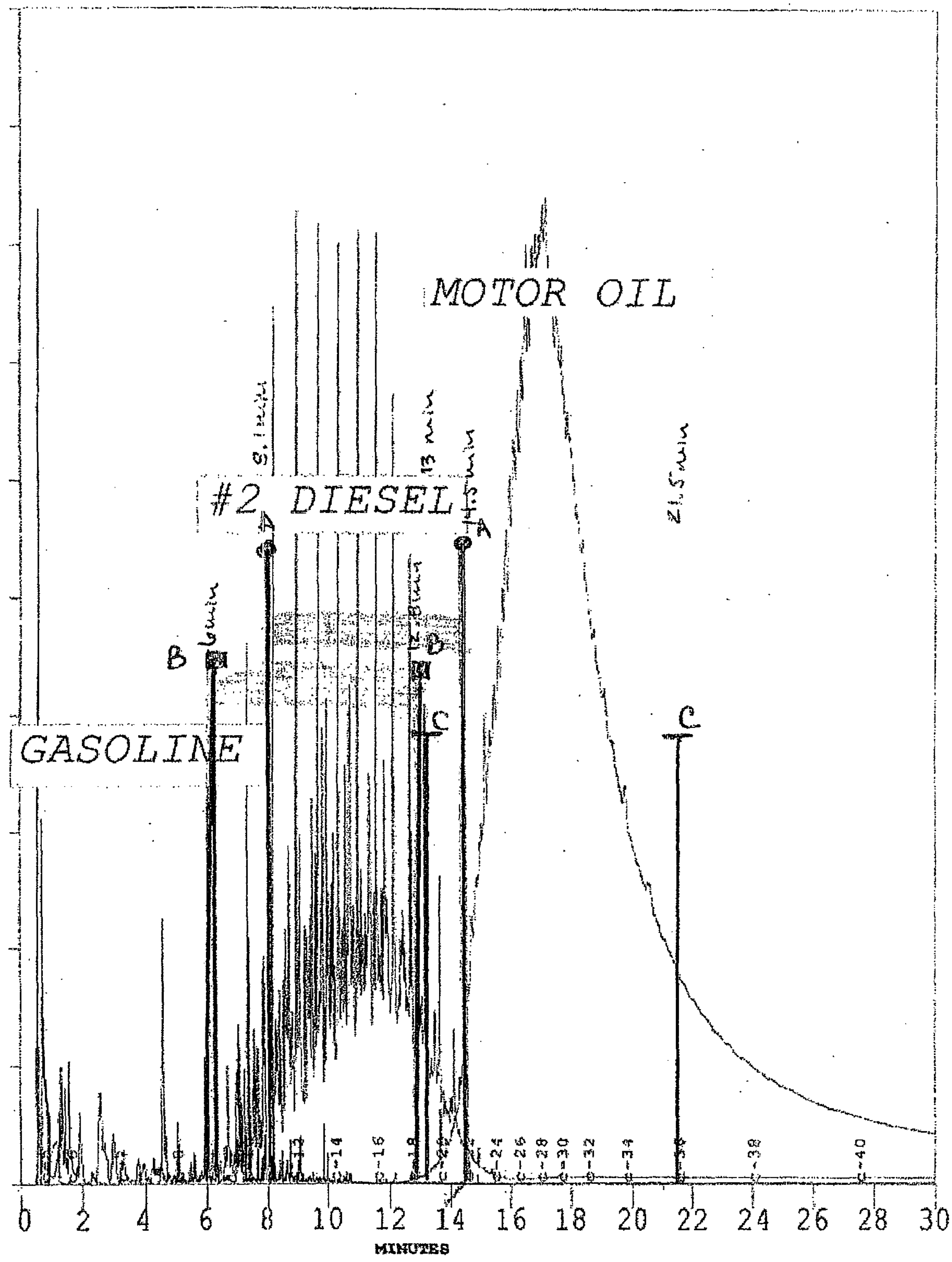




CRUDE OIL TYLER FORMATION BILLINGS CO., ND






MOTOR OIL
#2 DIESEL
GASOLINE
A
B
C
6 min
8.1 min
13 min
14.5 min
12.8 min
21.5 min
C-14
C-16
C-18
C-20
C-24
C-26
C-28
C-30
C-32
C-34
C-36
C-38
C-40
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
MINUTES