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Governor

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NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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DAVE MARTIN
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RAJ SOLOMON, P.E.
Deputy Secretary

ENTERED

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 20, 2011

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

RE: APPROVAL
FINAL CLOSURE PLAN NORTH AND SOUTH AERATION LAGOONS
WESTERN REFINING SOUTHWEST, INC., BLOOMFIELD REFINERY
EPA ID # NMD089416416
HWB-WRB-10-007

Dear Mr. Schmaltz:

The New Mexico Environment Department (NMED) has reviewed Western Refining Southwest, Inc., Bloomfield Refinery (Western) *Final Closure Plan North and South Aeration Lagoons* (Closure Plan), revised January 2011. NMED hereby issues this Approval.

NMED issued a draft Closure Plan on March 29, 2011 announcing a 30-day public comment period for public review of the draft Closure Plan. The following table summarizes the comments received and contains NMED's response to each comment. Enclosed is a copy of the final Closure Plan that includes all modifications made based on the comments. The approved Closure Plan may also be viewed on the NMED website at:
http://www.nmenv.state.nm.us/hwb/grcbperm.html

If you have any questions regarding this Approval, please contact Hope Petrie of my staff at (505) 476-6045.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

JEK:hm

cc: D. Cobrain, NMED HWB
C. Chavez, OCD
K. Robinson, Western
A. Hains, Western
File: HWB-WRB-10-007 and Reading 2011

WESTERN REFINING SOUTHWEST, INC., BLOOMFIELD REFINERY COMMENTS ON THE FINAL CLOSURE PLAN NORTH AND SOUTH AERATION LAGOONS Summary and Response				
Comment Number	**TOPIC AREA OR CLOSUER PLAN LOCATION**	**COMMENT SUMMARY**	**NMED RESPONSE TO COMMENT**	**CHANGE MADE TO CLOSURE PLAN Yes/No**
1	Closure Plan	It is not anticipated that significant impacts to wildlife or sensitive habitats will result from closure of the Aeration Lagoons. A list of species of concern in San Juan County was provided.	Closure of the North and South Aeration Lagoon do not pose a threat to the San Juan River or associated species of concern.	No
2	General	The Closure Plan should reference closure certification, a closure report, and a survey plat.	Section 4.4 of the Closure Plan has been modified to state *Upon completing closure of the Aeration Lagoons, Western must submit a Closure Report. The Closure Report must be submitted to NMED within 60 days of completing closure. Western may include the required Closure Certification (40 CFR 265.115) and a Survey Plat (40 CFR 265.116) as an appendix to the Closure Report. For clarification, the Closure Report is different from Closure Certification. The Closure Report describes all closure activities completed during closure in accordance with the specifications of the Closure Plan. Closure Certification is a letter that certifies that the hazardous waste management unit has been closed in accordance with the specifications in the approved closure plan as required by 40 CFR 265.115.*	Yes

WESTERN REFINING SOUTHWEST, INC., BLOOMFIELD REFINERY COMMENTS ON THE FINAL CLOSURE PLAN NORTH AND SOUTH AERATION LAGOONS Summary and Response				
Comment Number	**TOPIC AREA OR CLOSUER PLAN LOCATION**	**COMMENT SUMMARY**	**NMED RESPONSE TO COMMENT**	**CHANGE MADE TO CLOSURE PLAN Yes/No**
3	Section 4.1.1 and 4.1.2	Any waste removed from beneath the ponds will be sent to the San Juan County Regional Landfill as special waste as long as it is non-hazardous. OCD discharge requirements for approval of the special waste to the San Juan Regional Landfill as Special Wastes are listed under 19.15.35.8 [Disposal of Certain Non-Domestic Waste at Solid Waste Facilities].	Appendix B (Management of Investigation Derived Waste) of the Closure Plan has been modified to state *Western must comply with OCD requirements for management of special waste found in 19.15.25.8 Disposal of Certain Non-Domestic Waste at Solid Waste Facilities, as applicable.*	Yes
4	Appendix C (Closure Cost Estimate)	While the Closure Plan does not limit the excavation depth of impacted soils to any specific depth, it is necessary to assume a specific excavation depth for development of the cost estimate. A depth of two feet was used based on available site-specific information provided with the comment.	Justification for the two foot excavation depth included in the cost estimate was provided.	No

Final Closure Plan
North and South Aeration Lagoons
Bloomfield Refinery

Regulated Unit EPA ID# NMD089416416
HWB-GRCB-10-007

Western Refining Southwest, Inc.
Bloomfield Refinery
Bloomfield, New Mexico

May 2010
(Revised January 2011)

James R. Schmaltz
Environmental Manager

Scott T. Crouch, P.G.
Senior Consultant
RPS

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Section 1
Introduction

The Bloomfield Refinery is located immediately south of Bloomfield, New Mexico in San Juan County. The physical location address is #50 Road 4990, Bloomfield, New Mexico 87413. The Bloomfield Refinery is located on approximately 263 acres. The site is located on a bluff approximately 100 feet above the south side of the San Juan River, a perennial river that flows to the west (Figure 1).

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. The town of Bloomfield is located to the north of the refinery, across the San Juan River. U.S. Highway 550 is located approximately one-half mile west of the facility. The topography of the site is generally flat with low-lying areas to the east of the process area.

The Bloomfield Refinery is a crude oil refinery currently owned by San Juan Refining Company and it is operated by Western Refining Southwest, Inc. – Bloomfield Refinery. The Bloomfield Refinery generally processed crude oil from the Four Corners area transported to the facility by pipeline or tanker truck and crude from West Texas transported by pipeline.

The Bloomfield Refinery has an approximate refining capacity of 18,000 barrels per day; however, the refinery suspended petroleum refining operations in November 2009. Various process units operated at the facility, included crude distillation, reforming, fluidized catalytic cracking, sulfur recovery, merox treater, catalytic polymerization and diesel hydrotreating. Products produced at the refinery included gasoline, diesel fuels, jet fuels, kerosene, propane, butane, naphtha, residual fuel, fuel oils and LPG.

This Closure Plan addresses the final closure of the North and South Aeration Lagoons. Historical monitoring data of the effluent from the API Separator, which discharges into the South Aeration Lagoon, indicated that concentrations of benzene above the toxicity characteristic (TC) regulatory threshold of 0.5 milligrams per liter (mg/l) entered the aeration lagoons. Modifications to the wastewater treatment system required that the lagoons be cleaned out to remove all hazardous waste, hazardous constituents, decomposition products, and leachate. These “partial closure” activities were completed in October 2008 through

February 2009 pursuant to the North and South Aeration Lagoons Closure Plan dated May 2008 [approved by the New Mexico Environment Department (NMED) on August 7, 2008]. Final closure of the aeration lagoons will be conducted in accordance with an Enforceable Document (July 27, 2007 NMED Order) and this Final Closure Plan.

Figure 1 Site Location Map

Section 2
Wastewater Treatment Unit Description and Operation

2.1 Environmental Regulatory Activities

All oil refineries produce process wastewater, which today must be managed in accordance with a variety of environmental requirements intended to assure adequate and appropriate protection of public health and the environment. Three federal regulatory programs [the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Safe Drinking Water Act (SDWA)] have major significance for Bloomfield Refinery process wastewater. Two of these federal programs at Bloomfield are directly administered by the State of New Mexico, as it has primacy over the RCRA and SDWA Underground Injection Control (UIC) programs. In addition, there are additional State regulatory programs with varying applicability, including those administered by New Mexico Oil Conservation Division (OCD).

Initially, beginning in 1972 under the CWA regulatory program, EPA promulgated petroleum refinery wastewater management requirements pursuant to the National Pollutant Discharge Elimination System (NPDES) permit program. The principal federal regulations implementing this CWA program as it applies to petroleum refineries are found at 40 C.F.R. Parts 122 and 419. The Bloomfield Refinery, like other oil refineries impacted by 40 C.F.R. Part 419, had implemented a series of process wastewater treatment operations, including primary treatment of wastewaters with an oil/water separator followed by aggressive biological treatment in accordance with 40 CFR §261.31(b)(2). The two ponds where such biological treatment occurred were referred to at the time as the North Oily Water Pond and the South Oily Water Pond.

A second major regulatory program, the RCRA regulations, affecting hazardous waste was promulgated by EPA on November 19, 1980. Initially, these applied only to certain sludges created by petroleum refinery wastewater management, such as API oil/water separator sludge that was listed as K051 hazardous waste. In November 1980, the Bloomfield Refinery operator applied for a Part A permit as a generator and TSD facility as a protective filing for its so-called oily water ponds. It was later determined that they were not disposing of listed hazardous waste on site since D018 wastewater was not part of the 1980 EP toxicity test (it only became regulated after the 1990 TCLP toxicity test was adopted). In 1982 they petitioned for RCRA

reclassification under a generator only status.[1] In 1982/1983, the liquids and sludge were removed from the oily water ponds and disposed of offsite. Impacted soils were also excavated and the ponds were lined. This activity included the placement of a composite liner consisting of a 33% bentonite/soil bottom liner, a French drain system, and a 100 mill high density polyethylene (HDPE) upper liner.

In 1990, a significant revision to these regulations classified most petroleum refinery process wastewater as D018 benzene characteristic hazardous waste, leading the Bloomfield Refinery to submit a Part B RCRA permit application[2] in the mid-1990s and to operate its biological treatment impoundments pursuant to RCRA interim status as a regulated unit. To comply with RCRA interim status, the Bloomfield Refinery upgraded and retrofitted the impoundments with an additional set of RCRA double liners and leak detection/leachate collection system over the liner system that the Bloomfield Refinery had installed in 1982/1983.

In 1992, the listing of F037/F038 sludges by EPA as hazardous wastes effectively mandated a certain level of biological treatment and retention time in the biological treatment impoundments at the Bloomfield Refinery.[3] Thereafter, the aeration-enhanced impoundments were called the North Aeration Lagoon (NAL) or the South Aeration Lagoon (NAL) [also referred to herein as the North Aggressive Biological Treatment (ABT) Units (two impoundments known as NABT-E and NABT-W) and the South ABT Unit] (Figure 2). The compliance strategy employed aggressive biological treatment followed by disposition through evaporation ponds and a Class I underground injection well permitted consistent with the Safe Drinking Water Act UIC program requirements.[4]

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[1] On November 26, 1985, the Bloomfield Refinery agreed to take an on-site landfill [where some of the materials from the 1982 impoundment cleanout had been placed] through RCRA closure. During 1989, these materials were removed and eventually determined by EPA delisting to be non-hazardous for offsite disposal. See, Hazardous Waste Delisting Petition, Petroleum Contaminated Soil, dated April 15, 1991 (ERM-Rocky Mountain, Inc.)

[2] This Part B application submitted in the mid-1990s included a RCRA closure plan for the biological treatment impoundments, as discussed later in this document.

[3] Integral to the operation of the Bloomfield Refinery, as with any oil refinery in the United States, is the operation of an aggressive biological treatment (ABT) unit system for wastewater management, mandated by EPA regulations regarding the listing of certain petroleum refinery wastes (F037/F038) that became effective in May, 1991. EPA regulations, as adopted by NMED, effectively require each petroleum refinery to implement an ABT system to biological treat organics with regulatorily-specified ABT technology to remove organics and eliminate F037/F038 formation. The Bloomfield Refinery has had such advanced organic aeration in place as required since that time, and these EPA-required treatment systems operate as multi-lined ABT wastewater treatment units at Bloomfield, backed up with a double set of leak detection/leachate collection systems, over and above what has been technologically required under EPA regulations.

[4] EPA promulgated regulatory requirements to assure that wastewater managed by UIC disposition not pose a risk to public health and the environment (40 C.F.R. Parts 144-146), but those did not apply at the Bloomfield Refinery until 1994 when Bloomfield installed a Class I UIC well for wastewater management.

As a result of an EPA Consent Agreement and Final Order (CAFO) dated May 18, 2006, additional upgrades were made to wastewater treatment operations at the Bloomfield Refinery in the fall of 2007. The upgrades included construction and operation of a benzene stripper/surge tank system that decharacterizes all potentially D018 characteristically hazardous process wastewater prior to further biological treatment in the ABT impoundments. The tank system includes a 10,000 barrel tank to provide surge capacity. As a result, all process wastewater streams, including any contaminated runoff, is decharacterized prior to discharge into the ABT units for aggressive biological treatment.

2.2 ABT Unit Operations

The refinery process wastewater that was generated [approx. 80 gallons per minute (gpm)] at the Bloomfield Refinery prior to suspension of the petroleum refining operations was managed first by treatment in an API oil/water separator, then benzene air strippers to remove the volatile components and the final treatment (biological) in the three ABT impoundments. The impoundments were designed and equipped with aerators sized to prevent F037/F038 waste generation through high rate aeration (i.e., aggressive biological treatment) in accordance with 40 CFR §261.31(b)(2). With the installation of the benzene stripper equipment in October 2007, the wastewater is “decharacterized” below the benzene TC levels prior to discharge into the first (South) ABT unit. The liner system for the ABT units, from top to bottom, includes:

- A 100-mil HDPE top liner;
- A geonet for collecting leaks that drain to sumps (i.e., a low point beneath each ABT Unit liner designed to collect any fluids passing the 100-mil liner), which are equipped with a 6" observation pipe;
- The observation pipes for the South ABT unit are located along the north side of the pond, close to the northeast corner of the pond. The observation pipes for the Northwest ABT unit are located near the northeast corner of the pond and the observation pipes for the Northeast ABT unit are located near the northeast corner of the pond;
- A 60-mil HDPE secondary liner;
- A composite geotextile/geonet with a 4" observation pipe;
- A cement amended sand that was compacted into a 1.5% slope;
- A 100-mil HDPE liner;
- A French drain system, which directs any collected fluids to a central low point; and
- A 6" layer of soil with 33% bentonite mixed into it.

The wastewater discharges from the API separator, passes through the benzene air stripper and into the first (South) ABT unit, which averages 4.4 feet in depth and has a surface area of about 6,652 square feet. The total volume is approximately 216,000 gallons. At 80 gpm, the holding time in the pond was 1.9 days. The South ABT unit is equipped with two, 5-horsepower aerators sized to prevent F037/F038 waste generation through high rate aeration.

Wastewater from the first (South) ABT unit is routed to the second (North) ABT unit through an overflow pipe. The second ABT unit is comprised of two impoundments that are operated together, and are generally referred to together as the North ABT unit. The first of the two impoundments (which can be referred to as North ABT-W as it is the westernmost of the two portions of the North ABT unit) is separated from the second (the second can be referred to as North ABT-E) by a concrete divider. An overflow pipe from the North ABT-W connects to the North ABT-E. The outflow from North ABT-E goes to a sump, where the non-hazardous wastewater can be pumped for final disposition, either in evaporation ponds or into an SDWA Class I permitted non-hazardous UIC well.

The North ABT-W averages 5.5 feet in depth with a surface area of 10,000 square feet. The total volume is approximately 411,500 gallons. The North ABT-W unit is equipped with two (each) 2-horsepower aerators and wastewater retention time (at 80 gpm) was 3.6 days at 80 gpm.

The North ABT-E (the second of the two in the North area) averages 5.7 feet in depth, with a surface area of 8,440 square feet and a volume of approximately 360,000 gallons. The North ABT-E is equipped with two 2-horsepower aerators and wastewater retention time (at 80 gpm) was 3.1 days

The North and South ABT units have been operated with a minimum freeboard of two feet under normal operating conditions. At the lowest points during operation, the South ABT, North ABT-W and North ABT-E have freeboards of 2.97, 2.54 and 3.08 feet respectively. Influent flow into the South ABT unit is limited by the size of the overflow pipe coming from the API separator/wastewater treatment unit system. Operating personnel monitor pond water levels on a daily basis. The only non-controlled inflow is direct rainfall onto the North and South unit areas.

To manage precipitation, outflow from the ABT unit system is routed to a sump, which has an automatic level control pump. Excess water from process areas generated during a 100-year

storm (2.6") is easily handled by this system. The impoundments have 698,000 gallons of additional capacity to the top of the freeboard and the pump can remove 720,000 gallons of water daily. This capacity management total greatly exceeds the 406,000 gallons of water that would be drained from 250,000 square feet of process area. The pump is backed up by two portable diesel backup pumps, which can function in the event of a power outage.

Since termination of the active refining operations, the flow to the ABT units has been reduced to approximately 40 to 60 gpm but this is the only change in operations at the units. The flows now include primarily ground water recovered from the remediation systems, stormwater and wastewater incidental to the continued terminal operations.

2.3 Contingency Plan

In the event of a major failure, the first contingency response is to direct the wastewaters that have not been through the benzene stripping treatment process into the 10,000 barrel surge tank. At a rate of wastewater flow of 60 gpm, that would permit 116 hours of flow to be managed without discharge to the ABT units in the event of a benzene stripper failure. During those 116 hours for repair work, the benzene strippers in most cases could be fixed and returned to operation. In the event the surge tank capacity may be exceeded, it may be possible to make additional surge tank capacity available, depending on other tank usage at the Bloomfield Refinery. Such evaluation would occur if there was a significant likelihood the strippers could not be restored to working order within the 116 hour time frame available for repairs.

Once the benzene strippers are made operational again, wastewaters collected in the surge tank will be appropriately metered back through the wastewater treatment system by being introduced upstream of the API separator consistent with capacity available (in excess of the 40 gpm flow being handled). After the wastewater in the surge tank has been removed, the tank will be inspected to determine if any potentially F037 or F038 listed waste has accumulated. However, it should be noted that since suspension of refining operations, F037 or F038 listed waste should not be present. If residual sludge is present, it will be physically removed from the tank via the manway, and characterized and sent off-site for disposal in accordance with all applicable Hazardous Waste regulations.

Figure 2 Aeration Lagoons Location Map

Section 3
Completed Partial Closure Activities

NMED approved the previous Closure Plan for the North and South Aeration Lagoons (dated May 2008) on August 7, 2008. The previous Closure Plan required the removal of all materials (water and sludge) from within the North and South Aeration Lagoons and decontamination and repairs, as necessary, of the RCRA liner/leachate collection system. The May 2008 Closure Plan was implemented between October 2008 and May 2009. The previously completed closure activities are discussed in detail in the North and South Aeration Lagoons Closure Certification Report dated September 2009 (supplemented via correspondence dated April 20, 2010) and are summarized below.

3.1 Sludge Characterization, Removal, and Disposal

In accordance with the Closure Plan, sixteen sludge samples were collected in a grid pattern from the South ABT unit on October 7, 2008. Five of the first seven sludge samples analyzed exhibited hazardous waste characteristics for benzene, therefore no further testing was conducted and the entire sludge volume (851,930 pounds) in the South ABT unit was removed from the unit via vacuum transport truck and directly shipped offsite as oil-bearing hazardous secondary materials to be recycled (fuels blending).

On October 9, 2008, twenty sludge samples were collected in a grid pattern from the Northwest ABT unit. Analytical results indicated that the sludge did not exhibit any hazardous characteristics. The sludge in the Northwest ABT unit was removed via vacuum truck, mixed with fly ash, transported, and disposed of at the San Juan County Landfill in Aztec, New Mexico. Approximately 2,476,880 pounds of material, including sludge and fly ash, was transported to the landfill.

On October 21, 2008, seven sludge samples were collected in a grid pattern from the Northeast ABT unit. Analytical results indicated that the sludge did not exhibit any hazardous characteristics. The sludge in the Northeast ABT unit was removed via vacuum truck, mixed with fly ash, transported and disposed of at the San Juan County Landfill in Aztec, New Mexico. Approximately 1,998,780 pounds of sludge and fly ash were transported to the landfill.

3.2 Liner Inspection and Repair

After removal of the sludge, the entire top RCRA liner of each lagoon was power washed with water. The wash water was collected via vacuum truck and off-loaded into the API Separator. The South ABT unit was physically inspected in November 2008 by an independent engineer licensed in the State of New Mexico during closure activities. A crack in the plastic weld was discovered at the crossover piping between South ABT unit and the Northwest ABT unit. During the inspection process, personnel also discovered damage to the boot on the lower RCRA liner and pitting and corrosion on the piping that discharges from the South ABT unit into the Northwest ABT unit. Both sections of discharge piping from the South ABT unit into the Northwest and Northeast ABT units were replaced. After the piping was replaced, the liner was repaired inside the South ABT unit and inspected again. There was no accumulation of fluids in the underlying collection system beneath the lower 60-ml RCRA liner to indicate damage to the secondary liner. The South ABT unit was put back in service by November 18, 2008.

The Northwest ABT unit's top RCRA liner was power washed with water after sludge removal. The wash water was collected via vacuum truck and off-loaded into the API Separator. The liner surrounding the new inlet pipe from the South ABT Unit was repaired. Inspection of the upper liner identified small scrapes and gouges that did not penetrate the liner. A reinforcing plastic weld bead was applied to those areas before water was put back in the Northwest ABT unit on December 29, 2009.

After sludge removal, the top RCRA liner of the Northeast ABT unit was power washed with water. The wash water was collected via vacuum truck and off-loaded into the API Separator. Clean out activities were completed January 20, 2009. Inspection of the upper RCRA line revealed a puncture on the north wall of the liner and a cut on the top east side of the upper liner; neither of these penetrations went through the lower liner. The discharge pipe from the Northeast ABT unit to the suction of P-616 (Transfer Pump from the Aeration Lagoon to the Evaporation Ponds) was found to be pitted and corroded and was replaced. The liner was repaired around the new discharge piping as well as around the new transfer piping from the South ABT unit. The repair of the aforementioned puncture and cut in the upper liner was completed February 4, 2009 and the unit was put back into service.

Liner repairs surrounding the piping replacement consisted of cutting out and removing all three liners and the geonet. The liners and geonet were replaced with new material and new boots were created to tie into the piping.

3.3 Flushing of Leachate Collection System

Pursuant to the previous Closure Plan, after repairs to the upper liner of the South ABT unit were completed, the geonet between the upper 100-ml liner and the lower 60-ml liner was flushed with clean water. The flush water was sampled using a bailer in the 6" observation pipe. Analytical results indicated that the flush water did not exhibit any hazardous characteristics. The following individual constituents were detected; benzoic acid, 2,4-dimethylphenol, benzene, toluene, methyl tert-butyl ether, 1,3,5-trimethylbenzene, acetone, 2-butanone, xylenes, barium, and selenium. The laboratory analytical report for this sample (#1 AL Flush Water) is included in Appendix A. The flush water was removed from underneath the upper liner via vacuum truck through the 6" observation pipe and off-loaded at the API Separator.

An inspection of the upper liner in the Northwest ABT unit did not reveal any penetrations of the liner. As there were no indications of impacts to the upper liner, the leachate collection system was not flushed with water.

As discussed above, inspection of the Northeast ABT unit revealed a puncture on the north wall of the upper liner and a cut on the top east side of the upper liner. In addition, spongy conditions were observed under the upper liner in the northeast section. This observation prompted sampling and analysis of the water between the upper 100-ml liner and the lower 60-ml liner. The water was sampled through a new incision placed in the liner. Analytical results indicate that the water did not exhibit any hazardous characteristics, thus the leachate collection system was not flushed. The following individual constituents were detected; aniline, 2,4-dimethylphenol, 2-methylphenol, 3+4-methylphenol, phenol, benzene, toluene, ethylbenzene, methyl tert-butyl ether, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methlynaphthlene, 2-methlynaphthalene, acetone, 2-butanone, xylenes, barium, chromium, lead, and silver. The laboratory analytical report for this sample (#3 AL Liner Water) is included in Appendix A. The water was removed from underneath the upper liner via vacuum truck through two new incisions placed in the liner and off-loaded at the API Separator. There was no accumulation of fluids in the underlying collection system beneath the 60-ml liner to indicate damage to the RCRA liner. The incisions were repaired along with the other repairs of the liner.

Section 4
ABT Unit Final Closure

This Final Closure Plan sets forth the activities that will be conducted to achieve final closure of the ABT units at the Bloomfield Refinery. These activities will be conducted in compliance with the requirements of the NMED Order dated July 27, 2007 (also referred to as the Enforceable Document) in addition to the applicable closure standards in 40 CFR Part 265.

The applicable closure standard for the North and South ABT Units is provided in 40 CFR §265.111 (Closure Performance Standard), which requires that the owner or operator must close the facility in a manner that:

> (a) Minimizes the need for further maintenance, and
>
> (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.

The objective of this scope of services is to reach complete closure of the units. The final closure activities are designed to meet the surface impoundment closure requirements of 40 CFR §265.228 (a)(1) – Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste unless §261.3(d) of the chapter applies.

It is unlikely that the units will contain hazardous waste because of recent upgrades to the wastewater treatment operations discussed above in Section 2.1 and the partial closure activities that removed all hazardous waste from the ABT units as described above in Section 3. Regardless, all waste materials managed during closure will be tested to determine if they are characteristically hazardous in accordance with 40 CFR 261, Subpart C – Characteristics of Hazardous Waste.

4.1 ABT Units Closure Procedures

The steps described below will be implemented to achieve “clean closure” pursuant to 40 CFR §265.228(a)(1). The closure will begin by removing all liquids from the units using the current authorized wastewater treatment and discharge system. It is likely that only a small volume of

sludge/sediment will be present in the units at final closure, based on the fact that the units were completely cleaned out in late 2008 through early 2009 in order to remove all hazardous wastes, hazardous constituents, decomposition products, and leachate. Final closure for the three impoundments will be completed by implementing the steps discussed below.

4.1.1 Sludge/Sediment Removal

The sludge/sediment that remains in the ABT units above the top liner after removal of the free liquids will be allowed to dry for up to four weeks. If necessary, mechanical equipment such as a back hoe, track hoe, long-reach excavators, or similar may be used to facilitate physical drying of the sludge/sediment, moving the sludge/sediment to expose saturated portions to ambient air. At the conclusion of these activities, the material will be sampled for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP semi-volatiles (SVOCs), and total volatiles (VOCs). If the material is non-hazardous, then it may be disposed at a landfill permitted by the NMED to accept Special Waste (e.g., the San Juan County Regional Landfill). Western will comply with all waste characterization and acceptance requirements of the receiving disposal facility and waste disposition will be documented in the Closure Report.

Samples of the sludge/sediment will be collected for waste characterization at a minimum of one sample per each 20 cubic yards. If the sludge/sediment does not exhibit any hazardous characteristics, it will be removed from the ABT units by a vacuum truck or other mechanical means (e.g., long-reach track hoe) depending upon the consistency of the material for appropriate disposal. Portland cement or fly ash may be added to improve physical strength and reduce moisture content prior to excavation out of the units. If sludge/sediment exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste.

4.1.2 RCRA Liner Removal

The RCRA liners, which include an upper 100 mil HDPE liner, a geonet, and a lower 60 mil HDPE liner, will be removed and disposed at a landfill permitted by the NMED to accept Special Waste (e.g., the San Juan County Regional Landfill). Any liquids that are present in the leachate collection system will be containerized. The liquid will be sampled and analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of

Hazardous Waste, including reactivity, corrosivity, ignitability, total RCRA metals, SVOCs, and VOCs. If the liquid exhibits hazardous characteristics, then it will be disposed offsite as hazardous waste. If the liquid is non-hazardous, then it may be disposed through the on-site permitted discharge system. Any on-site discharges of non-hazardous liquids via the permitted discharge will be conducted in compliance with all applicable regulations at the time of final closure. The liners and geonet will be cut into manageable sized pieces and then rolled/folded to facilitate loading into trucks/roll-off boxes for transport for off-site disposal. The six-inch observation pipes will be disposed with the liners and geonet.

4.1.3 Non-RCRA Liner/Leachate Collection System Removal

There are a series of liners/leachate collection systems below the RCRA liner system that will be removed for off-site disposal. The uppermost layer beneath the RCRA lower 60 mil liner is a composite geotextile/geonet, which will be cut into manageable pieces and placed into roll-off boxes for off-site disposal. Beneath this composite geotextile/geonet layer is a 6" layer of cement amended sand. The sand layer will be excavated and stockpiled on-site pending waste characterization sampling. Beneath the sand layer is a 100 mil HDPE liner, which will be removed and handled with the previously removed composite geotextile/geonet layer. The lowermost layer consists of approximately 6 inches of bentonite amended soil with a French drain system.

Prior to removal of the French drain system, the soil dike separating the North and South ABT Units will be removed and stockpiled on-site. The French drain system will be checked for the presence of liquids prior to removal. Any liquids that are present will be containerized. The liquid will be sampled and analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste. If the liquid exhibits hazardous characteristics, then it will be disposed offsite as hazardous waste. If the liquid is non-hazardous, then it may be disposed through the facilities on-site permitted discharge. Any on-site discharges of non-hazardous liquids via the permitted discharge will be conducted in compliance with all applicable regulations at the time of final closure. Cement amended sand will be physically removed from the drain system piping and if the liquid present in the drain system is characteristically hazardous, then the piping will be triple rinsed with potable water prior to off-site disposal. The four-inch observation pipe and any ancillary piping associated with the French drain system will be disposed off-site along with the non-RCRA liner. The wash water will be containerized and analyzed for classification prior to disposal.

The cemented amended sand will be sampled for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP SVOCs, and total VOCs. If the material does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the material exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste.

The soil from the dike that separates the North and South ABT Units will be sampled for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, and TCLP SVOCs and will also be analyzed for totals concentrations of the constituents set forth below in Section 4.2.7 to evaluate potential reuse. If all concentrations of constituents are below the applicable NMED residential soil screening levels and all applicable requirements in NMED's Technical Background for Development of Soil Screening Levels, as updated, (e.g., the cumulative target residential risk of lE-05 for carcinogens and hazard index of 1 for noncarcinogens) are met, then the soil may be reused for backfill. If the soil is not suitable to use on-site as backfill and does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the soil exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal off-site as hazardous waste.

4.2 Soil Investigation

The purpose of the soil investigation is to determine if a release of contaminants from the ABT units has occurred and if so, to evaluate the nature and extent of the release. Guidance for Choosing a Sampling Design for Environmental Data Collection (EPA, 2000) was utilized to select the appropriate sampling strategy.

Investigation sample locations will be identified by gridding the bottom of the entire area (i.e., footprint of all three ABT Units) into 50 feet by 50 feet grids (Figure 3). Soil borings will be completed at the approximate center of each grid to a minimum depth of ten feet. If soils appear impacted (e.g., petroleum odor, staining, or elevated organic vapor readings) at ten feet,

then the soil boring(s) will be drilled deeper until the vertical extent of the impact is reached or ground water is encountered, whichever occurs first.

Discrete soil samples will be collected for laboratory analyses from the soil borings at the following intervals:

- 0-6";
- 18-24";
- The lowermost one-foot interval unless boring encounters ground water, in which case a sample will be collected from the six-inch interval at the top of saturation;
- The sample from each soil boring with the greatest apparent degree of contamination, based on field observations and field screening; and
- Any additional intervals as determined based on field screening results.

Shallow (0-6" and 18-24") samples will be collected from around the perimeter of the ABT Units using hand augers or similar manual tools on a 50-foot spacing. The samples will be collected from approximately half way up the sidewall of the ABT Units (Figure 3).

4.2.1 Soil Sample Field Screening and Logging

Samples obtained from the borings will be screened in the field on two foot intervals for evidence of contaminants. Field screening results will be recorded on the exploratory boring logs. Field screening results will be 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 includes examination of soil samples for evidence of staining caused by petroleum-related compounds. Headspace vapor screening targets volatile organic compounds and involves placing a soil sample in a plastic sample bag or a foil sealed container allowing space for ambient air. The container will be sealed and then shaken gently to expose the soil to the air trapped in the container. The sealed container will be allowed to stand for a minimum of 5 minutes while vapors equilibrate. Vapors present within the sample bag's headspace will then be measured by inserting the probe of the VOC screening instrument in a small opening in the bag or through the foil. The maximum value and the ambient air temperature will be recorded on the field boring or test pit log for each sample.

The monitoring instruments will be calibrated each day to the manufacturer's standard for instrument operation. A photo-ionization detector (PID) equipped with a 10.6 or higher electron

volt (eV) lamp or a combustible gas indicator will be used for VOC field screening. All conditions capable of influencing the results of field screening will be recorded on the field logs since field screening results may vary with instrument type, the media screened, weather conditions, moisture content, soil type, and type of contaminant,

The physical characteristics of the samples (such as mineralogy, ASTM soil classification, moisture content, texture, color, presence of stains or odors, and/or field screening results), depth where each sample was obtained, method of sample collection, and other observations will be recorded in the field log by a qualified geologist or engineer. Detailed logs of each boring will be completed in the field by a qualified engineer or geologist. Additional information, such as the presence of water-bearing zones and any unusual or noticeable conditions encountered during drilling, will be recorded on the logs.

Quality Assurance/Quality Control (QA/QC) samples will be collected to monitor the validity of the soil sample collection procedures as follows:

- Field duplicates will be collected at a rate of 10 percent; and
- Equipment blanks will be collected at a frequency of one per day.

4.2.2 Drilling Activities

Soil borings will be drilled using either a hand auger, cone penetrometer (CPT), hollow-stem auger or if necessary, air rotary methods including ODEX. The drilling equipment will be properly decontaminated before drilling each boring.

The NMED will be notified as early as practicable if conditions arise or are encountered that do not allow the advancement of borings to the specified depths or at planned sampling locations. Appropriate actions (e.g., installation of protective surface casing or relocation of borings to a less threatening location) will be taken to minimize any negative impacts from investigative borings. Soil samples will be collected continuously and logged by a qualified geologist or engineer.

Both sample information and visual observations of the cuttings and core samples will be recorded on the boring log. Known site features and/or site survey grid markers will be used as references to locate each boring. The boring locations will be measured to the nearest foot, and locations will be recorded on a scaled site map upon completion of each boring.

4.2.3 Sample Handling

At a minimum, the following procedures will be used at all times when collecting samples during investigation, corrective action, and monitoring activities:

1. Neoprene, nitrile, or other protective gloves will be worn when collecting samples. New disposable gloves will be used to collect each sample;

2. All samples collected of each medium for chemical analysis will be transferred into clean sample containers supplied by the project analytical laboratory with the exception of soil, rock, and sediment samples obtained in Encore® samplers. Sample container volumes and preservation methods will be in accordance with the most recent standard EPA and industry accepted practices for use by accredited analytical laboratories. Sufficient sample volume will be obtained for the laboratory to complete the method-specific QC analyses on a laboratory-batch basis; and

3. Sample labels and documentation will be completed for each sample following procedures discussed below. Immediately after the samples are collected, they will be stored in a cooler with ice or other appropriate storage method until they are delivered to the analytical laboratory. Standard chain-of-custody procedures, as described below, will be followed for all samples collected. All samples will be submitted to the laboratory soon enough to allow the laboratory to conduct the analyses within the method holding times. At a minimum, all samples will be submitted to the laboratory within 48 hours after their collection.

Chain-of-custody and shipment procedures will include the following:

1. Chain-of-custody forms will be completed at the end of each sampling day, prior to the transfer of samples off site.

2. Individual sample containers will be packed to prevent breakage and transported in a sealed cooler with ice or other suitable coolant or other EPA or industry-wide accepted method. The drainage hole at the bottom of the cooler will be sealed and secured in case of sample container leakage. Temperature blanks will be included with each shipping container.

3. Each cooler or other container will be delivered directly to the analytical laboratory.

4. Glass bottles will be separated in the shipping container by cushioning material to prevent breakage.

5. Plastic containers will be protected from possible puncture during shipping using cushioning material.

6. The chain-of-custody form and sample request form will be shipped inside the sealed storage container to be delivered to the laboratory.

7. Chain-of-custody seals will be used to seal the sample-shipping container in conformance with EPA protocol.

8. Signed and dated chain-of-custody seals will be applied to each cooler prior to transport of samples from the site.

9. Upon receipt of the samples at the laboratory, the custody seals will be broken, the chain-of-custody form will be signed as received by the laboratory, and the conditions of the samples will be recorded on the form. The original chain-of-custody form will remain with the laboratory and copies will be returned to the relinquishing party.

10. Copies of all chain-of-custody forms generated as part of sampling activities will be maintained on-site.

4.2.4 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 will be contained and characterized using methods based on the boring location, boring depth, drilling method, and type of contaminants suspected or encountered. All decontamination water will be characterized prior to disposal. If the water is hazardous, then it will be disposed off-site as a hazardous waste. If the water is non-hazardous and can meet all applicable discharge criteria for the on-site permitted discharge, then it may be managed on-site. An IDW management plan is included as Appendix B.

4.2.5 Field Equipment Calibration

Field equipment requiring calibration will be calibrated to known standards, in accordance with the manufacturers' recommended schedules and procedures. At a minimum, calibration checks will be conducted daily, or at other intervals approved by the Department, and the instruments will be recalibrated, if necessary. Calibration measurements will be recorded in the daily field logs. If field equipment becomes inoperable, its use will be discontinued until the necessary repairs are made. In the interim, a properly calibrated replacement instrument will be used.

4.2.6 Documentation of Field Activities

Daily field activities, including observations and field procedures, will be recorded in a field log book. Copies of the completed forms will be maintained in a bound and sequentially numbered field file for reference during field activities. Indelible ink will be used to record all field activities. Photographic documentation of field activities will be performed, as appropriate. The daily record of field activities will include the following:

Site or unit designation;

1. Date;

2. Time of arrival and departure;
3. Field investigation team members including subcontractors and visitors;
4. Weather conditions;
5. Daily activities and times conducted;
6. Observations;
7. Record of samples collected with sample designations and locations specified;
8. Photographic log, as appropriate;
9. Field monitoring data, including health and safety monitoring;
10. Equipment used and calibration records, if appropriate;
11. List of additional data sheets and maps completed;
12. An inventory of the waste generated and the method of storage or disposal; and
13. Signature of personnel completing the field record.

4.2.7 Soil Chemical Analyses

All samples collected for laboratory analysis will be submitted to an accredited laboratory. The laboratory will use the most recent standard EPA and industry-accepted analytical methods for target analytes as the testing methods for each medium sampled. Chemical analyses will be performed in accordance with the most recent EPA standard analytical methodologies and extraction methods.

Soil samples will be analyzed by the following methods:

- SW-846 Method 8260 volatile organic compounds;
- SW-846 Method 8270 semi-volatile organic compounds; and
- SW-846 Method 8015B gasoline range (C5-C10), diesel range (>C10-C28), and motor oil range (>C28-C36) organics.
- Soil samples will also be analyzed for the following Skinner List metals using the indicated analytical methods.

Inorganic 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 335.4/335.2 mod
Lead	SW-846 method 6010/6020

Analyte	Analytical Method
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

4.2.8 Data Quality Objectives

The Data Quality Objectives (DQOs) were developed to ensure that newly collected data are of sufficient quality and quantity to address the projects goals, including Quality Assurance/Quality Control (QA/QC) issues (EPA, 2006). The project goals are established to determine and evaluate the presence, nature, and extent of releases of contaminants from the ABT Units. The type of data required to meet the project goals includes chemical analyses of soil to determine if there has been a release of contaminants. Method detection limits should be 20% or less of the applicable background levels, cleanup standards and screening levels. If the desired method detection limits are not achieved, then an explanation will be included in the Closure Report.

Additional DQOs include precision, accuracy, representativeness, completeness, and comparability. Precision is a measurement of the reproducibility of measurements under a given set of circumstances and is commonly stated in terms of standard deviation or coefficient of variation (EPA, 1987). Precision is also specific to sampling activities and analytical performance. Sampling precision will be evaluated through the analyses of duplicate field samples and laboratory replicates will be utilized to assess laboratory precision.

Accuracy is a measurement in the bias of a measurement system and may include many sources of potential error, including the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, and analysis techniques (EPA, 1987). An evaluation of the accuracy will be performed by reviewing the results of matrix spikes and laboratory QC samples.

Representativeness is an expression of the degree to which the data accurately and precisely represent the true environmental conditions. Sample locations and the number of samples have been selected to ensure the data is representative of actual environmental conditions.

Completeness is defined as the percentage of measurements taken that are actually valid measurements, considering field QA and laboratory QC problems. EPA Contract Laboratory Program (CLP) data has been found to be 80-85% complete on a nationwide basis and this has been extrapolated to indicate that Level III, IV, and V analytical techniques will generate data that are approximately 80% complete (EPA, 1987). As an overall project goal, the completeness goal is 85%; however, some samples may be critical based on location or field screening results and thus a sample –by-sample evaluation will be performed to determine if the completeness goals have been obtained.

Comparability is a qualitative parameter, which expresses the confidence with which one data set can be compared to another. Industry standard sample collection techniques and routine EPA analytical methods will be utilized to help ensure data are comparable to historical and future data. Analytical results will be reported in appropriate units for comparison to historical data and cleanup levels.

4.3 Soil Removal Action

Removal actions will be conducted in the event that there are concentrations of constituents present in soils beneath the ABT Units that exceed the NMED residential soil screening levels. The preferred method to address any such releases from the ABT Units is to remove and dispose the impacted soils at a permitted off-site landfill so as to meet the requirements of 40 CFR§265.228 (a)(1) for clean closure. If the volume or depth of impacted soils is such that a complete removal action is technically impracticable, then a demonstration of impracticability and proposed additional phases of work or post-closure care will be included in the Closure Report.

4.3.1 Soil Excavation

Soil containing concentrations of constituents above the applicable NMED residential screening levels will be excavated for off-site disposal. The soil will be excavated using back hoes, track hoes, long-reach excavators, or similar equipment. The excavated soil will either be stocked piled on poly sheeting within the footprint of the ABT Units or placed directly into roll-off boxes. The soil will be sampled (discrete samples for VOCs) and analyzed for waste characterization at a minimum of one sample per 20 cubic yards. The samples will be analyzed for hazardous characteristics in accordance with 40 CFR Part 261, Subpart C – Characteristics of Hazardous Waste, including reactivity, corrosivity, ignitability, TCLP RCRA metals, TCLP SVOCs, and total

VOCs. If the material does not exhibit any hazardous characteristics, then it will be transported for off-site disposal to a NMED permitted non-hazardous landfill. If the material exhibits hazardous characteristics, then it will be placed into appropriate RCRA containers for disposal offsite as hazardous waste. All materials sent off-site for disposal will meet the requirements of the receiving disposal facility.

4.3.2 Confirmation Sampling

After removal of impacted soils, discrete samples of the underlying soils will be collected along all faces of the excavations with an approximate spacing of 20 feet between sample grid locations. The analyses selected for the confirmation soil samples will be dependent upon the results of investigation soil samples analyzed pursuant to Section 4.2.7. Any constituents that are found to be present in the initial investigation soil samples at concentrations above the NMED residential screening levels will be included in the analyses for the confirmation soil samples. All of the confirmation soil samples will be analyzed for this same list of constituents. The same analytical methods will be used as specified for soils in Section 4.2.7. Sample results will be compared to NMED residential soil screening levels. Locations exhibiting constituent concentrations in excess of NMED residential soil screening levels will be further excavated and the excavated soils will be stockpiled within the footprint of the ABT Units or placed directly into roll-off boxes in anticipation of characterization, transport and off-site disposal. This process will be repeated until impacted soils with concentrations exceeding the NMED residential Soil Screening Levels have been removed from beneath the ABT Units.

4.4 Closure Certification

Upon completing closure of the Aeration Lagoons, Western must submit a Closure Report. The Closure Report must be submitted to NMED within 60 days of completing closure. Western may include the required Closure Certification (40 CFR 265.115) and a Survey Plat (40 CFR 265.116) as an appendix to the Closure Report. For clarification, the Closure Report is different from Closure Certification. The Closure Report describes all closure activities completed during closure in accordance with the specifications of the Closure Plan. Closure Certification is a letter that certifies that the hazardous waste management unit has been closed in accordance with the specifications in the approved closure plan as required by 40 CFR 265.115.

Figure 3 Sample Location Map

Section 5
Construction Schedule

The schedule for closure of three ABT Units is as follows:

Description	Duration
Removal of liquids in ABT Units	1 week
Drying of residual solids	4 weeks
Testing of residual solids	1 week
Removal of RCRA liners	2 weeks
Removal of Non-RCRA lines/leachate collection	3 weeks
Soil Investigation (including analyses)	6 weeks
Soil excavation	8 weeks
Final confirmation sampling and Analyses	4 weeks
Total time required	29 weeks

The current cost of closure for the aeration ABT Units is estimated at $324,800, based on the estimated volumes and other assumptions as detailed in the cost estimate tables presented in Appendix C.

Section 6
References

EPA, 1987, Data Quality Objectives for Remedial Response Activities; United States Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, OSWER Directive 9355.0-7B, 85p

EPA, 2000, Guidance on Choosing a Sampling Design for Environmental Data Collection, EPA/240/R-02/005, EPA QA/G-5S, 168 p.

EPA, 2006, Guidance on Systematic Planning Using the Data Quality Objectives Process, United States Environmental Protection Agency, Office of Environmental Information; EPA/240/B-06/001, p. 111.

Appendix A

Analytical Reports

Appendix B

Management of Investigation Derived Waste

Investigation-Derived Waste Management Plan

All investigation-derived waste (IDW) will be properly characterized and disposed of in accordance with all federal, State, and local rules and regulations for storage, labeling, handling, transport, and disposal of waste. Western must comply with OCD requirements for management of special waste found in 19.15.25.8 Disposal of Certain Non-Domestic Waste at Solid Waste Facilities, as applicable. The IDW may be characterized for disposal based on the known or suspected contaminants potentially present in the waste. It is assumed that there are no listed wastes present in environmental media at any of the planned investigation areas.

A dedicated decontamination area will be setup prior to any sample collection activities. The decontamination pad will be constructed so as to capture and contain all decontamination fluids (e.g., wash water and rinse water) and foreign materials washed off the sampling equipment. The fluids will be pumped directly into suitable storage containers (e.g., labeled 55-gallon drums), which will be located at satellite accumulation areas. The decontamination water will be characterized in accordance with 40 Code of Federal Regulations (CFR) Part 261and if the water is hazardous, then it will be disposed off-site as a hazardous waste. If the water is non-hazardous and can meet all applicable discharge criteria for the on-site permitted discharge, then it may be managed on-site. The solids captured in the decontamination pad will be shoveled into 55-gallon drums and stored at the designated satellite accumulation area pending proper waste characterization for off-site disposal.

Drill cuttings generated during installation of soil borings and monitoring wells will be placed directly into 55-gallon drums and staged in the satellite accumulation area pending results of the waste characterization sampling. The portion of soil cores, which are not retained for analytical testing, will be placed into the same 55-gallon drums used to store the associated drill cuttings.

The solids (e.g., drill cuttings and used soil cores) will be characterized by testing to determine if there are any hazardous characteristics in accordance with 40 Code of Federal Regulations (CFR) Part 261. This includes tests for ignitability, corrosivity, reactivity, and toxicity. If the materials are not characteristically hazardous, then further testing will be performed pursuant to the requirements of the facility to which the materials will be transported. Depending upon the results of analyses for individual investigation soil samples, additional analyses may include TPH and polynuclear aromatic hydrocarbons (PAHs).

Appendix C

Closure Cost Estimate