FIFTH FIVE-YEAR REVIEW REPORT FOR HIGHLANDS ACID PIT SUPERFUND SITE HARRIS COUNTY, TEXAS

May 2018

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2016

Prepared by

U.S. Environmental Protection Agency
Region 6
Dallas, Texas

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FIFTH FIVE-YEAR REVIEW REPORT
HIGHLANDS ACID PIT SUPERFUND SITE
EPA ID#: TXD980514996
HARRIS COUNTY, TEXAS

This memorandum documents the U.S. Environmental Protection Agency's performance, determinations and approval of the Highlands Acid Pit Superfund site (Site) Fifth Five-Year Review (FYR) under Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S. Code Section 9621 (c), as provided in the attached Fifth FYR Report.

Summary of the Fifth Five-Year Review Report

The Site's remedy consisted of excavation of waste and contaminated soil to the approximate groundwater level with off-site disposal and backfilling excavated areas with clean fill. The long-term remedy for groundwater included installation of groundwater monitoring wells and a 30-year monitoring program for groundwater, surface water and sediments. Monitoring is ongoing. EPA drafted a deed notice for the Site in 2007, but the notice was not located on file with Harris County. The Site is not currently in use.

Environmental Indicators

Human Exposure Status: Under Control
Contaminated Groundwater Status: Under Control
Sitewide Ready for Anticipated Use: No

Actions Needed

The following actions must be taken for the remedy to be protective over the long term:

- Collect additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site. Take appropriate measures to ensure protectiveness.
- Revisit and update the draft institutional control instrument to ensure long-term protectiveness (e.g., make sure the institutional control runs with the land, prevents exposure to contaminated groundwater).
- Continue to monitor and evaluate contaminants of concern being detected more frequently in the middle and deep aquifers and determine impacts to long term protectiveness.
- Compare surface water and sediment sample data to ecological benchmarks and to appropriate human health screening values to determine if further study is needed.

Determination

I have determined that the status of the remedy for the Highlands Acid Pit Superfund site is short-term protective. This FYR Report specifies the actions that need to be taken for the remedy to be protective over the long term.

05/24/18

Carl E. Edlund, P.E.
Director, Superfund Division
U.S. Environmental Protection Agency Region 6

Date

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CONCURRENCES

FIFTH FIVE-YEAR REVIEW REPORT
HIGHLANDS ACID PIT SUPERFUND SITE
EPA ID#: TXD980514996
HARRIS COUNTY, TEXAS

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6/23/17
Date

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05/24/18
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ISSUES/RECOMMENDATIONS

FIFTH FIVE-YEAR REVIEW REPORT
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Issues and Recommendations Identified in the Five-Year Review Report:

OU(s): 2	Issue Category: Remedy Performance			
	Issue: Data on the current extent of contaminated groundwater in the upper aquifer is not available.			
	Recommendation: Because of the high benzene concentrations in well UA-12 at the eastern boundary of the Site, collect additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site. Take appropriate measures to ensure protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2020

OU(s): 1, 2	Issue Category: Institutional Controls			
	Issue: No deed notice was recorded on file with Harris County. The draft deed notice contains limited information, which may not provide sufficient protection from source material left in place during excavation and contaminated groundwater.			
	Recommendation: Revisit and update the draft institutional control instrument to ensure long-term protectiveness (e.g., make sure the institutional control runs with the land, prevents exposure to contaminated groundwater).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2019

OU(s): 2	Issue Category: Remedy Performance
	Issue: Arsenic and benzene have been persistently detected in the middle aquifer and periodically detected in the deep aquifer since the previous FYR.
	Recommendation: Continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long term protectiveness.

Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party/Support Agency	Milestone Date
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2019

OU(s): 2	**Issue Category:** Remedy Performance			
	Issue: Perform regular sediment and surface water sampling as part of the Operations and Monitoring (O&M) activities. Surface water and sediment data have not been compared to ecological benchmarks. Local residents are presumed to use the adjacent sand pit area for recreational purposes (swimming and fishing).			
	Recommendation: Compare surface water and sediment sample data to ecological benchmarks, or equivalent, and to appropriate human health screening values to determine if further study is needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2020

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CWA	Clean Water Act
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
HAP	Highlands Acid Pit
IC	Institutional Control
IDW	Investigation-derived Waste
MCL	Maximum Contaminant Level
mg/L	Milligram per Liter
NCP	National Contingency Plan
NPL	National Priorities List
OU	Operable Unit
O&M	Operation and Maintenance
P&A	Plugged and Abandoned
PCL	Protective Concentration Level
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI/FS	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act
TCEQ	Texas Commission on Environmental Quality
TDWR	Texas Department of Water Resource
TRRP	Texas Risk Reduction Program
µg/L	Microgram per Liter
URS	URS Corporation
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound
yd^3	Cubic Yards

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the Fifth FYR for the Highlands Acid Pit Superfund site (the Site). The triggering action for this review was the completion of the fourth five-year review on September 27, 2012. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of two operable units (OUs) that will be addressed in this FYR. OU1 addresses source control of waste and contaminated soil. OU2 addresses contaminated groundwater at the Site and monitoring of surface water and sediment.

The FYR was led by Stephen Pereira, EPA Remedial Project Manager (RPM). Participants included Sherell Heidt from the Texas Commission on Environmental Quality (TCEQ) and Eric Marsh and Ian Penn of Skeo, an EPA contractor. The review began on September 28, 2016.

Documents reviewed as part of this FYR are listed in Appendix A. The site chronology is provided in Appendix B.

Site Background

The 3.3-acre Site is located at the end of Clear Lake Road, north of Interstate Highway 10, in Highlands, Harris County, Texas (Figure D-1, Appendix D). Early in the 1950s, the Site is assumed to have received an unknown quantity of industrial waste sludge, believed to be spent sulfuric acid from oil and gas refining processes. The sludge may have been transported to the Site by barge. Waste sludges were then placed in an excavated sand pit (or pits) at the Site. After disposal, the sludge was reportedly covered with sand. The waste disposal activities contaminated soil and the shallow groundwater aquifer with hazardous chemicals.

The Site is located on a peninsula within the San Jacinto River's 10-year floodplain. The current average elevation of the Site is 5 to 10 feet above mean sea level. There is historical subsidence at the Site. Nearly 5 feet of subsidence was recorded at the Site between 1890 and 1973. Since 1964, the Site has subsided at least 2.4 feet. The Site is vacant. Only monitoring wells and fencing are currently located on site. Future development is not foreseen at the Site due to its location within the 10-year floodplain. The Site is bordered by two adjacent active oil/gas production wells and a petroleum distribution center, the Baytown Boat Club to the north, flooded former sand pits to the east, Clear Lake to the south, and the Grennel Slough to the west. Based on Texas Water Development Board data, there are no groundwater wells within a mile of the Site. Nearly 1,500 people live within 1 mile of the Site. The nearest permanent residence is approximately 1,000 feet from the Site. Recreational vehicles are located 275 feet north of the Site entrance gate. It is unknown if these are occupied year-round.

Groundwater occurs in three zones at the Site – the upper aquifer and the middle and deep aquifers. Groundwater in the upper aquifer flows radially from the Site and discharges to Grennel Slough, Clear Lake and the adjacent former sand pits. The predominant groundwater flow direction for the upper aquifer in December 2015 was to the east. Appendix C contains additional background information about the Site, including geology and hydrogeology.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Highlands Acid Pit		
EPA ID: TXD980514996		
Region: 6	**State:** Texas	**City/County:** Highlands/Harris
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Stephen Pereira, with additional support provided by Skeo		
Author affiliation: EPA Region 6		
Review period: 9/28/2016 - 9/27/2017		
Date of site inspection: 12/6/2016		
Type of review: Statutory		
Review number: 5		
Triggering action date: 9/27/2012		
Due date *(five years after triggering action date)*: 9/27/2017		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1978, the Texas Department of Water Resources (TDWR) received a complaint concerning the Site (known locally as the Acid Pit). TDWR collected waste sludge, sediment, stormwater and groundwater samples and found waste materials at the Site characterized by low pH, and elevated total organic carbon, sulfate, heavy metals and organics including benzene, toluene, xylene and phenols. Based on these results, EPA proposed the Site for listing on the Superfund National Priorities List (NPL) in 1982. EPA finalized the Site's listing on the NPL in September 1983.

State-led site investigation work finished in July 1983 and the Site's feasibility study was completed in December 1983. Exposure pathways of greatest concern identified during these investigations were inhalation, ingestion and absorption of contaminants in site soils; migration of contaminants to surrounding surface waters; and downward migration of contaminants in the shallow aquifer toward the middle aquifer. Human contact with existing contamination was likely, as evidenced by records of trespassing, garbage disposal activities and recreational uses of adjacent properties and water bodies. Soil contaminants would have continued to migrate off site through wind and surface water erosion. Table 1 summarizes the contaminants of concern (COCs) identified at the Site.

Table 1: COCs, by Media

COC	Media
Metals (arsenic, barium, cadmium, manganese, chromium, lead)	Soil
Volatile organic compounds (VOCs) (benzene, toluene, xylene)	Soil
Semi-VOCs (phenol, pyridine)	Soil
Metals (arsenic, beryllium, cadmium, manganese, chromium, lead)	Groundwater
VOCs (benzene, toluene, xylene)	Groundwater
Semi-VOCs (phenol, pyridine)	Groundwater

Response Actions

The OU1 remedy, selected in the Site's 1984 Record of Decision (ROD), included excavation of contaminated soils and waste material to an approximate depth of 8 feet below ground surface (the approximate groundwater level), transportation of waste to a permitted Class I hazardous waste disposal facility, backfilling the excavated area with clean fill, construction of a temporary site perimeter fence with warning signs, installation of a groundwater monitoring system, and monitoring groundwater for at least 30 years after cleanup. EPA estimated that excavation would remove about 19,000 cubic yards of material located above the water table. During excavation, if contaminated soil and material was visually observed (e.g., presence of black soil) beyond the defined lateral limit of excavation, it would also be removed during cleanup. An estimated 58,000 cubic yards of wastes and contaminated sand and soil located beneath the water table were not excavated during cleanup.

The OU1 ROD identified the following remedial action objectives (RAOs) for the Site:

- Control off-site migration of wastes by surface and subsurface pathways to mitigate future environmental impacts on surface waters and groundwater.
- Minimize potential for human contact with waste materials.

The OU2 groundwater remedy, selected in the 1987 ROD, was a "no action" remedy with long-term monitoring of surface water and groundwater to track attenuation. The OU2 ROD selected no further action because OU1 cleanup would eliminate the potential for surface water contamination and EPA sampling at the time did not detect COCs in the middle or deep aquifers. The OU2 ROD stated that "upon completion of the Source Control

Remedial Action, surface water contamination from runoff will be eliminated; natural flow of ground water will cleanse the pore spaces within the shallow aquifer over time; ground water flow to surface water bodies will continue to carry some contaminants to the surface environment, but the heavy metals are not mobile at the pH of the transition region for ground water flow to surface water bodies, the organics are volatile upon contact with the atmosphere, and in view of the dynamics of the river and properties of the contaminants, the San Jacinto River should not be affected." It also stated that "[t]he natural flow of groundwater cleanses the pore spaces within the shallow aquifer over time. Attenuation of contaminants down to nondetectable levels within the upper aquifer should take about 350 years."

The RAOs for OU2 were to:

- Characterize contaminant migration to surface waters, area environment and deeper groundwater.
- Determine potential impacts to potential receptors.
- Evaluate the need for groundwater corrective action at the Site.

No numeric cleanup goals were established for the upper aquifer in either ROD for the Site. The 1987 ROD states that, based on the 1987 Groundwater Contamination Evaluation, a well survey of the area had determined that the shallow aquifer was not considered a source of potable water. The 1984 OU1 ROD identified Clean Water Act water quality criteria as applicable or relevant and appropriate requirements (ARARs) for potential surface water impacts from site soils or lateral movement of shallow groundwater. The 1987 groundwater ROD identified Safe Drinking Water Act maximum contaminant levels (MCLs) as ARARs for the middle and deep aquifers. Texas Risk Reduction Program (TRRP) Tier 1 Industrial Groundwater Protective Concentration Levels (PCLs) and MCL action levels are currently equivalent for groundwater COCs at the Site. TCEQ uses PCLs to report monitoring data collected as part of the operations and maintenance activities.

Status of Implementation

Construction activities for the OU1 remedy began in February 1987 and finished in July 1987. EPA selected contractor Chemical Waste Management to conduct remedial activities. Cleanup included excavating contaminated soil to an approximate depth of 8 feet and conveying the material to the Chemical Waste Management disposal site in Louisiana. Excavated areas were backfilled with clean soil, including 6 inches of top soil that was seeded, mulched and fertilized. Excavated areas were also contoured to mitigate on-site flooding.

During OU1 cleanup activities and subsequently during the operational and functional period, additional monitoring wells were installed to assess whether groundwater was moving laterally. The OU2 ROD called for no action and long-term monitoring of groundwater. TCEQ currently undertakes groundwater sampling of the shallow, middle and deep aquifers, adjacent surface water, and sediment on a semi-annual basis.

In 2001, the groundwater monitoring network at the Site consisted of 21 wells. In 2002, one middle aquifer monitoring well (MA-08) and one deep aquifer monitoring well (DA-08) were plugged and abandoned due to suspected cross contamination between the upper and the middle and deep aquifers. Replacement wells were installed (MA-08A and DA-08A). In addition, three wells (UA-03, UA-13 and MA-04), which were considered redundant by the state, were plugged and abandoned in 2002. The monitoring network currently includes seven wells in the upper aquifer, six wells in the middle aquifer and five wells in the deep aquifer.

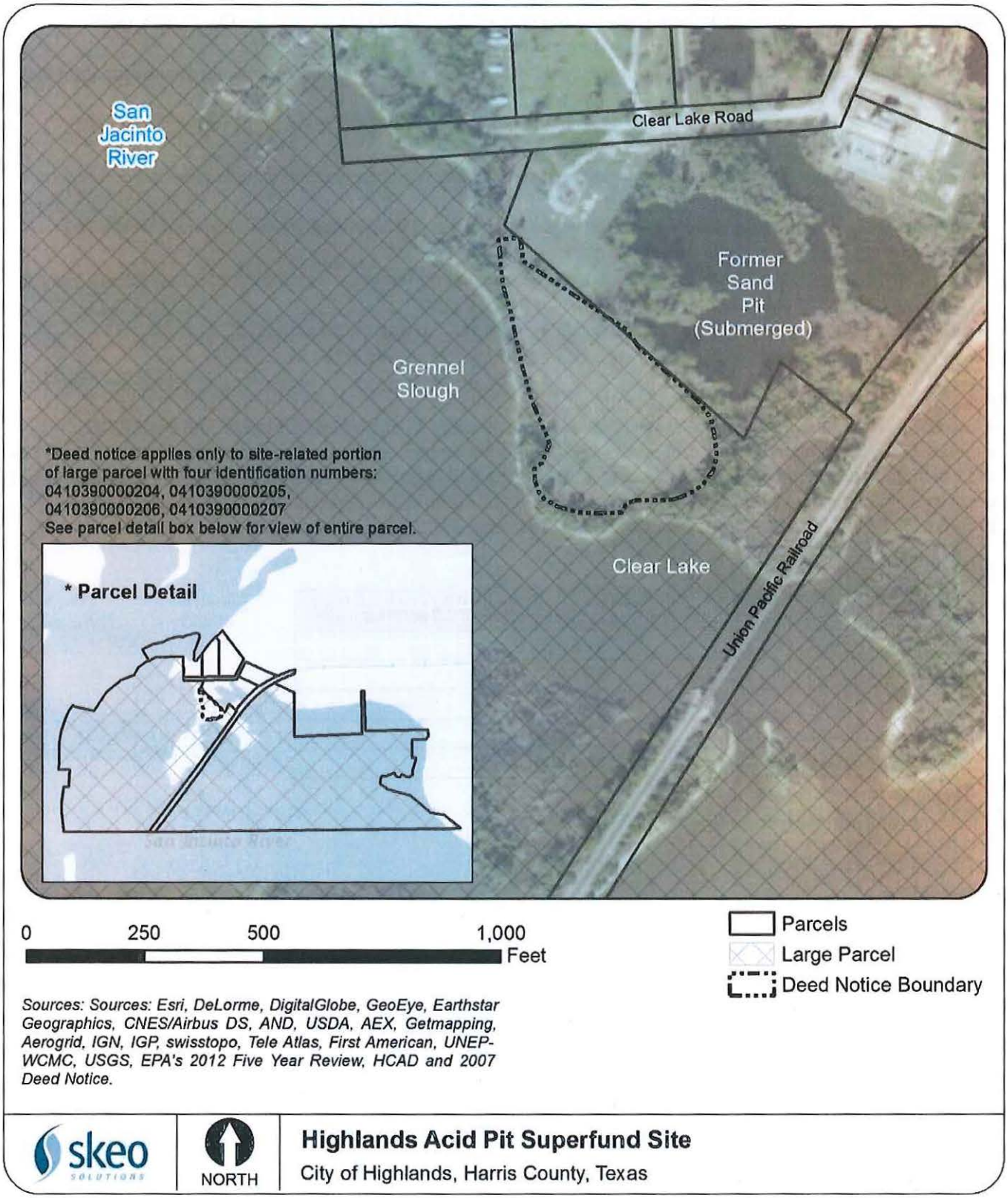
Institutional Control (IC) Review

No ICs were called for in the RODs for OU1 or OU2. However, in 2007, EPA prepared a draft IC for the Site in the form of a deed notice to address future protectiveness. The draft deed notice states that "[a]ny reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching, or well installation requires prior approval by TCEQ, USEPA, and the four property owners." The Site is part of a larger 100-acre parcel and is located within the 10-year floodplain of the San Jacinto River. The deed notice only applies to the 3.3 acres that make up the Site (See Figure 1) There are no site-related ICs associated with any adjacent parcels. Development of the site would be subject to the Harris County Floodplain Management Regulations. A copy of the draft deed notice is included in Appendix J.

Table 2: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls and Areas that Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	No	Only the Site, which is a subset of a parcel with four parcel numbers: 0410390000204, 0401390000205, 0401390000206 and 0401390000207.	Restrict reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching or well installation without prior approval.	None
Soil	Yes	No	Only the Site, which is a subset of a parcel with four parcel numbers: 0410390000204, 0401390000205, 0401390000206 and 0401390000207.	Restrict reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching or well installation without prior approval.	None

Figure 1: Institutional Control Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Systems Operations/Operation & Maintenance (O&M)

In 2011, TCEQ selected URS Corporation (URS) as the O&M contractor to conduct semi-annual groundwater monitoring and maintenance activities. URS (since purchased by AECOM) revised the O&M Plan in 2011. O&M, which is ongoing, includes the following requirements:

- Sampling 18 on-site wells on a semi-annual basis, evaluating groundwater data and submitting reports to EPA and TCEQ.
- Inspecting site security and replacing and/or repairing security features as approved by TCEQ (i.e., signage, fencing, gates and locks, road access).
- Inspecting the Site to determine whether subsidence has occurred or if site benchmarks have been removed or damaged.
- Inspecting the Site for the effectiveness and extent of vegetative cover, erosion, cap and benchmark settling, heaving, and site run-on/runoff.
- Conducting grass mowing, vegetation clearing, and debris removal, including inspecting the Site for conditions that may indicate that soil erosion has occurred.
- Managing investigation-derived waste (IDW) generated during O&M activities.
- Performing regular sediment and surface water sampling as part of O&M activities.

O&M Costs

The 1984 ROD estimated annual monitoring and maintenance costs of $14,100 for OU1. The OU2 ROD estimated additional annual monitoring costs of $4,700, for a combined site total of $18,800. The 2011 O&M Plan did not include estimated costs for semi-annual monitoring and inspection. Since the previous FYR, annual O&M costs have averaged just over $85,000.[1] There have been no significant additional O&M expenses since the previous FYR. Table 3 summarizes annual O&M costs since 2012.

Table 3: Annual O&M Costs

Year	Annual Cost *(rounded to the nearest $1,000)*
2012	$88,000
2013	$91,000
2014	$90,000
2015	$77,000
2016	$80,000

[1] Adjusted for inflation, $18,800 for annual monitoring costs in 1987 is approximately $40,000 in current dollars (2017). If that adjusted figure is doubled to account for two sampling events per year instead of one, annual monitoring costs remain comparable to estimated costs.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 4: Protectiveness Determinations/Statements from the 2012 FYR

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Protective	Based on the information available during the fourth five-year review, the selected remedy for the HAP site is performing as intended. The remedy will be protective of human health and the environment in the long term provided repairs are made to the monitoring wells and fencing, warning signs are placed within the cluster fencing, and O&M activities continue or are resumed.

Table 5: Status of Recommendations from the 2012 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	Site sampling	Continue semi-annual groundwater sampling of the upper, middle, and deep aquifer monitoring wells within the site.	Completed	Sampling of groundwater, surface water and sediments is ongoing on an approximately six-month basis.	9/23/2011*
2	Exceedance of action levels	The groundwater criteria set in the 1987 Record of Decision have not been met in the upper and middle aquifer. Although, for the middle aquifer, only arsenic was detected above MCLs during the August and November 2011 sampling events, this is problematic. Given the relevant decision document and the current data, EPA and the TCEQ should evaluate/consider whether more action is or is not necessary and document that an evaluation was conducted. In addition, an evaluation of the change in the arsenic MCL (from 50 µg/L to 10 µg/L in 2006) should be conducted to determine the impact to the site.	Under Discussion	Benzene and arsenic continue to be detected at concentrations above TRRP Tier 1 Protective Concentration Levels (PCL) in the middle aquifer. An evaluation of the change in the arsenic MCL has not yet been undertaken. Arsenic concentrations in groundwater are being compared to TRRP Tier 1 PCLs, which are 10 µg/L.	Ongoing
2	Surface water and sediment sampling	Resume/re-implement surface water and sediment sampling at least on a biannual basis. Compare surface water and sediment sample data to ecological benchmarks (TCEQ 2006), or equivalent, that have been established for surface water and soil in order to	Ongoing	Surface water and sediment sampling was reinstituted in 2012 and is ongoing. Comparison to TCEQ ecological benchmarks has not occurred.	Ongoing

		determine if further studies are warranted.			
1, 2	Operations and maintenance	Replace compression caps that are either missing or in poor condition, repair hinges to monitoring wells as needed (including UA-10 and UA-11), replace missing well cap locking pins and pad locks as needed, repair/extend the riser pipe within MA-02, install warning signs within the cluster fencing of the monitoring wells, and confirm well identification numbers and legibly repaint each monitoring well number.	Completed	O&M of the wells and well fencing is ongoing as needed and as issues arise. For example, in August 2015, ongoing well maintenance included replacing the well pad for DA-02, UA-10 and UA-11, installing protection posts for MA-03, and installing new compression well caps where required.	8/15/2015
1, 2	Surveying activities	Resume site surveying activities, including surveying the repaired riser pipe in MA-02 and the site's benchmarks.	Completed	Updated site survey completed in 2013.	8/28/2013
2	Disposal activities	Investigation-derived waste (i.e., purge water) should be labeled, characterized, and properly disposed of and not stored onsite.	Completed	IDW is now appropriately labeled and disposed of offsite after each sampling event.	9/23/2011*
*Semi-annual monitoring, re-implementing surface water and sediment sampling and properly managing IDW are assumed to have been completed with the finalization of an updated and approved O&M plan for the Site.					

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available by press release in the *Highlands Star-Crosby Courier* on November 24, 2016, stating that there was a FYR and inviting the public to submit any comments to EPA (Appendix F). The results of the review and the report will be made available at the Site's information repository, Highlands Public Library – Stratford Branch, located at 509 Stratford Street in Highlands.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy. Interviewees included TCEQ staff, representatives from the O&M contractor for the Site (AECOM), representatives from Harris County's Pollution Control Services Department and nearby residents. Interviews took place in person and via email. Results of the interviews are summarized below. Appendix I provides completed interview forms.

Nearby residents interviewed were generally aware of the Site but were less familiar with the Site's history or ongoing monitoring activities. Some residents associated the Site with the nearby San Jacinto Superfund site during interviews. Overall, nearby residents felt EPA could do a more effective job of keeping them up to date regarding ongoing activities at the Site. No nearby residents interviewed had private wells. Some residents said that the adjacent former sand pit east of the Site is used sometimes for swimming and fishing. Residents also said that trespassing and trash dumping was an occasional problem on or near the Site.

The EPA interviewed local citizens that live in close proximity to the Highlands Acid Pits Superfund Site. After interviewing the local residents, EPA provided the citizens with the EPA webpage for additional information on the Highlands Acid Pits Superfund Site & contact information. EPA plans to send an annual facts sheet or host a community meeting for the local residents that live near the site. The EPA will work with Harris County regarding the trash dumping in the area.

Representatives from Harris County's Pollution Control Services Department were aware of the Site. They stated that the public often associates the Site with the San Jacinto Waste Pits Superfund site. They did not necessarily feel well informed about the Site's current status. Department representatives recommended updating groundwater flow maps of the groundwater bearing units and sampling residential wells to determine if there are nearby wells being impacted from exceedances detected in the middle aquifer (see the Data Review section of this report for further information on groundwater sampling data).

Site sampling and data do not indicate that contaminated groundwater in the middle and deep aquifer are moving in the direction of the private wells. Private wells are located over 1/2 mile from the site.

Sherell Heidt of TCEQ indicated that the state considers the Site's remedy to be protective of human health and the environment due to ongoing semi-annual monitoring and maintenance activities and the Site's vacant status. Ms. Heidt felt that all recommendations from the 2012 FYR had been sufficiently addressed. She indicated that TCEQ was satisfied with the status of ICs. Ms. Heidt expressed concern that benzene and arsenic concentrations have consistently exceeded MCLs and PCLs in the upper aquifer and that there have been more frequent detections of benzene and arsenic in the middle and deep aquifers during sampling events, including benzene exceeding PCLs in deep aquifer well DA-08 during the most recent sampling event in December 2016. She noted that the OU2 ROD states that if contamination broke through the clay aquitard separating the shallow and middle aquifers, corrective action could be initiated. Ms. Heidt recommended that EPA assess potential tidal influences on the upper aquifer, the movement of site-related contaminants to the middle and deep aquifers, and the potential impact to adjacent surface water and sediment to determine a need for further action.

There is no data or information to support TCEQ's statement that contamination broke through the clay aquitard separating the shallow and middle aquifers. Concerns were expressed during the first O&M sampling in 1988 and 1989 and in Section II, Response Action Summary of this report, that well installations may have cross contaminated the middle and deep aquifers. Some wells were plugged and new wells have been installed for the middle and deep aquifer since O&M activities started at the site in 1988/1989 and in 2002.
Since then, contaminated levels in the middle and deep aquifers have fluctuated and currently do not exceed action levels. There are no indications, based on contaminant levels, that the middle or deep aquifers have been significantly impacted.

The site O&M contractor had a generally favorable impression of ongoing monitoring and maintenance activities at the Site. AECOM felt recommendations from the 2012 FYR had been addressed, including reinstituting semi-annual surface water and sediment sampling and proper management and disposal of groundwater sampling-derived waste. There have not been significant changes to O&M requirements or sampling routines since the previous FYR. Annual O&M costs have averaged $85,000 since 2012, with only minor additional expenses in 2015 due to weather-related damage to well fencing. Regarding remedy performance, AECOM noted that organics (benzene) have not declined significantly in the upper aquifer and have been detected along with some inorganics (arsenic) intermittently in the middle aquifer, suggesting that additional investigation might help assess the potential for ongoing impacts to the deeper aquifers. The AECOM representative noted that the current sampling frequency for surface water and sediment may not be adequate to assess potential shallow aquifer impacts to those media.

Data Review

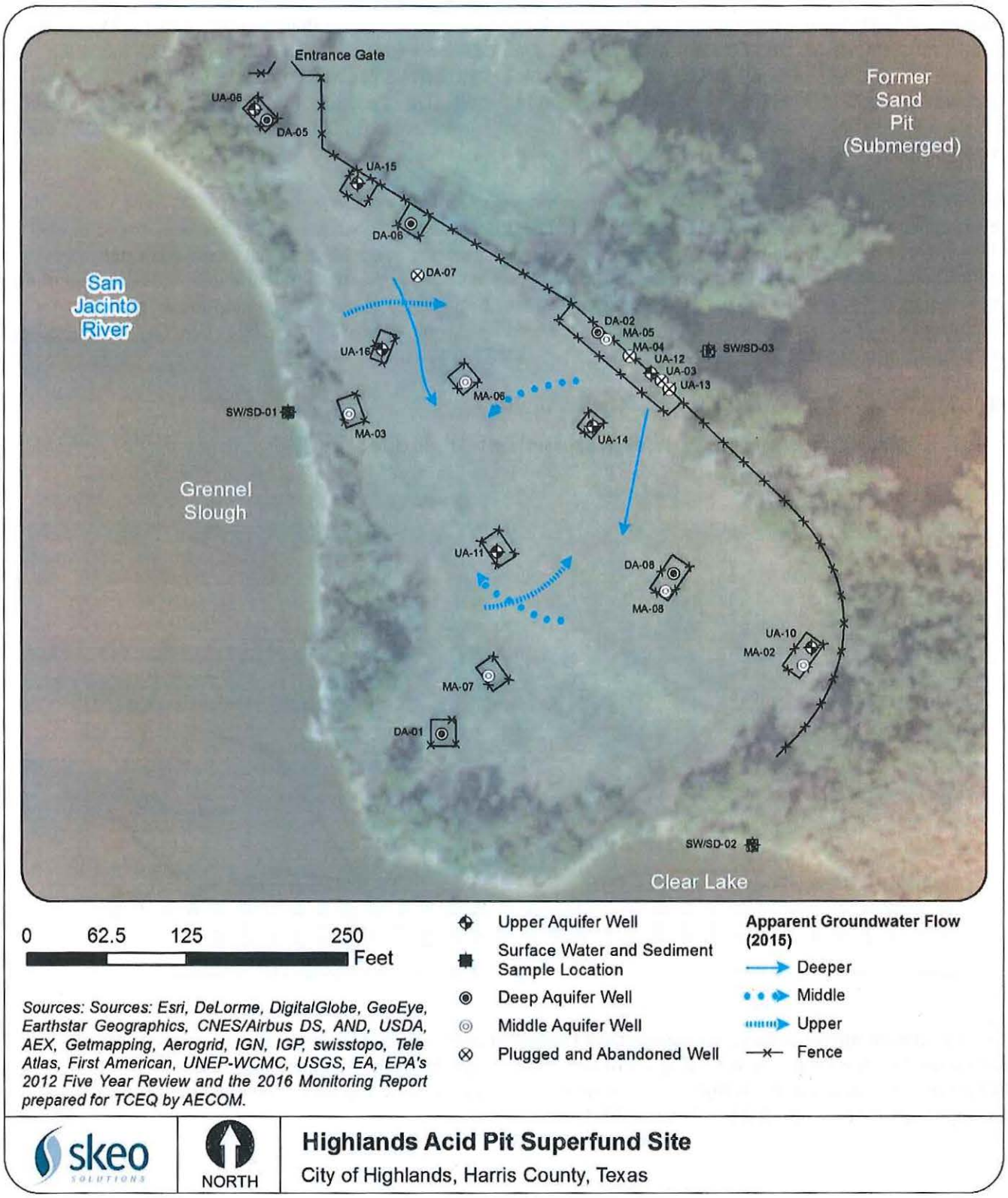
As required by the 1987 ROD, the collection of groundwater, surface water and sediment data is required to evaluate remedy performance.

Groundwater

The groundwater monitoring network currently includes seven wells in the upper aquifer, six wells in the middle aquifer and five wells in the deep aquifer. These 18 wells are the focus of this data review. Figure 2 shows current monitoring well locations. All active groundwater monitoring wells are located within the site boundary. There

are no off-site groundwater monitoring wells and no groundwater maps showing contamination for the Site. All groundwater analytical results were compared to the March 2016 PCLs. While the OU1 ROD lists SDWA MCLs as an ARAR for groundwater, groundwater results have been compared to TRRP Tier 1 PCLs since the 2007 FYR. PCL and MCL action levels are the same for COCs at the Site. TCEQ is conducting operations and maintenance activities for the site and they report the data as PCLs.

Figure 2: Site Details Map



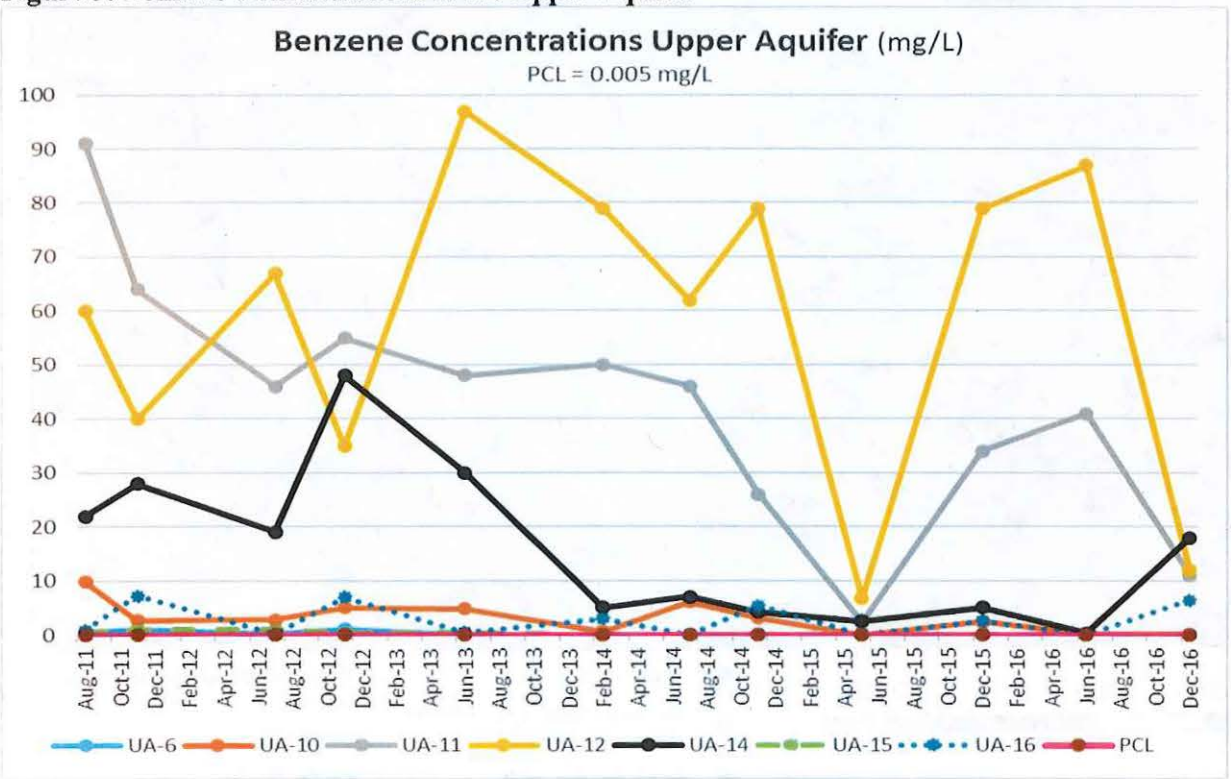
Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Upper Aquifer

Appendix H includes groundwater data collected through December 2016. Analytical results from groundwater sampling indicated many constituents are still present at concentrations above their respective PCLs. During the most recent sampling event in December 2016, COCs were at concentrations exceeding their PCLs including: benzene (wells UA-06, UA-10, UA-11, UA-12, UA-14, UA-16), pyridine (wells UA-10, UA-11, UA-12, UA-14), arsenic (wells UA-11, UA-12, UA- 14, UA-15), cadmium (well UA-14), chromium (well UA-14) and lead (wells UA-11, UA-14) Benzene and arsenic have been persistently detected above PCLs in the upper aquifer since the previous FYR.

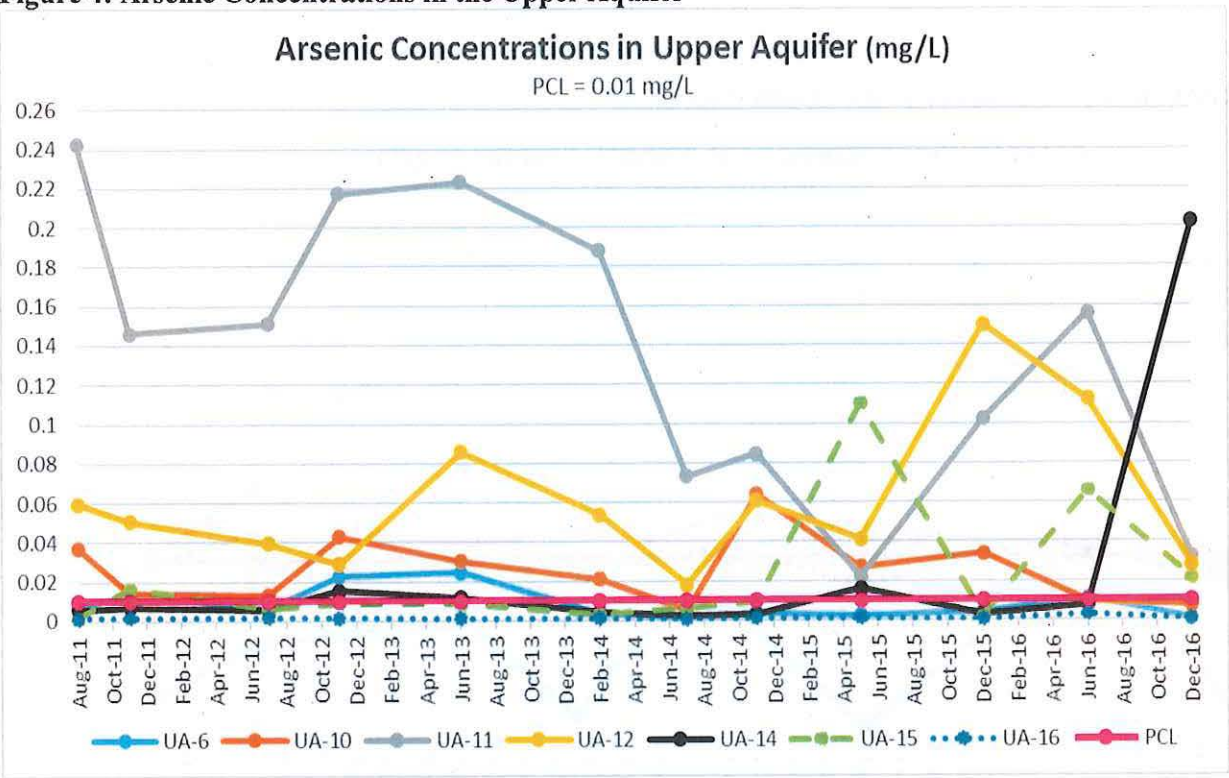
Benzene concentrations have fluctuated over time, but have regularly exceeded the PCL (0.005 mg/L) in six of seven upper-aquifer wells since the previous FYR. The highest average concentrations have been found in well UA-12, which is located along the eastern site boundary, suggesting that the full extent of groundwater contamination may not be known. Benzene concentrations have been detected above the PCL for every sampling event since 2011 for wells UA-11, UA-12 and UA-14 (see Figure 2). The pH environment in the upper aquifer continues to be low, which may be limiting benzene biodegradation. Figure 3 summarizes benzene concentrations in the upper aquifer since 2011.

Figure 3: Benzene Concentrations in the Upper Aquifer



Arsenic concentrations in the upper aquifer have fluctuated over time, but have persistently exceeded the PCL (0.010 mg/L) since the previous FYR in six of seven upper-aquifer wells. Arsenic concentrations have been above PCLs for every sampling event since 2011 for wells UA-11 and UA-12. Figure 4 shows arsenic concentrations in the upper aquifer for sampling events since 2011.

Figure 4: Arsenic Concentrations in the Upper Aquifer



Sampling results for benzene and arsenic suggest that material not removed during OU1 source removal (i.e., material below the water table) continues to impact the upper aquifer. Based on sampling results since O&M activities started in 1988/1989, contaminant levels have fluctuated consistent with the levels in Figures 3 and 4. Fluctuations in the upper aquifer will continue due to tidal influence at the site.

Middle Aquifer

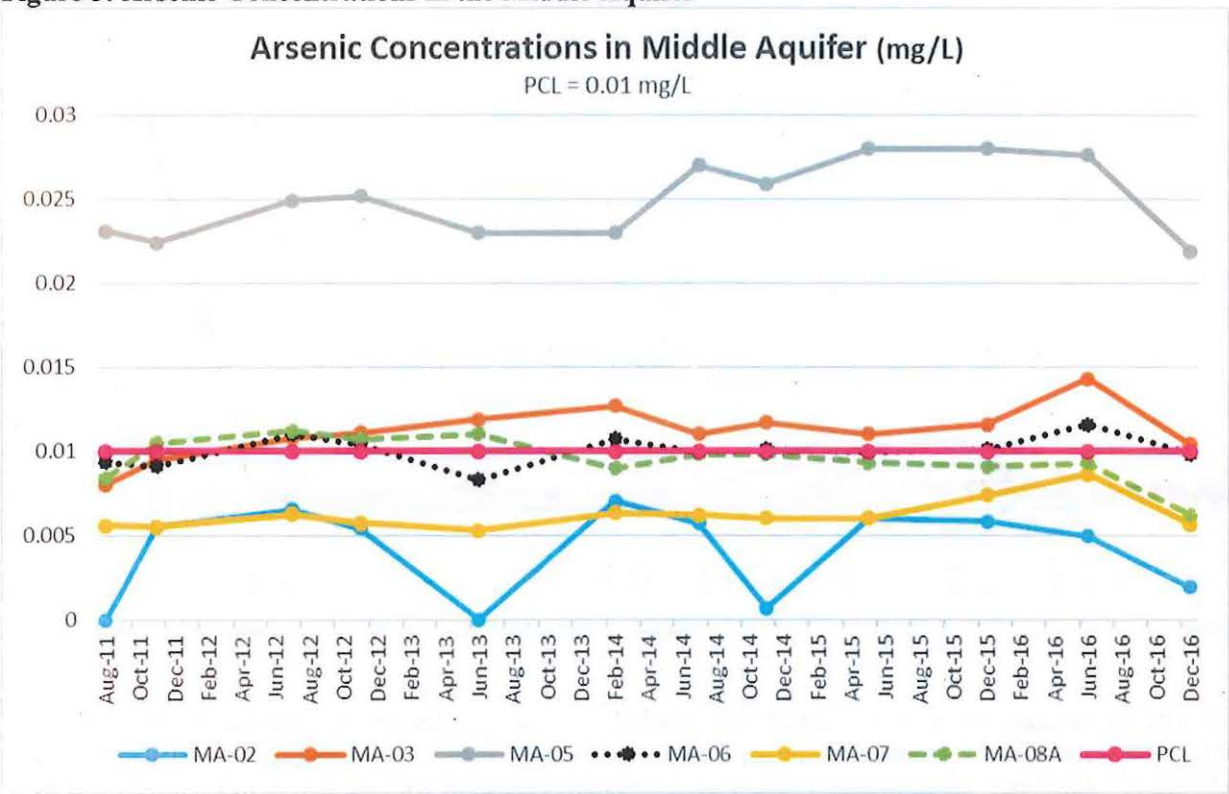
Appendix H includes groundwater data collected through December 2016. Based on analytical results provided in semi-annual monitoring reports, both organic contaminants (benzene, toluene, xylenes, phenol, pyridine) and inorganic contaminants (arsenic, barium, chromium, lead, selenium) have been detected in the middle-aquifer wells since the previous FYR. Of those constituents, arsenic and benzene have been detected above PCLs in several wells.

Since 2012, benzene has been detected in several middle-aquifer wells (MA-03, MA-05, MA-06, MA-07). It was above the PCL in MA-06 during the November 2014 and December 2015 sampling events. Benzene was below the PCL in MA-03 during the December 2016 sampling event.

Since 2012, arsenic has been detected in all six middle aquifer wells (MA-02, MA-03, MA-05, MA-06, MA-07, MA-08A). It has been persistently detected above PCLs in wells MA-03, MA-05 and MA-06 at concentrations ranging from 0.0104 milligrams per liter (mg/L) to 0.028 mg/L. Figure 5 shows arsenic concentrations in the middle aquifer for sampling events since 2011.

Contaminants were detected in the middle aquifers during the initial O&M sampling in 1988/1989. Subsequent sampling events indicate that the levels in the middle aquifer are fluctuating and continue to fluctuate.

Figure 5: Arsenic Concentrations in the Middle Aquifer



Deep Aquifer

Appendix H includes groundwater data collected through December 2016. Based on analytical results in the semi-annual monitoring reports, arsenic and barium have been consistently detected in all five deep-aquifer wells since the most recent FYR, but at concentrations below PCLs. Concentrations of organic contaminants (toluene, xylene, phenol, pyridine) and inorganic contaminants (cadmium, chromium, lead, mercury and selenium) have been intermittently detected in the deep aquifer since 2012, but at concentrations below PCLs. In June 2016, benzene was detected in deep well DA-08, but at a concentration below the PCL. In December 2016, benzene was detected in four of the five deep-aquifer wells and for the first time exceeded the PCL in well DA-06 (0.012 mg/L). The other three detections were below the PCL. Benzene was detected during the initial O&M sampling in 1988/1989, but generally have been non-detect or at levels below PCL concentrations. Arsenic was detected in the deep aquifer during sampling conducted in 1997/1998.

Surface Water

Surface water sampling locations are shown in Figure 2. Surface water data were compared to the March 2016 TRRP Tier 1 PCLs for residential groundwater by ingestion of COCs in class 1 or 2 groundwater resources. Appendix H includes surface water data collected through December 2016. Since the most recent FYR, benzene has been detected in surface water several times. Benzene concentrations at SW-03, on the eastern boundary of the Site, exceeded the PCL of 0.005 mg/L twice since the November 2014 sampling event, ranging from 0.0051 mg/L to 0.02 mg/L. Benzene was not detected during the June or December 2016 surface water sampling events.

Arsenic and barium have been consistently detected at all three surface water sampling locations since the most recent FYR, but at concentrations below PCLs. Other inorganic constituents (cadmium, chromium, lead, mercury and selenium) have been intermittently detected in surface water since 2012, but at concentrations below PCLs. While lead concentrations have been below the TRRP Tier 1 PCL (0.015 mg/L) since the most recent FYR,

concentrations have occasionally exceeded Texas Surface Water Quality Standards (0.00115 mg/L) at all three surface water sampling locations, with detected exceedances ranging from 0.00145 mg/L to 0.024 mg/L.

Sediment

Sediment sampling locations are shown in Figure 2. Sediment data were compared to the March 2016 TRRP Tier 1 PCLs for Residential Total Soil Combined exposure pathways for COCs in soil. Appendix I includes sediment data collected through December 2016. Since the most recent FYR, concentrations of organic contaminants (phenol) and inorganic contaminants (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) have been detected in sediment samples, but at concentrations below TRRP residential soil PCLs. Arsenic, barium, chromium and lead have been detected most persistently in sediment samples since the previous FYR.

Site Inspection

The site inspection took place on 12/5/2016. Site inspection participants included Stephen Pereira (EPA Region 6), Sherell Heidt (TCEQ), and Eric Marsh and Ian Penn (Skeo). The purpose of the inspection was to assess site status and the protectiveness of the remedy. It began at the entrance, located at the end of Clear Lake Road in Highlands, Texas. Participants examined all monitoring wells, the three surface water and sediment sampling locations, the site perimeter, and fencing at the site boundary and around on-site monitoring wells. (See the site inspection checklist in Appendix E and inspection photos in Appendix G).

The main entrance gate in the northern part of the Site was closed and locked, preventing unauthorized vehicle access. Warning signs in English and Spanish were posted on the main fence. Signs on the main gate were in good condition. The adjacent parcel, located north and northeast of the Site, is also fenced and locked, so vehicles would need to get through two locked gates to access the Site. Because of heavy rains, there was some standing water seen on site, but no areas were inaccessible or flooded during the inspection. Perimeter fencing is in place around about half of the Site (along the eastern boundary, beginning at the entrance gate and extending around the Site to near SW-02). Perimeter fencing was in average condition; some sections have fallen over or been pushed over. Barbed wire on top of perimeter fencing was also missing in places.

All on-site wells are surrounded by locked fencing, which generally appeared to be in good condition. A few well fence areas (e.g., wells UA-10 and MA-02) were missing some of the barbed wire across the top of the fence. Each well fence has warning signs posted, but some signs had been blown off fencing. Vegetation across the Site appeared to be well established. Due to recent rains, there were a few small areas of erosion an inch or two deep. Overall, monitoring wells appeared to be in good condition. However, soil erosion was observed beneath the concrete pad for well MA-06.[2] Participants unlocked several wells to inspect well caps. All caps inspected were in place and locked however a few well casings were missing locks. While all on-site wells were labeled, some labels have faded and were difficult to read. Monitoring wells could benefit from new, more visible labeling.

There were no signs of vandalism on site during the inspection. However, there were signs of trespassing along the perimeter of the Site, and in particular along its southern and western borders. Glass bottles and other litter were found along the shoreline near SW-01. Tires, coolers and other litter were also found along the shoreline and in the woods near SW-02.

After the site inspection, the FYR team interviewed five residents living near the Site. The FYR team then met with and interviewed officials from Harris County. Completed interview forms are provided in Appendix I.

On the morning of Tuesday, December 6, 2016, the FYR team conducted research at the Site's two information repositories – the Houston Central Library and the Highlands Community Center. No site-related documents were found at the Highlands Community Center. One document, the 1987 Groundwater Contamination Evaluation, was found at the Houston Public Library via the online card catalogue. The FYR team also conducted research at Highlands Public Library. Two site-related documents were found at the library – the 1983 Field Investigation

[2] TCEQ repaired the concrete well pad for MA-06 in April 2017. See Appendix G.

and the 1983 Feasibility Study. EPA decided to establish a permanent information repository for the Site at Highlands Public Library. Skeo staff reviewed property records online using the Harris County property records website. No deed notice was found on file for the large parcel that contains the Site.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The OU1 source control remedy has been implemented and is functioning largely as intended to minimize human contact with waste material and reduce contaminated surface water runoff into adjacent surface waters. Excavated material was disposed of off-site and excavated areas backfilled with clean fill. However, nearly 75 percent of the estimated volume of waste and contaminated sands and soils was below the water table and left in place after excavation. It continues to impact groundwater, as well as surface water and sediment. Site vegetation is well established and maintained through ongoing O&M activities at the Site. The entrance to the Site is gated and locked. Warning signs are posted.

The OU2 remedy included long-term monitoring of the surface environment (i.e., surface water and sediment) and groundwater. The state O&M contractor has conducted water and sediment sampling semi-annually since 2011. Arsenic has been persistently detected in the middle aquifer since 2012, with TRRP PCLs exceeded in three of six middle-aquifer wells since 2012 and in one deep aquifer well in 2016. Based on the OU2 ROD stating for the middle aquifer that "if contamination does break through the clay aquitard, corrective action can be initiated before levels of concern are reached," EPA should evaluate whether the OU2 remedy should be revisited and document the evaluation. Due to the presence of contaminants above the PCLs in upper and middle aquifer monitoring wells located at the site boundary, the extent of the contaminated groundwater is not fully defined. Currently, there are no monitoring wells located off-site; these may be needed to determine the extent of the groundwater contamination.

Based on interviews, the adjacent flooded sand pit east of the Site is presumed to be used for recreational purposes (swimming, fishing). However, sampling frequency may be insufficient to evaluate potential impacts of upper aquifer groundwater to adjacent surface water and sediment. The highest concentrations of benzene have been detected in well UA-12 adjacent to the flooded sand pit.

Groundwater analytical data should also be collected to determine the current extent of the groundwater contamination in the upper aquifer and the magnitude of contaminants relative to background.

Analytic results for surface water and sediment since the previous FYR indicate that upper-aquifer groundwater is reaching surface water and adjacent sediments. However, additional study is needed to determine the potential impact of these detections to human health and the environment.

EPA drafted a deed notice in 2007. EPA should revisit the deed notice and consider updating and strengthening it to ensure long-term protectiveness, including provisions to run with the land and to address potential off-site groundwater and surface water impacts. The institutional control should also be properly filed with Harris County to ensure it is located during property record searches.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:

Neither the OU1 or the OU2 ROD identified cleanup goals for soil, shallow groundwater, or sediment.

The OU2 ROD identified MCLs as ARARs for the middle and deep aquifers. However, recent monitoring reports have compared groundwater sampling results to TRRP Tier 1 PCLs. PCL and MCL action levels are currently the same levels for COCs at the Site. Clean Water Act Water Quality Criteria were identified as surface water ARARs in the 1984 and 1987 RODs and is considered the cleanup level. However surface water is currently compared to TRRP Tier 1 groundwater PCLs. Except for lead, where the WQS is more stringent than the PCL, PCLs and Texas Surface Water Quality Standards are currently the same for Site COCs. Sampling and monitoring plans should be updated to clarify appropriate site action levels, as identified in the RODs, to evaluate groundwater, surface water and sediment analytical results.

Vapor intrusion to indoor air was not considered as a potential exposure pathway in either ROD for the Site. Current groundwater contamination data is not available to evaluate potential off-site vapor intrusion impacts. Evaluating the current extent of the groundwater contamination in the upper aquifer and updating groundwater maps will help in determining whether vapor intrusion could be a concern for nearby properties.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

Question C Summary:

There is no additional information about the Site at this time that would call into question the protectiveness of the Site's remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None.

Issues and Recommendations Identified in the FYR:

OU(s): 2	Issue Category: Remedy Performance			
	Issue: Data on the current extent of the groundwater contamination in the upper aquifer is not available.			
	• **Recommendation:** Because of the high benzene concentrations in well UA-12 at the eastern boundary of the Site, collect additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site. Take appropriate measures to ensure protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2020

OU(s): 1, 2	Issue Category: Institutional Controls			
	Issue: No deed notice was recorded on file with Harris County. The draft deed notice contains limited information, which may not provide sufficient protection from source material left in place during excavation and contaminated groundwater.			
	Recommendation: Revisit and update the institutional control instrument to strengthen language and ensure long-term protectiveness (e.g., make sure the institutional control runs with the land, prevents exposure to contaminated groundwater).			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2019

OU(s): 2	Issue Category: Remedy Performance
	Issue: Arsenic and benzene have been persistently detected in the middle aquifer and periodically detected in the deep aquifer since the previous FYR.

	Recommendation: Continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long term protectiveness.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2019

OU(s): 2	**Issue Category: Remedy Performance**			
	Issue: Perform regular sediment and surface water sampling as part of the Operations and Monitoring (O&M) activities. Surface water and sediment data have not been compared to ecological benchmarks. Local residents are presumed to use the adjacent sand pit area for recreational purposes (swimming and fishing).			
	Recommendation: Compare surface water and sediment sample data to ecological benchmarks, or equivalent, and to appropriate human health screening values to determine if further study is needed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party/Support Agency**	**Milestone Date**
No	Yes	EPA/TCEQ	EPA/TCEQ	9/27/2020

OTHER FINDINGS

- The OU2 ROD identified MCLs as ARARs for the middle and deep aquifers. Recent monitoring reports have compared groundwater sampling results to TRRP Tier 1 PCLs. The TRRP Tier PCLs are the same as MCLs.
- Use the most recent TRRP Tier 1 PCLs to compare groundwater sampling analytic results in the O&M Plan. The August 2016 Annual Groundwater Monitoring Report used the May 2011 TRRP Tier 1 PCLs for residential groundwater to evaluate analytic results. TCEQ issued updated PCLs in March 2016, however there were no changes to PCLs in 2016 that impacted the most recent sampling analytic results.
- Based on semi-annual monitoring data, some upper aquifer wells (e.g., UA-16) appear to be influenced by seasonal variations or tidal changes. Additional study would help to identify potential tidal or seasonal influences on upper aquifer groundwater.
- Ensure all monitoring well covers are locked, make repairs as necessary to barbed wire along the top of fencing surrounding wells and repost warning signs on monitoring well fences. While the main entrance gate is locked, fencing surrounds about 50 percent of the Site. Consider fencing the entire site perimeter, including the shoreline along Grennel Slough, to discourage trespassers entering the Site from adjacent water bodies.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU1	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy for OU1 is currently protective of human health and the environment. The OU1 remedy included excavation of waste material and contaminated soil to a depth of 8 feet below ground surface and disposal at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishing vegetation, and installation of a security fence. EPA completed source removal of site soils in 1987. For the OU1 remedy to be protective over the long term, revisit the draft institutional control instrument to ensure long-term protectiveness.	

Protectiveness Statement(s)	
Operable Unit: OU2	*Protectiveness Determination:* Short-term Protective
• *Protectiveness Statement:* The remedy for OU2 is currently protective of human health and the environment. The OU2 remedy was a "no further action" remedy with long-term monitoring of surface water and groundwater. For the remedy to be protective over the long term: 1) collect additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness; 2) revisit the draft institutional control instrument to ensure long-term protectiveness; 3) continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long term protectiveness; 4) compare surface water and sediment sample data to ecological benchmarks and to appropriate human health screening values to determine if further study is needed.	

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
• *Protectiveness Statement:* The Site remedy is currently protective of human health and the environment. For the remedy to be protective over the long term: collect additional surface water and sediment samples in the former sand pit adjunct to the site to determine if the contaminated upper aquifer is impacting areas beyond the Site and take appropriate measures to ensure protectiveness; revisit the draft institutional control instrument to ensure long-term protectiveness; continue to monitor and evaluate contaminants of concern (COCs) being detected more frequently in the middle and deep aquifers and determine impacts to long term protectiveness; compare surface water and sediment sample data to ecological benchmarks and to appropriate human health screening values to determine if further study is needed.

VIII. NEXT REVIEW

The next FYR Report for the Highlands Acid Pit Superfund site is required no later than five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Annual Groundwater Monitoring Report December 2015 and May 2016 Sampling Events. Highlands Acid Pit Federal Superfund Site. Texas Commission on Environmental Quality. August 2016.

Water and Sediment Monitoring Data spreadsheet from November-December 2016 sampling event. Highlands Acid Pit Federal Superfund Site. Texas Commission on Environmental Quality. December 2016.

Final Report for Highlands Acid Pit, Highlands, Texas - Groundwater Contamination Evaluation. United States Environmental Protection Agency Region 6. April 1987.

First Five-Year Review, Highlands Acid Pit Superfund Site. United States Environmental Protection Agency Region 6. November 1995.

Fourth Five-Year Review Report for the Highlands Acid Pit Superfund site. United States Environmental Protection Agency Region 6. September 27, 2012.

Health Assessment, Highland Acid Pit (NPL) Site. Highlands, Harris County, Texas. Agency for Toxic Substances and Disease Registry. December 7, 1988.

Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups. United States Environmental Protection Agency. 540-F-00-005. September 2000.

National Primary Drinking Water Regulations. Maximum Contaminant Levels Table. United States Environmental Protection Agency. 2009. https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulation-table. Accessed January 10, 2017.

Operations and Maintenance Plan, September 2011, Highlands Acid Pit, State Superfund Site, Contract No. 582-10-91049, Work Order No. 246-0023. URS. September 23, 2011.

Record of Decision, Highlands Acid Pit, OU1. United States Environmental Protection Agency Region 6. June 25, 1984.

Record of Decision, Highlands Acid Pit, Groundwater Operable Unit. United States Environmental Protection Agency Region 6. June 26, 1987.

Remedial Action Feasibility Study, Highlands Acid Pit, Highlands, Texas. Texas Commission on Environmental Quality. December 1983.

Second Five-Year Review Report for the Highlands Acid Pit. United States Environmental Protection Agency Region 6. September 27, 2002.

Texas Risk Reduction Program, Protective Concentration Levels. Texas Commission on Environmental Quality. March 2016.

Third Five-Year Review Report, Highlands Acid Pit Superfund Site. United States Environmental Protection Agency Region 6. September 28, 2007.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
Texas Commission on Environmental Quality (formally known as TDWR) received a telephone complaint concerning the Site.	May 1978
TDWR analysis of sludge, sediment, and stormwater samples found low pH, concentrations of metals, high chemical oxygen demand and high total organic carbon.	September 1978
TDWR analysis of groundwater samples found VOCs and heavy metals.	October 1981
EPA proposed adding the Site to the NPL	June 1982
EPA and TCEQ entered into a Cooperative Agreement for a state-led RI/FS.	September 1982
EPA added the Site to the NPL.	September 1983
State-led Site Investigation Report is completed and indicates extensive contamination of site media with heavy metals and VOCs.	December 1983
State completed the Site's RI/FS Report.	December 1983
EPA finalized the ROD for OU1.	June 1984
The Site's remedial action design and site-safety plan was completed.	January 1985
EPA finalized the ROD for OU2.	June 1987
TCEQ conducted O&M activities at the Site.	July 1988 to July 1996
TCEQ collected groundwater samples from the private well of the Baytown Boat Club north of the Site and concluded that the water quality was not impacted based on analyzed constituents.	August 1994
TCEQ assumed responsibility for 30 years of O&M activities at the Site.	June 1993
EPA and TCEQ agreed on a revised well development plan, which proposed 10 additional monitoring wells with a revised monitoring strategy and an expansion of the sampling analysis program.	May 1996
EPA completed the Site's first Five-Year Review (FYR) Report.	June 1996
EPA contractor conducted additional groundwater sampling activities at the Site.	April 1997 to December 1999
TNRCC completed the Site's revised O&M Plan.	September 2001
EPA completed the Site's second FYR Report.	September 2002
EPA drafted the site deed notice, which was recorded by a public notary.	July 18, 2007
EPA completed the Site's third FYR Report.	September 2007
TCEQ selected URS as the Site's O&M contractor.	2011
URS completed the Site's O&M Plan.	September 2011
EPA completed the Site's fourth FYR Report.	September 2012

APPENDIX C – SITE BACKGROUND

Geology

The Site is located on the banks of the San Jacinto River and is geologically situated within recent meanderbelt alluvial sediments (upper sand). This alluvial material ranges in thickness from 18.5 feet to 26.0 feet, with an average thickness of 22.5 feet.

The recent alluvium overlies the Beaumont Clay, and the sharp contact between the two formations is evident. This clay deposit is about 30 feet thick across the entire site area. Samples of the upper 1 to 6 feet of the clay were typically stiff, very slightly silty. Below this clay interval lies a 23-foot to 26-foot thick sand interval (middle sand). Below this sand interval another clay deposit was encountered with a thickness of about 25 feet. Underlying this clay interval, a sand deposit (lower sand) was encountered with an average thickness of 16 feet.

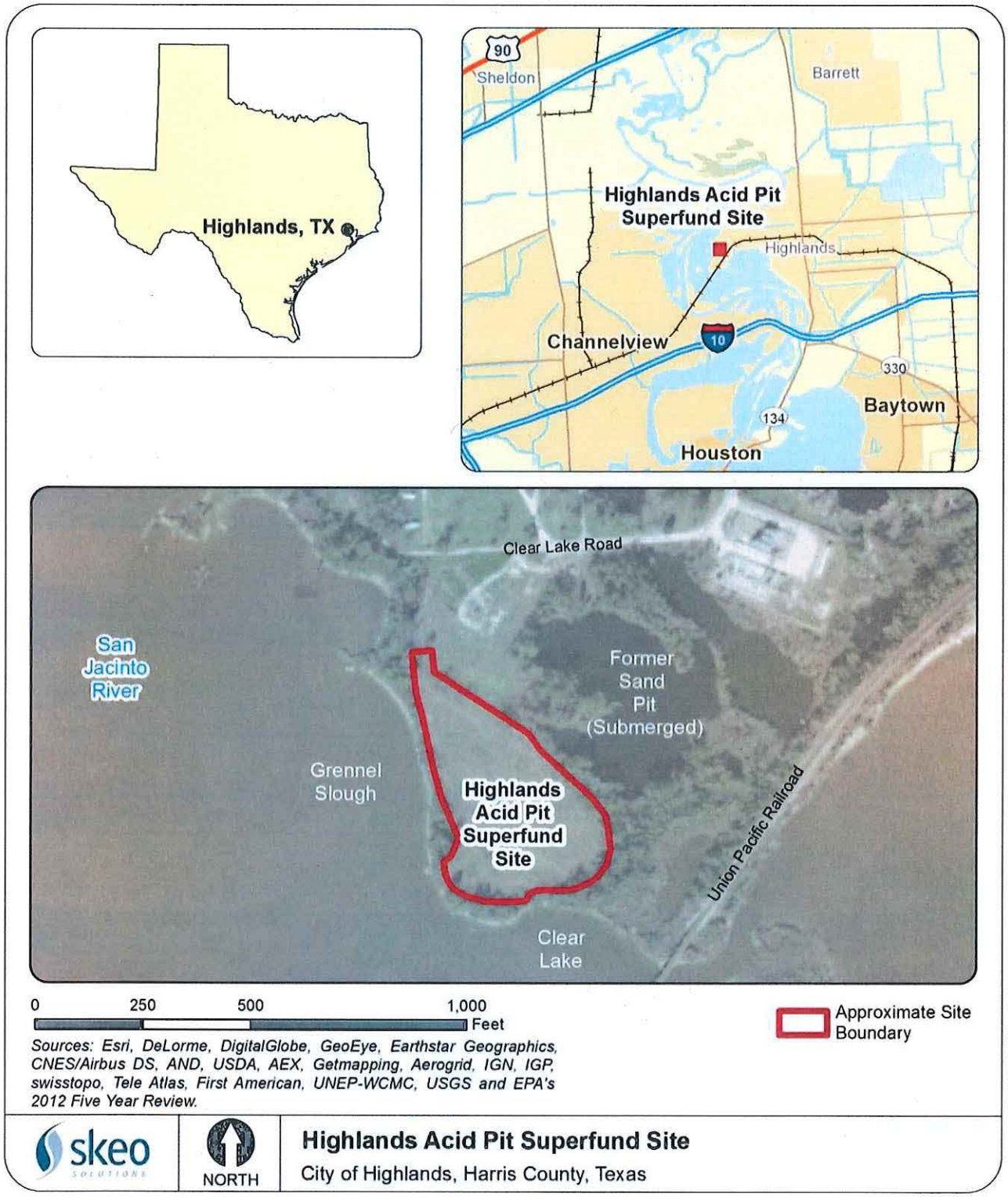
Hydrogeology

The permeability of the upper alluvial sand ranges from 4.0 to 8.0 feet/day. Groundwater elevations in the upper sand are strongly correlated with the level of the San Jacinto River, indicating that the river and the upper aquifer are hydraulically connected. Due to this connection, groundwater flow varies with the level of the river. At high tide, the primary flow directions are east toward the sand pits and south toward Clear Lake. The groundwater flow to the west, toward the San Jacinto River, is small. About 45 percent of the groundwater leaving the Site discharges into the sandpits. The remaining 55 percent discharges to Clear Lake and Grennel Slough with most flowing toward Clear Lake. At low tide, similar flow patterns are evident. However, the groundwater elevations and gradients are lower and there is some inland flow to the southern portion of the Site. Groundwater elevations for wells completed in the upper sand range from 1.64 to 2.25 above mean sea level.

The groundwater for the region is provided by two aquifers, the Chicot and the Evangeline. The Chicot Aquifer is a drinking water aquifer and is made up of the four Pleistocene age formations (Beaumont, Montgomery, Bently and Willis). At the Site, the Chicot extends to a depth of about 700 feet. The identified aquifers underlying the site are termed the upper, middle and lower. The middle and lower aquifer/sands at the Site are in the Chicot aquifer; the upper aquifer/sands consist of alluvium associated with the San Jacinto River. The Evangeline Aquifer is below the Chicot.

APPENDIX D – SITE MAPS

Figure D-1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

APPENDIX E – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Highlands Acid Pit	**Date of Inspection:** 12/05/2016
Location and Region: Highlands, Texas 6	**EPA ID: TXD980514996**
Agency, Office or Company Leading the Five-Year Review: EPA	**Weather/Temperature:** Rainy, 50°F

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☒ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Surface water and sediment sampling
- ☒ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ Name _____ Title _____ Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ Name _____ Title _____ Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency Harris County Pollution Control Services Department
   Contact Bob Allen (Name) Director (Title) 12/05/2016 (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency Texas Commission on Environmental Quality
   Contact Sherell Heidt (Name) Project Manager (Title) 11/18/2016 (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____

Contact	_____ Name	_____ Title	_____ Date	_____ Phone No.
Problems/suggestions ☐ Report attached: _____				

4. **Other Interviews** (optional) ☐ Report attached: _____

Local residents, Site O&M contractor

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

2. **Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	☒ N/A
☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

3. **O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5. **Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6. **Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7. **Groundwater Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A

Remarks: _____

8. **Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10. **Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☒ Contractor for state

☐ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: Date	To: Date	Total cost	
From: 09/2011	To: 08/2012	$88,000	☐ Breakdown attached
From: 09/2012	To: 08/2013	$91,000	☐ Breakdown attached
From: 09/2013	To: 08/2014	$90,000	☐ Breakdown attached
From: 09/2014	To: 08/2015	$77,000	☐ Breakdown attached
From: 09/2015	To: 08/2016	$80,000	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Entrance gate in good shape. Some perimeter fencing damaged. Some fencing around wells showing signs of wear and tear.

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: Warning signs in Spanish and English posted at site entrance and on fencing surrounding site wells. Some well fence signs had fallen off, been removed or been blown off.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☒ N/A

Type of monitoring (e.g., self-reporting, drive by): self report

Frequency: as needed

Responsible party/agency: TCEQ, EPA, site owners

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up to date ☒ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☒ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☒ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

Copy of deed notice was not found in search of Harris County online property records.

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☐ N/A

Remarks: A copy of the deed notice is included in the 2012 FYR. However, the deed notice was not found during research using the Harris County online property records. The deed notice states it was recorded with Harris County on March 6, 2006, but no record was found on file under the deed file number, TCEQ, EPA or site owners may not have recorded the deed with the county.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☐ No vandalism evident

Remarks: Fence bent/damaged both by SW-02 and east of UA10, in the south/southeast part of the Site. There was also refuse located by SW-02.

2. **Land Use Changes On Site** ☒ N/A

Remarks: Site is not in use except for sampling and monitoring activities.

3. **Land Use Changes Off Site** ☒ N/A

Remarks: The adjacent northern parcel is still used for oil and gas production. The boat club is still operating north of the Site.

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☒ N/A

1. **Roads Damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: No roads are located on site.

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☐ Applicable ☒ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☐ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2.	**Cracks**	☐ Location shown on site map	☐ Cracking not evident
	Lengths: _____	Widths: _____	Depths: _____
	Remarks: _____		
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☐ Holes not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
5.	**Vegetative Cover**	☐ Grass	☐ Cover properly established
	☐ No signs of stress	☐ Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: _____		
6.	**Alternative Cover** (e.g., armored rock, concrete)		☐ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☐ Bulges not evident
	Area extent: _____		Height: _____
	Remarks: _____		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Area extent: _____
	☐ Ponding	☐ Location shown on site map	Area extent: _____
	☐ Seeps	☐ Location shown on site map	Area extent: _____
	☐ Soft subgrade	☐ Location shown on site map	Area extent: _____
	Remarks: _____		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☐ No evidence of slope instability		
	Area extent: _____		
	Remarks: _____		
B. Benches	☐ Applicable	☒ N/A	
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench**	☐ Location shown on site map	☒ N/A or okay
	Remarks: _____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		
3.	**Bench Overtopped**	☐ Location shown on site map	☐ N/A or okay
	Remarks: _____		

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
   Area extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type:_____ Area extent: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Area extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Area extent: _____ Depth: _____
   Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions
   ☐ Location shown on site map Area extent: _____
   Size: _____
   Remarks: _____

6. **Excessive Vegetative Growth** Type: _____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Area extent: _____
   Remarks: _____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☐ Erosion not evident

Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A

Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A

Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

	Horizontal displacement: _____	Vertical displacement: _____
	Rotational displacement: _____	
	Remarks: _____	
2.	**Degradation** ☐ Location shown on site map	☐ Degradation not evident
	Remarks: _____	
I. Perimeter Ditches/Off-Site Discharge	☐ Applicable	☒ N/A
1.	**Siltation** ☐ Location shown on site map	☐ Siltation not evident
	Area extent: _____	Depth: _____
	Remarks: _____	
2.	**Vegetative Growth** ☐ Location shown on site map	☐ N/A
	☐ Vegetation does not impede flow	
	Area extent: _____	Type: _____
	Remarks: _____	
3.	**Erosion** ☐ Location shown on site map	☐ Erosion not evident
	Area extent: _____	Depth: _____
	Remarks: _____	
4.	**Discharge Structure** ☐ Functioning	☐ N/A
	Remarks: _____	
VIII. VERTICAL BARRIER WALLS	☐ Applicable	☒ N/A
1.	**Settlement** ☐ Location shown on site map	☐ Settlement not evident
	Area extent: _____	Depth: _____
	Remarks: _____	
2.	**Performance Monitoring** Type of monitoring: _____	
	☐ Performance not monitored	
	Frequency: _____	☐ Evidence of breaching
	Head differential: _____	
	Remarks: _____	
IX. GROUNDWATER/SURFACE WATER REMEDIES	☒ Applicable	☐ N/A
A. Groundwater Extraction Wells, Pumps and Pipelines	☐ Applicable	☒ N/A
1.	**Pumps, Wellhead Plumbing and Electrical**	
	☐ Good condition ☐ All required wells properly operating	☐ Needs maintenance ☐ N/A
	Remarks: _____	
2.	**Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**	
	☐ Good condition ☐ Needs maintenance	
	Remarks: _____	
3.	**Spare Parts and Equipment**	

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps and Electrical**

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☐ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of groundwater treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition

☒ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: Wells appear to be in good condition. All wells were surrounded by locked fences. Most well caps were also locked, but a few wells (MA-02, DA-02, DA-05, DA-06) did not have locks at the time of the inspection. Most wells were labeled, but many labels were weathered and difficult to read and could be replaced to be more easily identified, particularly in areas where wells are clustered. The well pad for MA-06 is being undercut by erosion.

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

Cleanup included excavation of contaminated soil above the water table (8 feet below ground surface) and disposal at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishment of vegetation, and installation of a security fence. The remedy also included monitored natural attenuation, long-term maintenance and groundwater monitoring. Institutional controls were not called for in either ROD, but a deed notice was drafted in 2007. While a copy of the notarized institutional control was included in the 2012 FYR, the deed notice for the Site was not found during online research of Harris County property records. The rest of the remedy appeared to be functioning as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M activities at the Site include semi-annual sampling of groundwater, surface water and sediment; maintaining site security, including replacing or repairing signs, gates, fencing and locks; managing the vegetative cover, including mowing, debris removal and addressing any soil erosion; and managing IDW generated during sampling. Fencing around wells was generally in good condition and locked. A few well

	covers were missing locks, but should not impact short-term protectiveness. The concrete pad for one well, MA-06 (see photo), was showing significant signs of erosion around and under the pad. All site wells were located, but labeling could be updated. No IDW waste was found on site, which was an issue during the 2012 FYR inspection. Vegetation appeared to be in good condition and was well established across most of the Site. Due to heavy recent rains, there were some small areas of erosion seen that should be addressed during the next O&M event, but the erosion channels were not deep enough to impact current protectiveness. Trash and other debris were found along the perimeter of the Site, both along the shoreline and in the woods along the shore, suggesting potential trespassing on site. The site perimeter fence, which extends along the eastern boundary from the entrance gate down to SW-2, needs repair in places, and could potentially be extended along the western boundary to dissuade trespassing on site from neighboring water bodies.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. Outside of the soil erosion seen around and under the concrete pad for well MA-06, there were no other current indicators of potential remedy problems identified during the inspection.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. N/A

APPENDIX F – PRESS NOTICE

Highlands Acid Pit Superfund Site
Public Notice
U. S. Environmental Protection Agency, Region 6

November 2016

The U.S. Environmental Protection Agency (EPA) Region 6, in cooperation with the Texas Commission on Environmental Quality, will be conducting the fifth five-year review of remedy implementation and performance at the Highlands Acid Pit Superfund site (Site) in Highlands, Texas. In the 1950s, the area was used for the disposal of industrial waste sludge, believed to be spent sulfuric acid from oil and gas refining processes. Waste disposal activities contaminated soil and groundwater with hazardous chemicals.

Cleanup included excavation and disposal of contaminated soil at an off-site hazardous waste facility, backfilling of the excavated area with clean soil, establishment of vegetation, and installation of a security fence. The remedy also included monitored natural attenuation, institutional controls, long-term maintenance and groundwater monitoring. Site maintenance activities and groundwater monitoring are ongoing. The five-year review will determine if the remedies are still protective of human health and the environment. The five-year review is scheduled for completion in September 2017.

The report will be made available to the public at the following local information repository:

Highlands Public Library, Stratford Branch
509 Stratford Street
Highlands, Texas 77562

Site status updates are available on the Internet at
http://www.epa.gov/superfund/highlands-acid-pit

All media inquiries should be directed
to the EPA Press Office at (214) 665-2200

For more information about the Site, contact:

Stephen Pereira/Remedial Project Manager
(214) 665-3137
or 1-800-533-3508 (toll-free)
or by email at pereira.stephen@epa.gov

Edward Mekeel/Community Involvement Coordinator
(214) 665-2252
or 1-800-533-3508 (toll-free)
or by email at mekeel.edward@epa.gov

APPENDIX G – SITE INSPECTION PHOTOS

After Cleanup

Gated entrance to the Site, circa 2001

Site Inspection Photos: December 2016

Gated entrance to the Site

View south, looking across the Site

Wells DA-05 and UA-06 (from left to right)

Well UA-15

Well DA-06

Well UA-16

Well MA-03, located near SW-1

Sign for location of surface/sediment sampling area 1 (SW-1)

Well MA-06, with faded label

Soil erosion under concrete pad for MA-06

Pad for MA-06, repaired in April 2017

Well UA-11 in the middle of the Site

Well MA-07, with dead vegetation on the fence

Well DA-01, no lock on the well cover, well secured with locked plug

SW-2, surface water and sediment sampling location, along the southern site boundary

Wells UA-10 (left) and MA-02

Missing lock on MA-02 well cover, well secured with locked plug

Wells MA-08A (left) and DA-08A

Well UA-14

Wells DA-02, MA-05 and UA-12 (from left to right)

Well DA-02, with faded label and missing cover lock, well secured with locked plug

Well MA-05

SW-3, surface water and sediment sampling location, along the eastern site boundary

Warning signs posted on well fences had fallen or been blown down for several well areas

Damage to barbed wire at the top of fence surrounding DA-06

Small area of ponding on site southeast of UA-12 after heavy rains

Area of surface erosion due to heavy rains between MA-08A and UA-14

Border fence near UA-10 with damage from a fallen tree

Litter/debris near SW-02

Tire dumped in woods near UA-10

Oil production operation on property east of the Site

Baytown Boat Club, located north of the Site

APPENDIX H – DATA TABLES

Table 1
2015 Semi-Annual Groundwater Monitoring Report
Groundwater Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCLs* c**GW mg/L	UA-06										
		UA-06 HAPOM-UA-06 08/05/2011 1108223-05	UA-06 HAPOM-UA-06-0 11/17/2011 1111650-05	UA-06 HAP-UA06-070512-0 07/05/2012 1207231-03	UA-06 HAP-UA06-112812-0 11/28/2012 12111017-20	UA-06 HAP-UA06-061913-0 06/19/2013 1306861-01	UA-06 HAP-UA06-NOV2013 02/19/2014 14021012-01	UA-06 HAP-UA06-JUL2014 07/18/2014 14070533-12	UA-06 HAP-UA06-090 11/13/2014 14110545-14	UA-06 HAP-UA06-090 5/14/2015 15050676-14	UA-06 HAP-UA06-100 12/17/2015 HS15120827-11	UA-06 HAP-UA06-110 6/29/2016 HS16070019-16
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	**0.8**	**0.93**	**0.11**	**1.0**	0.0069 UH*	**0.00080 J**	**0.0090**	<0.00020	**0.0062**	0.0016 UH-RB,FB	**0.0002 J**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	0.00013 UJ*	**0.00020 J**	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.0011 J**	**0.0022 J**	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	0.000026 U*	**0.00081 J***	0.00011 U*	**0.0033 JL***	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-HT*	<0.000035	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	**0.00062 J***	**0.00029 JL***	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-HT*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)												
Arsenic	0.010	**0.00558**	**0.0136**	**0.00899**	**0.0226**	**0.0247**	**0.00382 J**	**0.0058**	**0.00385 J**	**0.0024 J**	**0.00442 J**	**0.0113 UH-RB**
Barium	2.0	**0.062**	**0.0453**	**0.0510**	**0.0306**	**0.0493**	**0.1040**	**0.050**	**0.0778**	**0.1600**	**0.140**	**0.113**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	**0.00018 J**	<0.000800	<0.00080	<0.000200 U	**0.000202 J**
Chromium	0.10	**0.00137 J**	**0.00810**	**0.00192 J**	**0.0114**	**0.00191 J**	<0.0010	**0.00036 J**	<0.00100	<0.0010	0.000767 UH-MB,RB,CCB	**0.000954 UH-MB**
Lead	0.015	<0.00070	0.00344 U*	**0.00132 J**	**0.00483 J**	**0.00257 J**	**0.00095 J**	**0.00028 J**	<0.000700	0.0014	**0.00101 J**	**0.00136 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	**0.000016 J**	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	**0.00906**	**0.00768**	**0.00396 J**	**0.0147**	0.00214 UH*	**0.00152 J**	<0.0011	<0.00100	0.0011	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	570	1,080	361	1,110	195	73	130	78.8	69.0	**78.8**	**74.6**
Total Dissolved Solids	NA	1,580	2,590	1,540	2,630	1,080	1,140	820	750	1,200	**830**	**750**

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ANALYTE	TRRP Tier I Residential PCLs[a] GW mg/L	UA-10														
		UA-10 HAPOM-UA-10 08/05/2011 1108225-05	UA-10 HAPOM-UA-10-0 10/17/2011 1111630-11	UA-10 HAPOM-UA-10-1 11/17/2011 1111650-12	UA-10 HAP-UA10-070512-0 07/05/2012 1207231-11	UA-10 HAP-UA10-070512-1 07/05/2012 1207231-12	UA-10 HAP-UA10-112612-0 11/26/2012 1211017-14	UA-10 HAP-UA10-061913-0 06/19/2013 1306861-12	UA-10 HAP-UA10-NOV2013 02/13/2014 1402012-02	UA-10 HAP-UA10-JUL2014 07/11/2014 1407053[illegible]-19	UA-10 HAP-UA10-030 11/14/2014 14110545-15	UA-10 (DUP) HAP-UA10-031 11/14/2014 14110545-16	UA-10 HAP-UA10-030 05/14/2015 15059676-22	UA-10 HAP-UA10-100 12/17/2015 HS15120927-12	UA-10 HAP-UA10-110 6/30/2016 HS16070019-17
VOLATILE ORGANIC COMPOUNDS (mg/L)																
Benzene	0.005	9.9	1.2 J*	2.7 J*	2.3	2.8	5.0	4.8	0.81	0.1	3.1	2.9	0.00480	2.4	0.076
Ethylbenzene	0.70	<0.00010	<0.00050	<0.0010	<0.0015	<0.0015	<0.0015	<0.0015	<0.00030	<0.0030	<0.0030	<0.0030	<0.00030	<0.0030 U	<0.00030 U
Toluene	1.0	0.012 J	0.00083 J	0.0019 J	<0.0015	<0.0015	0.0026	0.0070	0.00037 J	0.0085 J	0.012	0.012	<0.00020	0.013	<0.00020 U
Xylenes, total	10	0.032 J	0.0061 J	0.011 J	0.0059 J	0.0079 J	0.011	0.012	0.0018	0.016	<0.0050	<0.0050	<0.00050	0.027 J	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																
Phenol	7.3	0.0026	0.0036 J*	0.0076 J*	0.015 J*	0.016 J*	0.0086 JL*	0.0073	0.0043	0.017 JL*	0.0026 JL-SUR, FD*	0.0089 JL-SUR, FD*	<0.000035 UJL-SUR,MS/SD	0.00028	<0.000035 U
Pyridine	0.024	0.00075 J	0.00090 J*	0.0012 J*	0.21 J*	0.23 J*	0.0042 JL*	0.0076	0.037	0.25 JL*	0.038 JL-LCS, FD*	0.0037 JL-LCS, FD*	0.000044 JL-MS/SD	0.020	<0.000030 UJL-MS/SD
METALS (mg/L)																
Arsenic	0.010	0.0373 J	0.0142	0.0149	0.0130	0.0129	0.0427	0.0301	0.0208	0.0080	0.0629	0.0624	0.027	0.0328	0.00941 UH-MS,RB
Barium	2.0	0.0443 J	0.0874	0.0937	0.0578	0.0543	0.0424	0.0706	0.0593	0.059	0.0730	0.0648	0.069	0.0603	0.0989
Cadmium	0.0050	<0.0080	<0.00080	<0.00080	<0.00080	<0.00080	0.00206	0.00177 J	<0.0016	0.00037 J	<0.00800	<0.00800	<0.00080	0.00201 J	0.000342 J
Chromium	0.10	0.180	0.0552	0.0544	0.0428	0.0463	0.180	0.178	0.081	0.106	0.276	0.273	0.021	0.243	0.0195
Lead	0.015	0.0102 J	0.00283 U*	0.00210 U*	0.00181 J	0.00153 J	0.00346 J	0.00384 J	0.002 UH-MB*	0.0031	<0.00700	<0.00700	0.061	<0.00600 U	0.0189
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	0.000053 J	<0.0000400	<0.0000400	0.00006 J	<0.0000400 U	0.000048 J
Selenium	0.050	0.0795	0.0146	0.0153	0.0138	0.0131	0.0092	0.0231	0.0467	0.0075	0.171	0.164	0.0043 J	0.0530	0.0022 J
Silver	0.12	<0.0080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.0016	<0.0016	<0.000056	<0.00800	<0.00800	<0.00080	<0.00100 U	<0.000200 U
OTHER																
Sulfate	NA	6,500	2,740	314	1,660	–	7,940	6,230	1,920	8,500	12,000	12,600	28	4140	53.8
Total Dissolved Solids	NA	12,200	7,300	9,080	6,400	–	13,800	13,900	4,940	16,000	15,600	16,400	410	10200	629

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ANALYTE	TRRP Tier 1 Residential PCL[a] [b]GW mg/L	UA-11												
		UA-11 HAPOM-UA-11 08/05/2011 1108225-07	UA-11 HAPOM-UA-11-0 11/12/2011 1111650-13	UA-11 HAP-UA11-070612-0 07/06/2012 1207230-07	UA-11 HAP-UA11-112912-0 11/29/2012 12111017-15	UA-11 (DUP) HAP-UA11-112912-1 11/29/2012 12111017-16	UA-11 HAP-UA11-062013-0 06/20/2013 1306861-23	UA-11 HAP-UA11-NOV2013 02/03/2014 14021012-17	UA-11 HAP-UA11-JUL2014 07/11/2014 14070539-20	UA-11 HAP-UA11-090 11/14/2014 14110545-17	UA-11 HAP-UA11-090 5/14/2015 15050676-19	UA-11(DUP) HAP-UA11-091 5/14/2015 15050676-19	UA-11 HAP-UA11-100 12/18/2015 HS15128629-05	UA-11 HAP-UA11-110 6/30/2016 HS16070019-23
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	91	64	46	48	60	48	50	46	28	2.2	2.2	34	41
Ethylbenzene	0.70	<0.0010	<0.010	<0.030	<0.030	<0.030	<0.015	<0.015	<0.015	<0.015	<0.0030	<0.0030	<0.0050 U	<0.030 U
Toluene	1.0	0.10 J	0.11	0.069 J	0.073 J	0.064 J	0.060	0.090	0.078	0.061	<0.0020	<0.0020	0.082	0.068 J
Xylenes, total	10	0.76 J	0.82	0.73	0.39	0.42	0.430	0.470	0.41	<0.025	<0.0050	<0.0050	0.48	0.22 J
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	0.027	0.22 J*	0.31 J*	0.17 JL*	0.24 JL*	0.39 JL*	<0.000032	0.093 JL*	0.039 JL-MS/SD*	0.0066 JL-SUR,MS/SD,FD	0.0031 JL-SUR,MS/SD,FD	0.018	0.18 JL-LCS,MS/SD
Pyridine	0.034	0.047 J*	0.023 J*	1.8 J*	0.022 JL*	0.034 JL*	0.50	0.056	1.1 JL*	0.12 JL-LCS,MS/SD*	0.018 JL-MS/SD,FD	0.34 JL-MS/SD,FD	0.080	0.18 JL-LCS,MS/SD
METALS (mg/L)														
Arsenic	0.010	0.142	0.146	0.161	0.188	0.217	0.223	0.198	0.073	0.0546	0.011 J-FD	0.022 J-FD	0.102	0.154
Barium	2.0	0.0323 J	0.0573	0.0257	0.0264	0.0271	0.0290 J	0.0238	0.024	0.0802	0.081 J-FD	0.12 J-FD	0.0366	0.188
Cadmium	0.0050	0.0168 J	0.0122	0.0141	0.0171	0.0184	0.0188 J	0.015	0.0087	<0.00800	<0.00080	0.0019 J	0.0124	0.0189
Chromium	0.10	0.813	0.718	0.825	0.772	0.803	0.925	0.784	0.427	0.390	0.018 J-FD	0.054 J-FD	0.382	0.410
Lead	0.015	0.0711	0.0706	0.0530	0.0790	0.0960	0.0510	0.0427	0.038	0.0134 J	0.0015	0.0076 J-FD	0.0216 J	0.0788
Mercury	0.0020	<0.000042	0.0000580 J	0.0000440 J	0.0000710 J	0.0000720 J	0.0000540 J	<0.000040	0.00012 J	<0.000040	<0.000040	<0.000040	<0.0000400 U	0.000048 J
Selenium	0.050	0.129	0.0360	0.0550	0.0610	0.0684	0.0697	0.1000	0.0054	0.0528	0.0036 J-FD	0.0068	0.0456 J	0.0194
Silver	0.12	<0.0080	<0.00080	<0.0016	<0.00080	<0.00080	<0.0080	<0.0016	<0.000056	<0.00800	<0.00080	<0.00080	<0.00100 U	<0.00100 U
OTHER														
Sulfate	NA	17,700	25,000	14,700	18,900	19,700	9,660	15,500	14,900	13,600	270	1000	8740	11900
Total Dissolved Solids	NA	31,700	39,900	33,500	26,600	35,100	25,700	30,700	29,100	15,100	1800	3900	16800	24800

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ANALYTE	TRRP Tier I Residential PCL[a] $^{**}GW_{tot}$ mg/L	UA-12											
		UA-12 HAPOM-UA-12 08/09/2011 1108225-08	UA-12 HAPOM-UA-12-0 11/17/2011 1111630-10	UA-12 HAP-UA12-070612-0 07/06/2012 1207230-03	UA-12 HAP-UA12-112912-0 11/29/2012 1211917-17	UA-12 HAP-UA12-062013-0 06/20/2013 1306861-20	UA-12 (DUP) HAP-UA12-062013-1 06/20/2013 1306861-21	UA-12 HAP-UA12-NOV2013 03/20/2014 14021012-18	UA-12 HAP-UA12-JUL2014 07/11/2014 14070539-21	UA-12 HAP-UA12-080 11/14/2014 14110545-18	UA-12 HAP-UA12-090 5/14/2015 15050676-18	UA-12 HAP-UA12-100 12/18/2015 HS15120826-03	UA-12 HAP-UA12-110 6/30/2016 HS16070019-22
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	60	40	47	35	88	97	79	62	78	6.7	79	87
Ethylbenzene	0.70	<0.0010	<0.0050	<0.030	<0.030	<0.030	<0.015	<0.030	<0.015	<0.015	<0.0030	<0.0030 U	<0.030 U
Toluene	1.0	0.12 J	0.081	0.13	0.052 J	0.150	0.130	0.120	0.10	0.13	0.0079 J	0.21	0.087 J
Xylenes, total	10	0.53 J	0.40	0.55	0.22	0.720	0.640	0.490	0.42	0.51	0.072	1.1	0.31
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	0.032	0.29 J*	0.47 J*	0.13 JL*	0.46	0.50	<0.000032	0.13 JL*	0.078 JL-MS/SD*	0.0058 JL-SUR,MS/SD	0.029	0.025 JL-LCS,MS/SD
Pyridine	0.024	0.032	0.028 J*	3.1 J*	0.041 JL*	0.17 JI*	0.34 JI*	0.082	1.4 JL*	0.16 JL-LCS,MS/SD*	0.18 JL-MS/SD	0.082 J-FD	0.061 JL-LCS,MS/SD
METALS (mg/L)													
Arsenic	0.010	0.0597	0.0507	0.0293	0.0287	0.0687	0.0777	0.0536	0.018	0.0605	0.041	0.150	0.112
Barium	2.0	0.0259 J	0.0391	0.0212	0.0396	0.0218	0.0209	0.0234	0.017	0.0210 J	0.065	0.0314	0.0271
Cadmium	0.0050	<0.0080	0.00319	<0.00080	0.00123 J	0.00347 J	0.00336 J	0.00181 J	0.0022	<0.00600	<0.00080	0.00847 J	0.00776
Chromium	0.10	0.264	0.228	0.257	0.184	0.448	0.411	0.352	0.312	0.348	0.018	0.450	0.381
Lead	0.015	<0.0070	0.00497 J	0.00277 J	0.00137 J	0.00800 J	0.00737 J	0.00234 UH-MS*	0.00540	<0.00700	0.0037	0.0297 J	0.0308
Mercury	0.0020	<0.000042	<0.000042	0.0000470 J	<0.000042	<0.000042	<0.000042	<0.000040	0.000038 J	0.0000500 J	<0.000040	0.000083 J	<0.0000400 U
Selenium	0.050	0.0642	0.0173	0.0234	0.0234	0.0256	0.0291	0.0686	0.0069	0.100	0.0082	0.0539	0.0184
Silver	0.12	<0.0080	<0.00080	<0.00080	<0.00080	<0.0016	<0.0016	<0.0016	<0.000056	<0.00800	<0.00080	<0.00100 U	<0.000200 U
OTHER													
Sulfate	NA	5,300	6,500	6,420	5,190	10,800	10,600	8,930	12,300	12,700	420	9590	10200
Total Dissolved Solids	NA	12,200	13,500	12,000	9,210	19,800	20,000	17,400	19,400	14,900	2200	18900	20700

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ANALYTE	TRRP Tier 1 Residential PCLs[a] **GW mg/L	UA-14															
		UA-14 HAPOM-UA-14 06/05/2011 1106225-09	UA-14 (DUP) HAPOM-DUP 06/05/2011 1106225-12	UA-14 HAPOM-UA-14-D 11/17/2011 1111650-08	UA-14 HAP-UA14-070612-0 07/06/2012 1207230-05	UA-14 HAP-UA14-070612-1 07/06/2012 1207230-06	UA-14 HAP-UA14-112912-0 11/29/2012 1211107-16	UA-14 HAP-UA14-062013-0 06/20/2013 1306861-19	UA-14 HAP-UA14-NOV2013 02/20/2014 1402012-19	UA-14 (DUP) HAP-UA14-NOV2013-1 02/20/2014 1402012-20	UA-14 HAP-UA14-JUL2014 07/11/2014 1407038-22	UA-14 HAP-UA14-080 11/14/2014 1411054S-19	UA-14 HAP-UA14-090 5/14/2015 1505076-17	UA-14 HAP-UA14-100 12/18/2015 HS1512080-02	UA-14 HAP-UA14-110 6/30/2016 HS1607001S-18	UA-14 HAP-UA14-111 6/30/2016 HS1607001S-19
VOLATILE ORGANIC COMPOUNDS (mg/L)																	
Benzene	0.005	22	21	28	18	19	40	30	8	8	7.8	4.2	2.5	5.0	0.18 JI-FD	0.21 JI-FD	
Ethylbenzene	0.70	0.00080 J	0.0011	<0.0050	<0.0075	<0.0075	<0.0075	<0.015	<0.0030	<0.0030	0.00040 J	<0.0015	<0.0030	<0.0030 U	<0.00030 U	<0.00030 U	
Toluene	1.0	0.010	0.011	0.038 J	0.011 J	0.011 J	0.049	0.060	0.0035 J	0.0035 J	0.0061	0.0089	<0.0020	0.0095 J	<0.00020 U	<0.00020 U	
Xylenes, total	10	0.013	0.018	0.11 J	0.052 J	0.053 J	0.22	0.220	0.037	0.035	0.044	0.065	0.0068 J	0.049	<0.00050 U	<0.00050 U	
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)																	
Phenol	7.3	0.015	0.015	0.093 J*	0.057 J*	0.074 J*	0.19 JL*	0.11	<0.000092 UJL-SUR	<0.000092	0.043 JL*	0.006 JL-SUR, MS/SD*	0.0082 JL-SUR,MS/SD	0.013	<0.000035 JI-FD	0.00056 JI-FD	
Pyridine	0.024	0.0018 J*	0.0021 J	0.0033 UJ*	0.55 J*	0.55 J*	0.012 JL*	0.028	0.029 JI-FD	0.12 JI-FD*	0.27 JL*	0.13 JL-LCS,MS/SD*	0.0056 JL-MS/SD	0.0018	<0.000030 UJL-MS/SD,FD	0.00026 JL-MS/SD,FD	
METALS (mg/L)																	
Arsenic	0.010	0.0064	0.005078	0.00721	0.00518	0.00535	0.0154	0.0118	0.00380 J	0.00418 J	0.0021	0.00278 J	0.018	0.00324 J	0.00732 UH-MB,KB,FD	0.00806 UH-MB,KB,FD	
Barium	2.0	0.0458	0.0414	0.0304	0.0774	0.0828	0.0200	0.188	0.174	0.171	0.154	0.144	0.19	0.274	0.186 JI-FD	0.13 JI-FD	
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	
Chromium	0.10	0.0214	0.0204	0.0543	0.0258	0.0247	0.0913	0.114	0.00853	0.00885	0.012	0.00808	0.0057	0.00820	0.0041 JI-FD	0.00308 JI-FD	
Lead	0.015	<0.00070	<0.00070	0.000776 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	0.002 J	<0.000600 U	0.000852 J	0.000815 J	
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000400 U	
Selenium	0.050	0.00489 J	0.00450 J	0.00511	0.00408 U*	0.00325 U*	0.00992	0.00636	0.00158 J	0.00282 J	<0.0011	0.00141 J	0.0011	0.0015 J	<0.00110 U	<0.00110 U	
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U	
OTHER																	
Sulfate	NA	836	--	2,040	677	--	2,560	3,160	354	290	394	419	98	550	157	138	
Total Dissolved Solids	NA	2,040	--	4,030	2,010	--	4,900	4,280	2,530	2,380	2,530	2,060	730	2140	1770	1600	

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ANALYTE	TRRP Tier 1 Residential PCL[a] $^{ow}GW_{ing}$ mg/L	UA-15											
		UA-15 HAPDM-UA-15 08/05/2011 1108225-10	UA-15 HAPDM-UA-15-0 11/17/2011 1111630-07	UA-15 HAP-UA15-070512-0 07/05/2012 1207231-05	UA-15 HAP-UA15-112812-0 11/28/2012 1211017-19	UA-15 HAP-UA15-061913-0 06/19/2013 1306861-05	UA-15 HAP-UA15-NOV2013 02/19/2014 1402102-03	UA-15 HAP-UA15-JUL2014 07/10/2014 1407053-13	UA-15 (DUP) HAP-UA15-JUL2014-1 07/10/2014 1407053-14	UA-15 HAP-UA15-080 11/13/2014 1411054-21	UA-15 HAP-UA15-090 5/14/2015 1505076-15	UA-15 HAP-UA15-100 12/17/2015 HS15120827-08	UA-15 HAP-UA15-110 6/29/2016 HS16070019-14
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	0.94	1.0	0.97	0.41	0.350	0.022	0.0078	0.0082	<0.00020	0.007	0.0011 UH-RB,FB	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	0.00010 UJ*	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	0.00023 J	<0.00030	<0.00050	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.000050 UJ*	0.00031 J*	0.0014 J*	0.00071 JL*	0.00012 J	0.00006 J	<0.00044 UJL*	<0.00044 UJL*	<0.000026 UJL-HT*	0.00005 JL-SUR,MS/SD	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	0.00058 J*	<0.00010 UJL*	0.00021 J	<0.000048	<0.0024 UJL*	<0.0024 UJL*	<0.000040 UJL-HT*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)													
Arsenic	0.010	0.00143	0.0155	0.00618	0.00891	0.00886	0.0032 J	0.0057	0.0059	0.00965	0.11	0.00215 J	0.0087
Barium	2.0	0.0322	0.0196	0.0451	0.0296	0.0679	0.0827	0.087	0.087	0.0721	0.14	0.0915	0.0560
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	0.00184 J	0.00282 J	0.00287 J	<0.0012	<0.0010	<0.0010	<0.00018	<0.00018	<0.00100	0.0019 J	0.000684 UH-MB,RB,CCB	0.00096 UH-MB
Lead	0.015	<0.00070	0.000952 U*	0.000890 J	<0.00070	<0.00070	<0.00070	<0.00012	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	0.000022 J	<0.000012	<0.0000400	<0.00040	<0.0000400 U	<0.0000400 U
Selenium	0.050	0.0120	0.00002	0.00421 J	0.00750	0.00192 UH*	<0.0010	<0.0011	<0.0011	<0.00100	0.0026 UH-CCB	<0.00110 U	0.00122 J
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	1,470	17,700	835	1,270	222	899	990	98	101	44	40.9	47.8
Total Dissolved Solids	NA	3,170	3,380	3,140	2,740	1,080	788	1,010	926	802	800	476	364

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ANALYTE	TRRP Tier 1 Residential PCLs[a] $^{GW}GW_{ingest}$ mg/L	UA-16										
		UA-16 HAPOM-UA-16 09/05/2011 1108225-11	UA-16 HAPOM-UA-16-0 11/17/2011 1111650-09	UA-16 HAP-UA16-070512-0 07/05/2012 1207231-04	UA-16 HAP-UA16-1128120 11/28/2012 12111017-20	UA-16 HAP-UA16-061913-0 06/19/2013 1306861-07	UA-16 HAP-UA16-NOV2013 02/19/2014 14021012-04	UA-16 HAP-UA16-JUL2014 07/10/2014 14070538-15	UA-16 HAP-UA16-080 11/14/2014 14110545-22	UA-16 HAP-UA16-093 5/14/2015 15050676-16	UA-16 HAP-UA16-100 12/17/2015 HS15120827-09	UA-16 HAP-UA16-110 6/29/2016 HS16070019-15
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	**0.92**	**7.2**	**0.10**	**8.8**	**0.410**	**2.3**	**0.0090**	**6.3**	**0.0019**	**2.0**	**0.00038 J**
Ethylbenzene	0.70	**0.00086 J**	**0.0010 J**	<0.0030	**0.00046 J**	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030 U	<0.00030 U
Toluene	1.0	0.00050 UJ*	**0.0013 J**	<0.0030	**0.00038 J**	<0.0020	<0.0020	<0.0020	**0.00062 J**	<0.0020	<0.0020 U	<0.00020 U
Xylenes, total	10	**0.018**	**0.014 J**	**0.0038**	**0.0056**	**0.0047**	<0.0050	<0.0050	**0.011**	**0.00062 J**	**0.016 J**	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	0.00055 U*	**0.0041 J***	0.00022 U*	**0.040 JL***	**0.00091**	**0.00021**	<0.00043 UJL*	**0.018 JL-8 UR***	<0.000035 UJL-SUR,MS/SD	**0.0012**	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	**0.00012 J***	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-LCS*	<0.000030 UJL-MS/SD	0.000039 UH-RB	<0.000030 UJL-MS/SD
METALS (mg/L)												
Arsenic	0.010	<0.0013	**0.00170 J**	**0.00161 J**	<0.0013	<0.0010	<0.0010	<0.00042	<0.00100	<0.0010	<0.000400 U	**0.00318 UH-MB,CCB,RB**
Barium	2.0	**0.190**	**0.167**	**0.110**	**0.163**	**0.131**	**0.139**	**0.106**	**0.138**	**0.11**	**0.128**	**0.0779**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	**0.00173 J**	<0.0012	<0.0010	**0.00141 J**	**0.0012**	<0.00100	<0.0010	0.00095 UH-MB,RB,CCB	**0.000633 UH-MB**
Lead	0.015	<0.00070	0.000726 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	**0.00106 J**	**0.00233 J**	<0.0010	0.00132 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	655	809	400	618	279	298	269	355	260	**185**	**198**
Total Dissolved Solids	NA	3,430	3,660	2,230	2,390	1,230	1,110	1,120	1,210	1,100	**930**	**612**

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ANALYTE	TRRP Tier 1 Residential PCLs[a] c^{ing}_{GW} mg/L	MA-02											
		MA-02 HAP-OM-MA-02 08/04/2011 1106188-01	MA-02 HAP-OM-MA-03-0 11/17/2011 1111650-04	MA-02 HAP-MA02-070512-0 07/05/2012 1207231-09	MA-02 HAP-MA02-112612-0 11/26/2012 12111017-07	MA-02 HAP-MA02-061913-3 06/19/2013 1306961-10	MA-02 HAP-MA02-NOV2013 02/19/2014 14021012-05	MA-02 HAP-MA02-JUL2014 07/11/2014 14070539-18	MA-02 HAP-MA02-080 11/14/2014 14110545-06	MA-02 HAP-MA02-090 5/14/2015 15050676-06	MA-02 HAP-MA02-100 12/17/2015 HS15120827-07	MA-02 HAP-MA02-110 6/29/2016 HS16070019-13
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	0.014 UH	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	**0.0074**	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	0.00016 UJ*	**0.000098 J**	<0.000092 UJ*	<0.000050 UJL*	<0.000050	<0.000032	<0.00047 UJL*	**0.000082 UH-RB, SUR, MS/SD***	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0026 UJL*	<0.000048 UJL-MS/SD*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)												
Arsenic	0.010	**0.00488 J**	**0.00561**	**0.00655**	**0.00542**	**0.00444 J**	**0.00709**	**0.0057**	**0.000694**	**0.0060**	**0.00591**	**0.00436 UH-MB,CCB,RB**
Barium	2.0	**0.0612**	**0.0481**	**0.0208**	**0.0699**	**0.0993**	**0.031**	**0.060**	**0.0796**	**0.042**	**0.0728**	**0.0551**
Cadmium	0.0050	<0.00060	<0.00060	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	<0.0010	<0.0010	**0.00032 J**	<0.00100	<0.0010	0.000425 UH-MB,RB,CCB	**0.00492 J**
Lead	0.015	<0.00070	0.000769 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	**0.00228 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000040	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	**0.00366 J**	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	66.5	61.1	19.9	46.4	59.1	7.61	53	52.5	5.7	**25.8**	**3.82**
Total Dissolved Solids	NA	1,210	740	420	856	920	336	822	828	380	742	130

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ANALYTE	TRRP Tier 1 Residential PCLs[a] **GW mg/L	MA-03										
		MA-03 HAPOM-MA-03 08/05/2011 1108225-003	MA-03 HAPOM-MA-03-0 11/16/2011 1111590-06	MA-03 HAP-MA03-070512-0 07/05/2012 1207231-06	MA-03 HAP-MA03-112012-0 11/20/2012 1211617-08	MA-03 HAP-MA03-061913-0 06/19/2013 1306861-06	MA-03 HAP-MA03-NOV2013-3 02/19/2014 1402012-06	MA-03 HAP-MA03-JUL2014 07/10/2014 1407053B-07	MW-03 HAP-MA03-080 11/14/2014 1411054S-07	MW-03 HAP-MA03-090 5/14/2015 1505067G-10	MW-03 HAP-MA03-103 12/17/2015 HS1512092 7-06	MW-03 HAP-MA03-110 6/29/2016 HS1607001 9-12
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	**0.00006 J**	<0.00020	<0.00020	<0.00020	<0.00020 U	**0.00036 J**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00090	<0.00090	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	0.00044 U*	<0.000050	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000032	<0.00045 UJL*	<0.000026 UJL-SUR,MS/SD*	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.00048	<0.0025 UJL*	<0.000040 UJL-MS/SD*	<0.000030	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)												
Arsenic	0.010	**0.00803**	**0.00849**	**0.0108**	**0.0111**	**0.0119**	**0.0127**	**0.011**	**0.0117**	**0.011**	**0.0116**	**0.0143 UH-RB**
Barium	2.0	**0.164**	**0.156**	**0.165**	**0.164**	**0.200**	**0.186**	**0.169**	**0.178**	**0.180**	**0.186**	**0.134**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	<0.0010	<0.0010	**0.00029 J**	<0.00100	<0.0010	<0.000400 U	**0.000457 UH-MB**
Lead	0.015	<0.00070	<0.00070	**0.000712 J**	<0.00070	<0.00070	0.000854 UH-MB*	**0.00022 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	**0.00438 J**	<0.0010	0.00102 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	69.4	24.3	14.9	15.7	18.3	11.4	11.8	14.9	10	**10.9**	**9.46**
Total Dissolved Solids	NA	1,140	614	600	436	448	368	366	358	340	**364**	**342**

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ANALYTE	TRRP Tier I Residential PCLs* **GW mg/L	MA-05											
		MA-05 HAPOM-MA-05 08/05/2011 1108225-04	MA-05 HAPOM-MA-05-0 11/16/2011 1111530-01	MA-05 HAP-MA05-070612-0 07/06/2012 1207230-04	MA-05 HAP-MA05-112712-0 11/27/2012 12111017-05	MA-05 HAP-MA05-062013-0 06/20/2013 1306861-15	MA-05 HAP-MA05-NOV2013 02/19/2014 14021012-07	MA-05 HAP-MA05-JUL2014 07/10/2014 1407039-08	MA-05 HAP-MA05-080 11/14/2014 1411045-08	MA-05 HAP-MA05-090 5/14/2015 1505076-01	MA-05 HAP-MA05-100 12/17/2015 HS15120827-05	MA-05 HAP-MA05-110 6/29/2016 HS16070819-11
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	<0.00030	<0.00030	<0.00030	**0.00068 J**	<0.00030	<0.00020	<0.00030	<0.00030	**0.00037 J**	<0.00030 U	**0.0004 J**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.00031 J**	<0.00050	<0.00050	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	0.00019 U*	<0.000050 UJ*	0.000060 U*	<0.000050 UJL*	<0.000056	<0.000032	<0.00045 UJL*	**0.00019 JJ-SUR,MS/SD***	**<0.000035 UJL-SUR,MS/SD**	<0.000035 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010	<0.000048	<0.0025 UJL*	<0.000040 UJL-MS/SD*	<0.000039 UJL-MS/SD	<0.000030 U	**0.000056 UH-RB,MS/SD**
METALS (mg/L)												
Arsenic	0.010	**0.0231**	**0.0224**	**0.0249**	**0.0252**	**0.0230**	**0.0230**	**0.027**	**0.0259**	**0.0290**	**0.0280**	**0.0278**
Barium	2.0	**0.108**	**0.113**	**0.125**	**0.131**	**0.122**	**0.134**	**0.145**	**0.138**	**0.14**	**0.128**	**0.129**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	**0.00188 J**	<0.0012	<0.0010	<0.0010	<0.00018	<0.00100	<0.0010	0.00057 UH-MS,RB,CCB	<0.000400 U
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	0.000719 UH-MS*	**0.00013 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	0.00170 U*	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.000080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	14.2	3.34	6.51	2.68	7.02	11.7	16	10.0	**18**	**8.54**	**10.8**
Total Dissolved Solids	NA	348	342	552	342	350	386	358	330	**340**	**314**	**342**

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ANALYTE	TRRP Tier 1 Residential PCLs[a] GW mg/L	MA-06											
		MA-06 HAPOM-MA-06 05/04/2011 1108189-03	MA-06 HAPOM-MA-06-0 11/18/2011 1111590-06	MA-06 HAP-MA06-070512-0 07/05/2012 1207231-02	MA-06 HAP-MA06-112812-0 11/28/2012 1211017-09	MA-06 HAP-MA06-061913-0 06/19/2013 1306861-08	MA-06 HAP-MA06-NOV2013 03/19/2014 14021012-08	MA-06 HAP-MA06-JUL2014-3 07/10/2014 14070536-09	MA-06 HAP-MA06-080 11/13/2014 14110545-09	MA-06 (DUP) HAP-MA06-081 11/13/2014 14110545-10	MA-06 HAP-MA06-051 5/12/2015 15050676-09	MA-06 HAP-MA06-100 12/16/2015 HS15120027-04	MA-06 HAP-MA06-113 6/29/2016 HS16070019-09
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	0.00041 J	<0.00020	0.010	0.010	<0.00020	0.0078	0.002
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	0.0027 J	0.0021 J	0.0013 J	0.00062	<0.00050	<0.00050	0.00087 J	<0.00050	<0.00050	0.0012 J	0.0016 J	0.0041
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	0.00034 UJ*	<0.000050 UJ*	0.000075 U*	<0.000050 UJL*	<0.000050 UJL*	0.00013 J	<0.00043 UJL*	0.00020 JL-SUR, MS/SD, FD*	0.00040 JL-SUR, MS/SD, FD*	<0.000035 UJL-SUR,MS/SD	<0.000035	0.000066 J
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.000048 UJL-MS/SD*	<0.000040 UJL-MS/SD*	<0.000030 UJL-MS/SD	0.000073	0.00011 UH-RB,MS/SD
METALS (mg/L)													
Arsenic	0.010	0.00935	0.00912	0.0110	0.0104	0.00822	0.0107	0.0099	0.0101	0.00960	0.00990	0.0101	0.0116 UH-RB
Barium	2.0	0.181	0.180	0.180	0.181	0.147	0.130	0.149	0.140	0.138	0.120	0.0848	0.0826
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000600	<0.000600	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	0.00128 J	<0.0012	<0.0012	<0.0010	<0.0010	<0.00018	<0.00100	<0.00100	<0.0010	0.000989 UH-MB,RB,CCB	<0.000400 U
Lead	0.015	<0.00070	0.000744 J	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.0000400	<0.0000100	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	0.00094 J	<0.0010	0.00110 UH*	<0.0010	<0.0011	<0.00100	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.00060	<0.000056	<0.000600	<0.000600	<0.00060	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	7.61	11.0	10.0	5.56	21.0	4.52	18	11.3	11.1	19.0	7.25	11.4
Total Dissolved Solids	NA	370	416	760	338	414	339	322	329	338	350	320	370

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ANALYTE	TRRP Tier I Residential PCLs[1] $<=GW_{ns}$ mg/L	MA-07											
		MA-07 HAPOM-MA-07 08/04/2011 1108188-05	MA-07 (DUP) HAPOM-DUP 08/04/2011 1108188-09	MA-07 HAPOM-MA-07-0 11/16/2011 1111590-08	MA-07 HAP-MA07-070512-0 07/05/2012 1207231-08	MA-07 HAP-MA07-1128120 11/28/2012 12111017-10	MA-07 HAP-MA07-051313-0 05/19/2013 1305281-11	MA-07 HAP-MA07-NOV2013 02/19/2014 1402101-09	MA-07 HAP-MA07-JUL2014 07/10/2014 1407105539-10	MA-07 HAP-MA07-063 11/14/2014 1411054512	MA-07 HAP-MA07-050 5/14/2015 15050876-08	MA-07 HAP-MA07-100 12/15/2015 HS15120827-02	MA-07 HAP-MA07-110 6/20/2016 HS16070019-08
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	**0.00037 J**	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.0013 J**	**0.0014 J**	**0.0012 J**	<0.00090	<0.00030	**0.0011**	<0.00090	**0.0022**	<0.00090	**0.0012 J**	**0.00071 J**	**0.00065 J**
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.00005 UJ*	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJL*	<0.000050	**0.000092 J**	<0.00044 UJL*	<0.000035 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000045	<0.0024 UJL*	<0.000030 UJL-MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)													
Arsenic	0.010	**0.00494 J**	**0.00560**	**0.00554**	**0.00624**	**0.00576**	**0.00530**	**0.00530**	**0.0062**	**0.00690**	**0.0060**	**0.00739**	**0.00863 UH-MB**
Barium	2.0	**0.161**	**0.179**	**0.171**	**0.176**	**0.189**	**0.206**	**0.167**	**0.186**	**0.176**	**0.18**	**0.172**	**0.163**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000080	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0010	<0.0010	**0.00024 J**	<0.00100	<0.0010	0.000662 UH-MB,RB,CCB	**0.000429 UH-MB**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	**0.00012 J**	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000400	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	**0.00238 J**	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	9.63	–	0.895	10.3	4.47	13.8	9.39	11	6.24	**9.3**	3.3 UH-CCB	**9.37**
Total Dissolved Solids	NA	276	–	314	320	276	352	342	324	318	**300**	**318**	**368**

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ANALYTE	TRRP Tier 1 Residential PCLs[a] ^{GW} mg/L	MA-08												
		MA-08 HAPOM-MA-08 08/04/2011 1108185-07	MA-08 HAPOM-MA-08-0 11/17/2011 1111680-02	MA-08 HAP-MA08-070612-0 07/06/2012 1207230-01	MA-08 HAP-MA08-112612-0 11/26/2012 1211017-11	MA-08 (DUP) HAP-MA08-112612-1 11/26/2012 1211017-12	MA-08 HAP-MA08-062013-0 06/28/2013 1306661-18	MA-08 HAP-MA08-NOV2013 03/26/2014 1402101 2-21	MA-08 HAP-MA08-JUL2014 07/16/2014 1407053 8-11	MA-08 HAP-MA08-080 11/13/2014 1411053 5-13	MA-08 HAP-MA08-090 05/12/2015 1505067 6-03	MA-08 (DUP) HAP-MA08-090 05/12/2015 1505067 6-03	MA-08 HAP-MA08-100 12/16/2015 HS15120788-09	MA-08 HAP-MA08-110 6/24/2016 HS16070019-07
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.011**	**0.0068**	**0.0030**	**0.0038**	**0.0038**	**0.0061**	**0.0099**	**0.014**	**0.0054**	**0.012**	**0.011**	**0.0065**	**0.016**
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	0.00622 U*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJL*	<0.000050 UJL*	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-SUR*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.0010 UJL*	<0.00010	<0.000048	<0.0034 UJL*	<0.000040 UJL-LCS*	<0.000050 UJL-MS/SD	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)														
Arsenic	0.010	**0.00839**	**0.0105**	**0.0112**	**0.0107**	**0.0105**	**0.0110**	**0.00898**	**0.0098**	**0.00981**	**0.0093**	**0.0089**	**0.00907**	**0.00929 UH-MB**
Barium	2.0	**0.142**	**0.124**	**0.126**	**0.182**	**0.166**	**0.153**	**0.210**	**0.207**	**0.234**	**0.24**	**0.22**	**0.150**	**0.156**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000080	<0.00080	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0010	<0.0010	**0.00082 J**	**0.00289 J**	**0.0031 J**	**0.0020**	0.000582 UH-RB	**0.00109 UH-MB**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.00070	<0.000500 U	<0.000500 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000090	<0.000040	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	0.00117 U*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.00080	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	99.7	75.1	107	69.4	64.5	65.8	46.2	55	93.9	58	89	38.0	53.3
Total Dissolved Solids	NA	1,230	1,190	1,220	1,140	1,130	1,270	1,130	1,120	1,030	1100	1100	922	1100

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ANALYTE	TRRP Tier 1 Residential PCLs[2] ^{ow}GW mg/L	DA-01											
		DA-01 HAP-OM-DA-01 6/8/2011 1109225-002	DA-01 HAP-OM-DA-01-0 11/17/2011 1111650-03	DA-01 HAP-DA01-070512-0 07/05/2012 1207231-10	DA-01 HAP-DA01-112812-0 11/28/2012 1211017-01	DA-01 HAP-DA01-061913-0 06/19/2013 1306861-09	DA-01 HAP-DA01-NOV2013 03/19/2014 1403012-16	DA-01 HAP-DA01-JUL2014 07/10/2014 1407053-01	DA-01 (DUP) HAP-DA01-JUL2014-1 07/10/2014 1407053-02	DA-01 HAP-DA01-090 11/14/2014 1411054-01	DA-01 HAP-DA01-090 5/12/2015 1505076-07	DA-01 HAP-DA01-100 12/15/2015 HS15120788-02	DA-01 HAP-DA01-100 6/27/2016 HS16070019-01
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	**0.0001 J**	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	**0.00002 J**	<0.00030	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.000050 UJ*	<0.000050 UJ*	0.000792 U*	<0.00005 UJL*	<0.000050 UJL*	**0.000085 JL-SUR***	<0.00045 UJL*	<0.00045 UJL*	<0.000036 UJL-SUR, MS/SD*	<0.000036 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010 UJL*	<0.000043 UJL-SUR*	<0.0025 UJL*	<0.0025 UJL*	<0.000030 UJL-SUR, MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)													
Arsenic	0.010	<0.0013	<0.0013	<0.0013	<0.0013	<0.0010	**0.0012 J**	**0.00093 J**	**0.0011**	<0.00100	<0.0010	**0.000716 J**	**0.00022 UH-MB,CCB**
Barium	2.0	**0.0898**	**0.0851**	**0.109**	**0.116**	**0.122**	**0.117**	**0.130**	**0.132**	**0.126**	**0.13**	**0.107**	**0.113**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.00009	<0.000600	<0.00060	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	**0.00220 J**	<0.0012	<0.0010	<0.0010	<0.00018	<0.00018	<0.00100	<0.0010	<0.000400 U	**0.00108 UH-MB**
Lead	0.015	<0.00070	**0.000819 U***	<0.00070	<0.00070	<0.00070	<0.00070	**0.00020 J**	**0.00015 J**	<0.000700	<0.00070	<0.000600 U	**0.000867 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000012	<0.0000400	<0.000040	<0.0000300 UJ-CCB	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	**0.00360 J**	<0.0010	**0.00157 UH***	<0.0010	**0.0013 J**	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00030	<0.00080	<0.00080	<0.00056	<0.000056	<0.000056	<0.000003	<0.00080	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	5.40	3.61	2.70	2.53	3.84	3.27	3.43	3.56	14.9	3.1	3.13	3.76
Total Dissolved Solids	NA	316	316	308	352	316	340	316	316	298	300	322	338

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ANALYTE	TRRP Tier 1 Residential PCLs[1] $^{GW}_{Gw}$ mg/L	DA-02													
		DA-02 HAPOM-DA-02 06/04/2011 1106169-06	DA-02 HAPOM-DA-02-0 11/16/2011 1111590-7	DA-02 HAP-DA02-070612-D 07/06/2012 1207230-02	DA-02 HAP-DA-02-112712-0 11/27/2012 1211017-02	DA-02 HAP-DA02-062013-0 06/20/2013 1306861-17	DA-02 HAP-DA02-NOV2013 02/19/2014 1402012-12	DA-02 (DUP) HAP-DA02-NOV2013-T 02/19/2014 1402012-13	DA-02 HAP-DA02-JUL2014 07/10/2014 1407038-03	DA-02 HAP-DA02-080 11/13/2014 1411045-02	DA-02 HAP-DA02-090 5/12/2015 1505067-07	DA-02 HAP-DA02-100 12/15/2015 HS15120768-07	DA-02 HAP-DA02-161 12/16/2015 HS15120768-08	DA-02 HAP-DA02-110 6/29/2016 HS16070019-05
VOLATILE ORGANIC COMPOUNDS (mg/L)															
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	0.00012 J	<0.00010	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	0.0012 J
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)															
Phenol	7.3	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*	0.000076 JL*	<0.000050	<0.000032	<0.000032 UJL-SUR*	<0.00047 UJL*	0.000068 JL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010	<0.000048	<0.000048 UJL-SUR*	<0.0026 UJL*	<0.000040 UJL-SUR, MS/SD*	<0.000030 UJL-SUR,MS/SD	<0.000030 U	<0.000030 UJL-SUR	<0.000030 UJL-MS/SD
METALS (mg/L)															
Arsenic	0.010	0.00395 J	0.00302 J	0.00361 J	0.00344 J	0.00244 J	0.00307 J	0.00323 J	0.0032	0.00259 J	0.0023	0.00232 J	0.00236 J	0.00487 UH-MS,CCB
Barium	2.0	0.328	0.279	0.226	0.205	0.152	0.151	0.146	0.152	0.148	0.13	0.182	0.154	0.0853
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	0.00391 J	<0.0012	<0.0012	<0.0010	<0.0010	<0.0010	0.00021 J	<0.00100	<0.0010	<0.000400 U	<0.000400 U	0.000642 UH-MS
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000040	<0.000012	<0.0000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 UJ-CCB	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	0.00125 U*	<0.0010	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00080	<0.000200 U	<0.000200 U	<0.000200 U
OTHER															
Sulfate	NA	9.86	10.2	10.1	11.7	13.5	9.95	10.7	9.90	11.3	8.7	5.48	8.48	12.4
Total Dissolved Solids	NA	550	470	456	424	384	376	362	340	340	340	324 JI-FD	1050 JI-FD	396

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Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCLs[a] GW mg/L	DA-05												
		DA-05 HAPOM-DA-05 08/04/2011 1108188-02	DA-05 HAPOM-DA-05-0 11/16/2011 1111590-02	DA-05 HAP-DA05-070612-0 07/06/2012 1207201-01	DA-05 HAP-DA05-112312-0 11/27/2012 12111017-03	DA-05 HAP-DA05-061913-0 06/19/2013 1306661-03	DA-05 (DUP) HAP-DA05-061913-1 06/19/2013 1306661-04	DA-05 HAP-DA05-NOV2013 02/19/2014 14021012-14	DA-05 HAP-DA05-JUL2014 07/10/2014 1407059B-04	DA-05 HAP-DA05-080 11/13/2014 14115045-03	DA-05 HAP-DA05-090 5/12/2015 15050876-13	DA-05 HAP-DA05-100 12/16/2015 HS15120768-06	DA-05 HAP-DA05-110 6/2/2016 HS16070019-04	DA-05 HAP-DA05-111 6/2/2016 HS16070019-05
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	**0.00010 J**	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	**0.00081 J**	<0.00050 U	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	<0.00005 UJ*	<0.000050 UJ*	0.000074 U*	<0.000050 UJL*	<0.000050	<0.000056 UJL*	<0.000032	<0.00049 UJL*	**0.000056 JL-SUR, MS/SD***	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U	<0.000035 U
Pyrene	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.00010 UJL*	<0.000048	<0.0024 UJL*	<0.000010 UJL-SUR, MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD	<0.000030 UJL-MS/SD
METALS (mg/L)														
Arsenic	0.010	**0.00363 J**	<0.0013	**0.00565**	**0.00483 J**	<0.0010	<0.0010	**0.00506**	**0.0011**	<0.00100	<0.0010	**0.00486 J**	**0.0045 UH-MS,CCB**	**0.0043 UH-MS,CCB**
Barium	2.0	**0.126**	**0.131**	**0.133**	**0.161**	**0.157**	**0.156**	**0.144**	**0.148**	**0.149**	**0.14**	**0.133**	**0.0778**	**0.0868**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00060	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	**0.00187 J**	<0.0012	<0.0012	<0.0010	<0.0010	<0.0010	**0.00026 J**	<0.00100	<0.0010	<0.000400 U	**0.00481 JI-FD**	**0.0057 JI-FD**
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	<0.00070	**0.00023 J**	<0.000700	<0.00070	<0.000600 U	**0.00304 J**	**0.00373 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	**0.00368 J**	**0.00118 J**	0.00196 UH*	0.00116 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000800	<0.00060	<0.000200 U	<0.000200 U	<0.000200 U
OTHER														
Sulfate	NA	4.34	4.920	0.836	0.626	39.2	40.1	2.45	38.7	37.9	37	0.913	6.02	5.16
Total Dissolved Solids	NA	348	318	650	296	314	328	168	329	318	350	314	152	176

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ANALYTE	TRRP Tier 1 Residential PCLs[a] $^{tw}GW_{ac}$ mg/L	DA-06											
		DA-06 HAPOM-DA-06 08/04/2011 1108168-04	DA-06 HAPOM-DA-06-0 11/16/2011 1111590-03	DA-06 HAPOM-DA-06-1 11/16/2011 1111590-04	DA-06 HAP-DA06-070512-3 07/05/2012 1207231-07	DA-06 HAP-DA06-112712-3 11/27/2012 1211017-04	DA-06 HAP-DA06-061913-0 06/19/2013 1306861-02	DA-06 HAP-DA06-NOV2013 02/19/2014 1402012-16	DA-06 HAP-DA06-JUL2014 07/10/2014 1407038-05	DA-06 HAP-DA06-080 11/13/2014 1411054S-04	DA-06 HAP-DA06-090 5/14/2015 1505067S-12	DA-06 HAP-DA06-100 12/15/2015 H151120788-04	DA-06 HAP-DA06-110 6/28/2016 H160709019-03
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	0.00010 UJ*	<0.00010	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	<0.00030	<0.00030	<0.00090	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.00005 UJ*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJ*	<0.000050 UJL*	<0.000050	0.000082 J	<0.00046 UJL*	<0.000035 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U
Pyridine	0.034	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJ*	<0.00010 R*	<0.00010 UJL*	<0.00010	<0.000048	<0.0025 UJL*	<0.000030 UJL-SUR,MS/SD*	<0.000030 UJL-MS/SD	<0.000030 U	<0.000030 UJL-MS/SD
METALS (mg/L)													
Arsenic	0.010	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0010	<0.0010	<0.00042	<0.00100	<0.0010	<0.000400 U	0.00329 UH-MB,CCB
Barium	2.0	0.117	0.110	0.107	0.126	0.128	0.139	0.129	0.131	0.130	0.12	0.121	0.109
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00089	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	0.00127 J	<0.0012	<0.0012	0.00102 J	<0.0010	<0.00018	<0.00100	<0.0010	<0.000400 U	0.000922 UH-MB
Lead	0.015	<0.00070	<0.00070	<0.00070	<0.00070	0.00130 J	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	<0.000600 U
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040	<0.000012	<0.000400	<0.000040	<0.0000400 UJ-CCB	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	<0.0010	0.00250 J	<0.0010	0.00116 UH*	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00060	<0.000056	<0.000800	<0.00060	<0.000200 U	<0.000200 U
OTHER													
Sulfate	NA	3.6	2.30	2.28	2.49	2.38	3.69	2.82	3.26	4.98	3.8	3.14	4.29
Total Dissolved Solids	NA	316	322	312	760	360	338	304	348	300	340	316	348

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Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCLs* c*GW mg/L	DA-09										
		DA-09 HAPOM-DA-08 08/05/2011 1108225-001	DA-09 HAPOM-DA-09-0 11/17/2011 1111659-01	DA-09 HAP-DA09-070612-0 07/06/2012 1207220-06	DA-09 HAP-DA09-112712-0 11/27/2012 12111017-05	DA-09 HAP-DA09-062013-0 06/06/2013 1306661-15	DA-09 HAP-DA09-NOV2013 02/20/2014 14021012-23	DA-09 HAP-DA09-JUL2014 07/10/2014 14070538-06	DA-09 HAP-DA09-090 11/13/2014 14110545-05	DA-09 HAP-DA09-060 05/14/2015 15050676-05	DA-09 HAP-DA09-100 12/15/2015 HS15120768-03	DA-09 HAP-DA09-110 6/27/2016 HS16070019-02
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	**0.00025 J**
Ethylbenzene	0.70	<0.00010	<0.00010	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.0	0.00014 UJ*	<0.00010	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00030	**0.00032 J**	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	<0.000050 UJ*	<0.000050	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000032	<0.00044 UJL*	<0.000026 UJL-SUR, MS/SD*	<0.000035 UJL-SUR,MS/SD	<0.000035 UJL-SUR	<0.000035 U
Pyridine	0.024	<0.00010 UJ*	<0.00010	<0.00010 UJ*	<0.00010 UJL*	<0.00010	<0.000048	<0.0024 UJL*	<0.000040 UJL-MS/SD*	<0.000030 UJL-MS/SD	<0.000030 UJL-SUR	**0.00009 JL-MS/SD**
METALS (mg/L)												
Arsenic	0.010	**0.00179 J**	**0.00153 J**	**0.00200 J**	**0.00183 J**	**0.00153 J**	**0.00147 J**	**0.0014**	**0.00155 J**	**0.0019 J**	**0.0015 J**	**0.00403 UH-MB,CCB**
Barium	2.0	**0.0904**	**0.0846**	**0.0828**	**0.101**	**0.103**	**0.0991**	**0.124**	**0.165**	**0.12**	**0.0851**	**0.117**
Cadmium	0.0050	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00009	<0.000800	<0.00080	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0012	<0.0012	<0.0012	**0.00347 J**	<0.0015	**0.0027**	**0.00314 J**	<0.0010	0.00184 UH-RB	**0.00167 UH-MB**
Lead	0.015	<0.00070	0.000734 U*	<0.00070	<0.00070	<0.00070	<0.00070	<0.00012	<0.000700	<0.00070	<0.000600 U	**0.00064 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000043 UJL-MS*	<0.000012	<0.0000400		<0.0000400 UJ-CCB	<0.0000400 U
Selenium	0.050	<0.0010	<0.0010	0.00205 U*	<0.0010	<0.0010	<0.0010	<0.0011	<0.00100	<0.0010	<0.00110 U	<0.00110 U
Silver	0.12	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.00080	<0.000056	<0.000600	<0.00080	<0.000200 U	<0.000200 U
OTHER												
Sulfate	NA	5.78	5.62	4.87	3.24	7.76	4.62	5.42	11.9	**4.4**	**4.41**	**5.24**
Total Dissolved Solids	NA	396	386	526	460	420	772	404	449	**400**	**524**	**420**

Table 2
2015 Semi-Annual Groundwater Monitoring Report
Surface Water Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCLs* ***Gw mg/L	SW-01											
		SW-01 HAP-SW01-0712-3 07/09/2012 12072349-03	SW-01 HAP-SW01-112312-0 11/13/2012 12115016-05	SW-01 (DUP) HAP-SW01-112312-1 11/13/2012 12115016-06	SW-01 HAP-SW01-063113-3 06/31/2013 13063853-08	SW-01 HAP-SW01-0320201 3-3 03/20/2014 14021016-02	SW-01 HAP-SW01-JUL2014 07/11/2014 14070603-01	SW-01 HAP-SW01-030 11/14/2014 14110541-05	SW-01 (DUP) HAP-SW01-033 11/15/2014 14110541-06	SW-01 (DUP) HAP-SW01-032 05/12/2015 14110541-06	SW-01 HAP-SW01-040 12/16/2015 HS15120825-10	SW-01 HAP-SW01-110 6/30/2016 HS16070519-28	SW-01 HAP-SW01-111 6/30/2016 HS16070019-29
VOLATILE ORGANIC COMPOUNDS (mg/L)													
Benzene	0.005	<0.00020	<0.00030	<0.00030	<0.00020	**0.0013**	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylene, total	10	<0.00030	<0.00030	<0.00030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)													
Phenol	7.3	<0.000050 UJ*	<0.000050 UJL*	<0.000050 UJL*	<0.000010	<0.000032	<0.000025 UJL*	<0.000025 UJL-SUR, MS/SD*	<0.000025 UJL-SUR, MS/SD*	<0.000025 UJL-SUR, MS/SD*	<0.000025 UJL-SUR	<0.000025 UJL-LCS,SUR,MS/SD	<0.000025 UJL-LCS,SUR,MS/SD
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJL*	<0.00010 UJL*	<0.00010	<0.000015	<0.000040 UJL*	<0.000040 UJL-LCS, MS/SD*	<0.000040 UJL-SUR, LCS, MS/SD*	<0.000040 UJL-SUR, LCS, MS/SD*	<0.000030 U	<0.000030 UJL-LCS,MS/SD	<0.000030 LCS,MS/SD
METALS (mg/L)													
Arsenic	0.010	**0.00475 J**	<0.0055	**0.00338 J**	**0.00151 J**	<0.0050	<0.0030 UJ*	<0.00500	<0.00500	<0.00500	**0.00224 J**	**0.00193 UH-MO,CCB**	**0.00551 UH-MO,CCB**
Barium	2.0	0.133	0.140	0.150	0.0744	0.0691	0.070	0.105	0.107	0.107	0.0436	0.0419	0.0512
Cadmium	0.005	<0.00050	<0.0040	<0.00050	<0.0016	<0.00050	<0.00009	<0.00400	<0.00400	<0.00400	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.19	<0.0042	<0.0060	**0.00165 J**	<0.0020	<0.0050	**0.00445 J**	<0.00500	<0.00500	<0.00500	0.00267 UH-CCB	**0.00207 UH-MB**	**0.00213 UH-MB**
Lead	0.015	<0.00070	<0.0015	**0.00211 J**	<0.0014	<0.0035	0.00077	<0.00350	<0.00350	<0.00350	**0.00153 J**	**0.00158 J**	**0.00172 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040 UJL-MS*	<0.000012	<0.0000400	<0.0000400	<0.0000400	<0.0000400 U	<0.0000400 U	<0.0000400 U
Selenium	0.050	**0.00362 U***	**0.00521 J**	**0.00184 J**	<0.0020	<0.0050	<0.0011	**0.00551 J**	**0.00551 J**	0.00551 J	<0.00100 U	**0.00311 UH-CCB**	**0.00283 UH-CCB**
Silver	0.12	<0.00080	<0.0040	<0.00050	<0.0016	<0.00080	<0.000056	<0.00400	<0.00400	<0.00400	<0.000200 U	<0.000200 U	<0.000200 U

Table 2
2015 Semi-Annual Groundwater Monitoring Report
Surface Water Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCL of ***gw mg/L	SW-02												
		SW-02 HAP-SW02-071214-0 07/09/2012 120724-05	SW-02 (DUP) HAP-SW02-071214-1 07/09/2012 120724-06	SW-02 HAP-SW02-112312-0 11/23/2012 121110-03	SW-02 HAP-SW02-052113-0 05/21/2013 130519-08	SW-02 (DUP) HAP-SW02-052113-1 05/21/2013 130519-09	SW-02 HAP-SW02-NOV2013 11/20/2014 141201-04	SW-02 (DUP) HAP-SW02-NOV2013-1 11/20/2014 141201-05	SW-02 HAP-SW02-JUL2014 07/11/2014 140708-02	SW-02 HAP-SW02-050 12/14/2014 141209-07	SW-02 HAP-SW02-090 05/12/2015 150506-26	SW-02 (DUP) HAP-SW02-091 05/12/2015 150506-23	SW-02 HAP-SW02-100 12/15/2015 HS1512026-11	SW-02 HAP-SW02-110 6/30/2016 HS1607019-30
VOLATILE ORGANIC COMPOUNDS (mg/L)														
Benzene	0.005	<0.00020	0.00029 J	<0.00020	<0.00020	<0.00020	0.0041	0.0060	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U
Toluene	1.6	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)														
Phenol	7.3	0.00015 J	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000050	<0.000035	<0.000035	<0.000035 UJL*	<0.000024 UJL-SUR,MS/SD*	<0.000035 UJL-SUR,LMS/SD	<0.000035 UJL-SUR,LMS/SD	<0.000035 UJL-SUR	<0.000035 UJL-LCS,MS/SD
Pyridine	0.024	<0.00010 UJ*	<0.00010 UJ*	<0.00010 UJL*	<0.00010	<0.00010	<0.000053 UJL,FD	0.00022 J-FD*	<0.000040 UJL*	<0.000040 UJL-LCS,MS/SD*	0.00035 JL-SUR,MS/SD	<0.000010 UJL-SUR,LMS/SD	<0.000030 U	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)														
Arsenic	0.010	0.00438 J	0.00479 J	<0.0065	0.00455 J	0.00479 J	<0.0050	0.00502 J	0.0019 JL*	<0.00500	0.0033 J	0.0032	0.00294 J	0.00536 UH-MO,CCB
Barium	2.0	0.122	0.120	0.115	0.0833	0.0834	0.0880	0.0928	0.072	0.108	0.091	0.083	0.0805	0.0587
Cadmium	0.005	<0.00250	<0.00250	<0.0040	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250	<0.00250 U	<0.00250 U
Chromium	0.10	<0.0012	<0.0012	<0.0060	<0.0010	0.00194 J	<0.0050	<0.0050	0.0011	<0.00500	0.0056	0.0054	0.00275 UH-CCB	0.00201 UH-MO
Lead	0.015	<0.00070	<0.00070	0.0143 J	0.00033 J	0.00112 J	0.00196 J	0.00336 J	0.00045 J	<0.00350	0.0064	0.0078	0.00181 J	0.00145 J
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000042	<0.000042	<0.000040 UJL-MS	<0.000040 UJL-MS*	<0.000012	<0.000040	<0.000040	<0.000040	<0.0000400 U	<0.0000400 U
Selenium	0.050	0.00156 UJ*	0.00201 UJ*	0.0133 J	0.00154 J	0.00243 J	<0.0050	<0.0050	<0.0011	<0.00500	0.001 UH-CCB	0.0011 UH-CCB	<0.00110 U	0.00365 UH-CCB
Silver	0.12	<0.00250	<0.00250	<0.0040	<0.00250	<0.00250	<0.0040	<0.00250	<0.00055	<0.00400	<0.00250	<0.00250	<0.00250 U	<0.00250 U

Table 2
2015 Semi-Annual Groundwater Monitoring Report
Surface Water Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential PCL[a] $^{**}GW_{ns}$ mg/L	SW-03										
		SW-03 HAP-SW03-0712-0 07/09/2013 1307214-03	SW-03 HAP-SW03-112312-3 11/23/2012 1211016-02	SW-03 HAP-SW03-042113-0 05/21/2013 1305089-02	SW-03 HAP-SW03-NOV2013 02/03/2014 1402034-03	SW-03 HAP-SW03-JUL2014 07/11/2014 1407063-03	SW-03 (DUP) HAP-SW03-JUL2014-1 07/11/2014 1407063-04	SW-03 HAP-SW03-083 11/14/2014 1411054-08	SW-03 HAP-SW03-090 5/15/2015 1505074-30	SW-03 HAP-SW03-100 12/8/2015 HS15120826-12	SW-03 HAP-SW03-101 12/8/2015 HS15120826-13	SW-03 HAP-SW03-115 5/3/2016 HS16070319-31
VOLATILE ORGANIC COMPOUNDS (mg/L)												
Benzene	0.005	**0.00046 J**	<0.00020	**0.00061 J**	<0.00020	<0.00020	<0.00020	0.0030	<0.00020	**0.0061 J,E,D**	**0.0016 J,E,D**	<0.00020 U
Ethylbenzene	0.70	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030 U	<0.00030 U	<0.00030 U
Toluene	1.0	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 U	<0.00020 U	<0.00020 U
Xylenes, total	10	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050 U	<0.00050 U	<0.00050 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/L)												
Phenol	7.3	<0.000050 UJ*	<0.000050 UJL*	<0.000050	<0.000037 UJL-SUR*	<0.000026 UJL*	<0.000026 UJL*	**0.00012 J,L-SUR,MS/SD***	<0.000035 UJL-SUR,MS/SD	<0.000035 U	<0.000035 U	<0.000035 UJL-LCS,MS/SD
Pyridine	0.034	<0.000010 UJ*	<0.00010 UJL*	**0.00011 J**	<0.000040	<0.000040 UJL*	<0.000040 UJL*	<0.000040 UJL-LCS,MS/SD*	<0.000030 UJL-SUR,MS/SD	<0.000030 U	<0.000030 U	<0.000030 UJL-LCS,MS/SD
METALS (mg/L)												
Arsenic	0.010	**0.00035 J**	<0.0065	**0.00305 J**	<0.0050	**0.0035 J,L***	**0.0038 J,L***	<0.00500	**0.0025 J**	**0.00277 J**	**0.0023 J**	**0.00106 UH-MD,CCB**
Barium	2.0	**0.111**	**0.162**	**0.082**	**0.0990**	**0.089**	**0.071**	**0.110**	**0.076**	**0.0640**	**0.0626**	**0.0608**
Cadmium	0.005	<0.00050	<0.0046	<0.00050	<0.00080	<0.00080	<0.00059	<0.00100	<0.00050	<0.000200 U	<0.000200 U	<0.000200 U
Chromium	0.10	<0.0012	<0.0060	<0.0010	<0.0060	**0.00106 J**	**0.00073 J**	<0.00200	**0.0030**	0.00245 UH-CCB	0.00226 UH-CCB	**0.00226 UH-MD**
Lead	0.015	<0.00070	**0.0244 J**	<0.00070	**0.000928 J**	**0.00069 J***	**0.0019 J***	<0.00352	**0.0020**	**0.00154 J**	**0.00106 J**	**0.00135 J**
Mercury	0.0020	<0.000042	<0.000042	<0.000042	<0.000048 UJL-MS*	<0.000012	<0.000012	<0.000400	<0.000040	<0.0000400 U	<0.0000400 U	<0.0000400 U
Selenium	0.050	0.00152 UJ*	**0.00457 J**	**0.00248 J**	<0.0050	<0.0011	<0.0011	<0.00500	<0.0010	<0.00110 U	<0.00110 U	**0.00202 UH-CCB**
Silver	0.12	<0.00080	<0.0040	<0.00080	<0.00080	<0.000058	<0.000058	<0.00400	<0.00040	<0.000200 U	<0.000200 U	<0.000200 U

Table 3
2015 Semi-Annual Groundwater Monitoring Report
Sediment Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential[1] $^{Tier\ 1}Sol_{Ccom}$ mg/kg	SD-01												
		SD-01 HAP-SD01-0712-0 07/09/2012 1207234-07	SD-01 HAP-SD01-112912-0 11/29/2012 12111018-07	SD-01 (DUP) HAP-SD01-112912-1 11/29/2012 12111018-08	SD-01 HAP-SD01-062113-3 06/21/2013 1306888-07	SD-01 HAP-SD01-NOV2013-3 02/28/2014 14021014-01	SD-01 HAP-SD01-JUL2014 07/11/2014 14070603-05	SD-01 HAP-SD01-080 11/14/2014 14110541-01	SD-01 (DUP) HAP-SD01-081 11/14/2014 14110541-02	SD-01 HAP-SD01-093 5/15/2015 14110541-01	SD-01 HAP-SD01-100 12/18/2015 HS15120826-08	SD-01 HAP-SD01-110 6/30/2016 HS16070019-24	SD-01 HAP-SD01-111 6/30/2016 HS16070019-25
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	<0.00030	<0.00071	<0.00068	<0.00048	<0.00050	<0.00064	<0.00087	<0.00064	<0.00059	<0.00048 U	<0.00046 U	<0.00049 U
Ethylbenzene	5300	<0.00046	<0.0011	<0.00098	<0.00072	<0.00078	<0.00096	<0.0010	<0.00097	<0.00089	<0.00064 U	<0.00064 U	<0.00068 U
Toluene	5400	<0.00035	<0.00083	<0.00077	<0.00056	<0.00059	<0.00075	<0.00078	<0.00075	<0.00069	<0.00056 U	<0.00055 U	<0.00058 U
Xylenes, total	3700 B	<0.0013	<0.0031	<0.0028	<0.0014	<0.0014	<0.0018	<0.0019	<0.0018	<0.0017	<0.0022 U	<0.0022 U	<0.0023 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Phenol	20000	<0.0026	<0.0025	<0.0024	<0.00091 UJL*	<0.00070	<0.050	**0.0026 J**	**0.0025 J**	<0.0013	<0.0018 U	<0.0040 U	<0.0041 U
Pyridine	82	<0.0028 UJ*	<0.0025 UJL*	<0.0024 UJL*	<0.0013 UJL*	<0.00088 UJL-MS/SD*	<0.037	<0.0018 UJL-MS/SD*	<0.0018	<0.0011	<0.0015 UJL-MS/SD	**0.0072 J**	<0.0034 U
METALS (mg/kg)													
Arsenic	24	**0.276 J**	**0.202 J**	**0.221 J**	**0.167 J**	**0.147 J**	<0.33	**0.243 J**	**0.229 J**	**0.54 J**	**0.346 J**	**0.669 JI-FD**	**1.14 JI-FD**
Barium	9100	**2.35**	**1.33 JI***	**2.01 JI***	**1.55**	**1.44**	**3.3 J**	**1.39**	**1.45**	**6.3 JL-DL**	**4.63**	**8.46 JH-MS**	**8.69 JH-MS**
Cadmium	52	<0.062	<0.061	<0.051	<0.047	<0.048	<0.08	<0.0675	<0.0687	<0.060	<0.0650 U	<0.0579 U	**0.0729 J**
Chromium	27000	**0.584 J**	**0.269 J**	**0.297 J**	**0.293 J**	**0.276 J**	**0.76 J**	**0.475 UH-CCB***	**0.436 J**	**2.5**	**0.53 J**	**6.12 UH-MB**	**4.8 UH-MB**
Lead	500	**1.68**	**1.09**	**0.982**	**1.05**	**1.00**	**1.60 J**	**1.28**	**1.06**	**5.5 J-D**	**2.03**	**4.5 JI-FD**	**9.49 JI-FD**
Mercury	2.1	**0.000828 J**	**0.00122 J**	**0.00179 J**	<0.00063	<0.00048	**0.0021 J**	**0.00130 J**	**0.000850 J**	**0.0040**	**0.00212 J**	**0.00347 JI-FD**	**0.0128 JI-FD**
Selenium	310	**0.272 J**	<0.22	<0.18	<0.17	<0.17	<0.51	<0.243	<0.247	**0.26 J**	<0.240 U	**0.25 UH-CCB**	<0.211 U
Silver	97	<0.099	<0.088	<0.082	<0.075	<0.076	<0.029	**0.170 UH-CCB***	<0.0110	<0.095	<0.110 U	<0.0936 U	<0.0938 U

Table 3
2015 Semi-Annual Groundwater Monitoring Report
Sediment Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential[a] $^{Tot}Soil_{Comb}$ mg/kg	SD-02											
		SD-02 HAP-SD02-0712-3 07/09/2012 1207234-04	SD-02 HAP-SD02-112912-0 11/29/2012 12111016-04	SD-02 HAP-SD02-062113-0 06/21/2013 1306688-03	SD-02 (DUP) HAP-SD02-062113-1 06/21/2013 1306688-04	SD-02 HAP-SD02-NOV2013 02/20/2014 14021014-07	SD-02 (DUP) HAP-SD02-NOV2013-1 02/20/2014 14021014-08	SD-02 HAP-SD02-JUL2014-3 07/11/2014 14070003-06	SD-02 HAP-SD02-080 11/14/2014 14110541-03	SD-02 HAP-SD02-090 05/15/2015 15050876-23	SD-02 (DUP) HAP-SD02-091 05/15/2015 15050876-24	SD-02 HAP-SD02-103 12/18/2015 HS15120826-07	SD-02 HAP-SD02-110 6/30/16 HS16070019-26
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	<0.00035	<0.00080	<0.00081	<0.00056	<0.00054	<0.00055	<0.00066	<0.00070	<0.00055	<0.00059	<0.00082 U	<0.00040 U
Ethylbenzene	5300	<0.00053	<0.00089	<0.00092	<0.00084	<0.00081	<0.00082	<0.00099	<0.0011	<0.00083	<0.00087	<0.00087 U	<0.00069 U
Toluene	5400	<0.00041	<0.00069	<0.00072	<0.00066	<0.00063	<0.00064	<0.00078	<0.00082	<0.00065	<0.00069	<0.00074 U	<0.00059 U
Xylenes, total	3700 0	<0.0015	<0.0028	<0.0017	<0.0016	<0.0015	<0.0015	<0.0019	<0.0020	<0.0016	<0.0016	<0.0030 U	<0.0024 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Phenol	20000	5.8 J	<0.0024 UJL*	<0.00089 UJL*	<0.00090 UJL*	<0.00070 UJL-SUR	0.0021 J	<0.036	0.0041 J	<0.0013	<0.0014	<0.0019 U	<0.0040 U
Pyridine	82	<0.0050 UJ*	<0.0024 UJL*	<0.0013 UJL*	<0.0013 UJL*	<0.0010 UJL-SUR/MS/SD	<0.0010	<0.034	<0.0018	<0.0011	<0.0011	<0.0015 UJL-MS/SD	<0.0033 U
METALS (mg/kg)													
Arsenic	24	0.964	0.540	0.395 J	0.0403 J	0.340 J	0.362 J	0.36 J	0.651 J	1.1 JI-FD	0.51	2.69	0.552
Barium	8100	0.59	2.09	2.27 JI*	4.05 JI*	2.18	2.24	6.6 J	3.80	17 JL-DL,FD	6.7	16.1	6.55 JH-MS
Cadmium	52	0.115 J	<0.053	<0.046	<0.049	<0.048	0.0522 J	<0.05	<0.0672	<0.060	<0.062	0.0849 J	0.0846 J
Chromium	27000	1.84	0.68	0.422 J	0.556	0.662	0.885	1.1 J	0.816	6.2	3.3	4.56	3.05 UH-MB
Lead	500	19.6	132	3.03	2.62	3.91	3.9	6.10	3.62	12	7.9	71.1	6.68
Mercury	2.1	0.00344 J	0.000426 J	<0.00060	<0.00061	<0.00048	<0.00046	0.0035 J	0.00439 J	0.012	0.026	0.0404	0.00695
Selenium	310	0.278 J	<0.19	0.299 J	0.239 J	<0.17	<0.18	<0.30	<0.242	0.26	0.23	0.411 J	0.263 UH-CCB
Silver	97	<0.092	<0.084	<0.074	<0.078	<0.077	<0.079	<0.017	<0.108	<0.096	<0.098	<0.110 U	<0.0959 U

Table 3
2015 Semi-Annual Groundwater Monitoring Report
Sediment Analytical Data

Highlands Acid Pit
Highlands, Harris County, Texas

ANALYTE	TRRP Tier 1 Residential[a] 1^{st}Soil mg/kg	SD-03											
		SD-03 HAP-SD03-0712-0 07/06/2012 1207234-01	SD-03 (DUP) HAP-SD03-0712-1 07/06/2012 1207234-02	SD-03 HAP-SD03-112912-3 11/29/2012 12111016-01	SD-03 HAP-SD03-052113-0 05/21/2013 1306889-01	SD-03 HAP-SD03-NOV2013 02/20/2014 14021014-04	SD-03 HAP-SD03-JUL2014 07/11/2014 14070603-07	SD-03 (DUP) HAP-SD03-JUL2014-1 07/11/2014 14070603-08	SD-03 HAP-SD03-099 11/14/2014 14110541-04	SD-03 HAP-SD03-090 05/15/2015 15050876-20	SD-03 HAP-SD03-100 12/18/2015 HS15120926-09	SD-03 HAP-SD03-101 12/18/2015 HS15120926-09	SD-03 HAP-SD03-113 8/30/16 HS16070019-27
VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Benzene	69	<0.00029	<0.00039	<0.00065	<0.00088	<0.00048	<0.00074	<0.00081	<0.00079	<0.00057	<0.00070 U	<0.00058 U	<0.00061 U
Ethylbenzene	5300	<0.00044	<0.00058	<0.00097	<0.0010	<0.00072	<0.0011	<0.0012	<0.0012	<0.00085	<0.00098 U	<0.00079 U	<0.00085 U
Toluene	5400	<0.00034	<0.00045	<0.00075	<0.00079	<0.00058	<0.00087	<0.00095	<0.00090	<0.00066	<0.00084 U	<0.00067 U	0.0035 J
Xylenes, total	3700 0	<0.0013	<0.0017	<0.0028	<0.0019	<0.0014	<0.0021	<0.0023	<0.0022	<0.0016	<0.0033 U	<0.0027 U	<0.0029 U
SEMI-VOLATILE ORGANIC COMPOUNDS (mg/kg)													
Phenol	20000	<0.0025 UJ*	<0.0029	<0.0028	0.0060 JL*	<0.00970	<0.069	<0.078 UJL*	<0.0025	<0.0014	<0.0020 U	<0.0019 UJL-SUR	<0.0045 U
Pyridine	82	<0.0025 UJ*	<0.0028 UJ*	<0.0026 UJL*	<0.0015 UJL*	<0.0010	<0.042	<0.043 UJL*	<0.0021	<0.0011	0.0041 JL-MS/SD	<0.0018 UJL-MS/SD	0.21
METALS (mg/kg)													
Arsenic	24	0.498 J	0.551 J	1.20	0.61	0.858	1.1 J	0.59 J	1.41	0.84	1.62	1.96	1.05
Barium	8100	5.37	3.65	12.4	7.9	6.12	19	18	6.35	6.3 JL-DL	7.40	9.11	12.3 JH-MS
Cadmium	52	<0.054	<0.060	0.0667 J	<0.058	<0.049	<0.07	<0.08	<0.0785	<0.063	<0.0730 U	<0.0880 U	<0.0663 U
Chromium	27000	0.908	0.910	2.21	1.19	1.79	4.3 J	5.1 J	1.45	2.0	1.89	1.81	3.99 UH-MB
Lead	500	2.00 J*	2.24 J*	4.94	3.15	3.47	6.60	7.59	5.87	5.5 J-D	4.55	4.54	6.76
Mercury	2.1	0.00115 J	0.994 J	0.0112	0.00275 J	0.00276 J	0.0112	0.0155	0.00582	0.019	0.00870	0.0116	0.00517
Selenium	310	0.311 J	0.361 J	0.316 J	0.462 J	0.223 J	<0.41	<0.35	0.671 J	0.29 J	0.643 J	0.694 J	0.269 UH-CCB
Silver	97	<0.088	<0.098	<0.089	<0.092	<0.079	<0.074	0.022 J	<0.126	<0.10	<0.120 U	<0.110 U	<0.108 U

Water and Sediment Sampling data from November/December 2016 sampling event

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-DA01-120	N	11/28/2016	mg/L	Total dissolved solids	SM2540C	NS	**328**		5.00	10.0	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.000520**	J	0.000100	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Barium	SW-846 6020A	2.0	**0.114**		0.00190	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Selenium	SW-846 6020A	0.050	0.00111	UH-CCB	0.00110	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.00036**	J	0.00020	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	U	0.000035	0.00020	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Pyridine	SW-846 8270D	0.024	<0.000030	U	0.000030	0.0010	1	HS16111331-01
HAP-DA01-120	N	11/28/2016	mg/L	Sulfate	SW-846 9056A	NS	**3.54**		0.200	0.500	1	HS16111331-01
HAP-DA02-120	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	**402**		5.00	10.0	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00247**	J	0.000100	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0412**		0.00190	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	**0.00065**	J	0.00030	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	**0.00065**	J	0.00050	0.0020	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	**0.000043**	J	0.000035	0.00020	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.024	**0.000068**	J	0.000030	0.0010	1	HS16111331-06
HAP-DA02-120	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	**10.3**		0.200	0.500	1	HS16111331-06
HAP-DA05-120	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	**212**		5.00	10.0	1	HS16111331-01
HAP-DA05-120	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00127**	J	0.000100	0.00500	1	HS16111331-01
HAP-DA05-120	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0834**		0.00190	0.00500	1	HS16111331-01
HAP-DA05-120	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-01
HAP-DA05-120	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	**0.00123**	J	0.000400	0.00500	1	HS16111331-01
HAP-DA05-120	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	**0.00102**	J	0.000600	0.00500	1	HS16111331-01

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-DA05-120	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.00033**	J	0.00020	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	U	0.000036	0.00020	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000031	U	0.000031	0.0010	1	HS16111331-04
HAP-DA05-120	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	**18.7**		0.200	0.500	1	HS16111331-04
HAP-DA06-120	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	**342**		5.00	10.0	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00943**		0.000100	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0790**		0.00190	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000100	U	0.000100	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.012**		0.00020	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	**0.0021**		0.00030	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	**0.0021**		0.00050	0.0020	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	U	0.000035	0.00020	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	U	0.000030	0.0010	1	HS16111331-03
HAP-DA06-120	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	**4.79**		0.200	0.500	1	HS16111331-03
HAP-DA08-120	N	11/28/2016	mg/L	Total dissolved solids	SM2540C	NS	**552**		5.00	10.0	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00107**	J	0.000100	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0878**		0.00190	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	**0.000785**	J	0.000100	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.00039**	J	0.00020	0.0010	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-02

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-DA08-120	N	11/28/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	U	0.000035	0.00020	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	U	0.000030	0.0010	1	HS16111331-02
HAP-DA08-120	N	11/28/2016	mg/L	Sulfate	SW-846 9056A	NS	**5.34**		0.200	0.500	1	HS16111331-02
HAP-MA02-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**90**		5.00	10.0	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00192**	J	0.000100	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0511**		0.00190	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	**0.00160**	J	0.000100	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	**0.000902**	J	0.000600	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	UJL-MS/SD	0.000030	0.0010	1	HS16120073-06
HAP-MA02-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	**4.39**	UH-RB	0.200	0.500	1	HS16120073-06
HAP-MA03-123	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**276**		5.00	10.0	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.0104**		0.000100	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0864**		0.00190	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000100	U	0.000100	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.0079**		0.00020	0.0010	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120073-05
HAP-MA03-123	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.021	**0.0013**	JL-SUR,MS/SD	0.000030	0.0010	1	HS16120073-05

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-MA03-123	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	**12.5**		0.200	0.500	1	HS16120073-05
HAP-MA05-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**318**		5.00	10.0	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.0210**	JI-FD	0.000100	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.130**		0.00190	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-SUR,MS/SD	0.000035	0.00020	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	UJL-MS/SD	0.000030	0.0010	1	HS16120073-02
HAP-MA05-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	**8.59**		0.200	0.500	1	HS16120073-02
HAP-MA05-121	FD	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**308**		5.00	10.0	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.0219**	JI-FD	0.000100	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.131**		0.00190	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	**0.000816**	J	0.000600	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	UJL-MS/SD	0.000030	0.0010	1	HS16120073-03
HAP-MA05-121	FD	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	**8.68**		0.200	0.500	1	HS16120073-03
HAP-MA06-120	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	**366**		5.00	10.0	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00983**		0.000100	0.00500	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0804**		0.00190	0.00500	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-01

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Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-MA06-120	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	0.0034		0.00020	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	0.0024		0.00030	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	0.0024		0.00050	0.0020	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	UJL-MS-SD	0.000036	0.00020	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.0017	JL-MS-SD	0.000031	0.0010	1	HS16120073-01
HAP-MA06-120	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	15.7		0.200	0.500	1	HS16120073-01
HAP-MA07-123	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	344		5.00	10.0	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.00567		0.000100	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	0.149		0.00190	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000100	U	0.000100	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	U	0.000035	0.00020	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.024	<0.000030	U	0.000030	0.0010	1	HS16111331-08
HAP-MA07-123	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	8.59		0.200	0.500	1	HS16111331-08
HAP-MA08-120	N	11/29/2016	mg/L	Total dissolved solids	SM2540C	NS	1050		5.00	10.0	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.00619		0.000100	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Barium	SW-846 6020A	2.0	0.065		0.00190	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	0.000779	J	0.000100	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16111331-07

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Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-MA08-120	N	11/29/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Xylene (total)	SW-846 8260C	10	**0.024**		0.00030	0.0010	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	m & p-Xylene	SW-846 8260C	10	**0.024**		0.00050	0.0020	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	U	0.000035	0.00020	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000030	U	0.000030	0.0010	1	HS16111331-07
HAP-MA08-120	N	11/29/2016	mg/L	Sulfate	SW-846 9056A	NS	**47.2**		1.00	2.50	5	HS16111331-07
HAP-SD01-123	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	**13.9**		0.0100	0.0100	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**2.25**		0.110	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**45.4**		0.0550	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.053	U	0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**5.96**		0.0960	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**7.07**		0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	**0.388**	J	0.190	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.085	U	0.0850	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.0112**		0.000590	0.00416	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00046	U	0.00046	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00064	U	0.00064	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00055	U	0.00055	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00092	U	0.00092	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0015	U	0.0015	0.0092	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00092	U	0.00092	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0013	U	0.0013	0.0077	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0010	U	0.0010	0.0077	1	HS16120124-05
HAP-SD02-120	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	**18.6**		0.0100	0.0100	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**1.98**	JI-FD	0.120	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**124**	JI-FD	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.059	U	0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**6.22**		0.110	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**6.33**		0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	**0.493**	J	0.210	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.094	U	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00632**	JI-FD	0.000630	0.00444	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00050	U	0.00050	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00070	U	0.00070	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00060	U	0.00060	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.0010	U	0.0010	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0016	U	0.0016	0.010	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.0010	U	0.0010	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0014	U	0.0014	0.0081	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0081	1	HS16120124-06
HAP-SD02-121	FD	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	**19.4**		0.0100	0.0100	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**1.28**	JI-FD	0.120	0.590	1	HS16120124-07

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-SD02-121	FD	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**36.5**	JI-FD	0.0910	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.0590	U	0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**4.13**		0.110	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**5.49**		0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	**0.408**	J	0.210	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.0910	U	0.0910	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00889**	JI-FD	0.000620	0.00139	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00048	U	0.00048	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00067	U	0.00067	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00057	U	0.00057	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00096	U	0.00096	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0015	U	0.0015	0.0096	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00096	U	0.00096	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0014	U	0.0014	0.0082	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0082	1	HS16120124-07
HAP-SD03-120	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	**17.7**		0.0100	0.0100	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**1.02**		0.110	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**17.4**		0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.057	U	0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**2.92**		0.100	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**4.53**		0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	<0.21	U	0.210	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.091	U	0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00815**		0.000610	0.00128	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00041	U	0.00041	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00057	U	0.00057	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00049	U	0.00049	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00081	U	0.00081	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0013	U	0.0013	0.0081	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00081	U	0.00081	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0013	U	0.0013	0.0080	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0080	1	HS16120124-08
HAP-SW01-120	N	12/2/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00298**	J	0.000400	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Barium	SW-846 6020A	2.0	**0.123**		0.00190	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Selenium	SW-846 6020A	0.050	**0.00174**	J	0.00110	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-01

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-SW01-120	N	12/2/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	UJL-MS/SD	0.000036	0.00020	1	HS16120124-01
HAP-SW01-120	N	12/2/2016	mg/L	Pyridine	SW-846 8270D	0.021	<0.000031	UJL-MS/SD	0.000031	0.0010	1	HS16120124-01
HAP-SW02-120	N	12/2/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00313**	J	0.000400	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Barium	SW-846 6020A	2.0	**0.125**		0.00190	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Selenium	SW-846 6020A	0.050	**0.00136**	J	0.00110	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120124-02
HAP-SW02-120	N	12/2/2016	mg/L	Pyridine	SW-846 8270D	0.021	**0.00032**	JL-MS/SD	0.000030	0.0010	1	HS16120124-02
HAP-SW02-121	FD	12/2/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00330**	J	0.000400	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Barium	SW-846 6020A	2.0	**0.126**		0.00190	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Lead	SW-846 6020A	0.015	**0.000614**	J	0.000600	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Selenium	SW-846 6020A	0.050	**0.00144**	J	0.00110	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	UJL-MS/SD	0.000036	0.00020	1	HS16120124-03
HAP-SW02-121	FD	12/2/2016	mg/L	Pyridine	SW-846 8270D	0.021	**0.00027**	JL-MS/SD	0.000031	0.0010	1	HS16120124-03
HAP-SW03-120	N	12/2/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00334**	J	0.000400	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Barium	SW-846 6020A	2.0	**0.130**		0.00190	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	**0.000509**	J	0.000400	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Selenium	SW-846 6020A	0.050	**0.00197**	J	0.00110	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120124-04

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-SW03-120	N	12/2/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	UJL-MS/SD	0.000036	0.00021	1	HS16120124-04
HAP-SW03-120	N	12/2/2016	mg/L	Pyridine	SW-846 8270D	0.021	**0.00055**	JL-MS/SD	0.000031	0.0010	1	HS16120124-04
HAP-UA06-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**536**		5.00	10.0	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.000811**	J	0.000400	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0742**		0.00190	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.0050**		0.00020	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.021	**0.0042**	JL-MS/SD	0.000030	0.0010	1	HS16120073-10
HAP-UA06-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	**82.1**		1.00	2.50	5	HS16120073-10
HAP-UA10-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	**2490**		5.00	10.0	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	**0.00734**		0.000400	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	**0.0808**		0.00190	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	**0.0161**		0.000400	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	**0.00785**		0.000600	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	0.00662	UH-CCB	0.00110	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	**0.11**		0.00020	0.0010	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000035	UJL-MS/SD	0.000035	0.00020	1	HS16120073-11

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-UA10-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.025	JL-MS/SD	0.00015	0.0050	5	HS16120073-11
HAP-UA10-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	1290		10.0	25.0	50	HS16120073-11
HAP-UA11-120	N	12/1/2016	mg/L	Total dissolved solids	SM2540C	NS	1590	JI-FD	5.00	10.0	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.0104	JI-FD	0.000400	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Barium	SW-846 6020A	2.0	0.0399		0.00190	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Cadmium	SW-846 6020A	0.0050	0.000665	JI-FD	0.000200	0.00200	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	0.0112	JI-FD	0.000400	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Lead	SW-846 6020A	0.015	0.00273	JI-FD	0.000600	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Selenium	SW-846 6020A	0.050	0.00374	UH-CCB,RB	0.00110	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Benzene	SW-846 8260C	0.0050	4.4	JI-FD	0.020	0.10	100	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.0030	U	0.0030	0.010	10	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Toluene	SW-846 8260C	1.0	0.0064	JI-FD	0.0020	0.010	10	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Xylene (total)	SW-846 8260C	10	0.037	JI-FD	0.0030	0.010	10	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	m & p-Xylene	SW-846 8260C	10	0.037	JI-FD	0.0030	0.020	10	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Phenol	SW-846 8270D	7.3	0.0045	JL-MS/SD,FD	0.00018	0.0010	5	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.028	JL-MS/SD	0.00015	0.0052	5	HS16120073-15
HAP-UA11-120	N	12/1/2016	mg/L	Sulfate	SW-846 9056A	NS	1430	JI-FD	100	250	500	HS16120073-15
HAP-UA11-121	FD	12/1/2016	mg/L	Total dissolved solids	SM2540C	NS	2200	JI-FD	5.00	10.0	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.0320	JI-FD	0.000400	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Barium	SW-846 6020A	2.0	0.0404		0.00190	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Cadmium	SW-846 6020A	0.0050	0.00300	JI-FD	0.000200	0.00200	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	0.0371	JI-FD	0.000400	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Lead	SW-846 6020A	0.015	0.0186	JI-FD	0.000600	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Selenium	SW-846 6020A	0.050	0.00539	UH-CCB,RB	0.00110	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Benzene	SW-846 8260C	0.0050	11	JI-FD	0.020	0.10	100	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.0030	U	0.0030	0.010	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Toluene	SW-846 8260C	1.0	0.017	JI-FD	0.0020	0.010	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Xylene (total)	SW-846 8260C	10	0.11	JI-FD	0.0030	0.010	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	m & p-Xylene	SW-846 8260C	10	0.11	JI-FD	0.0050	0.020	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Phenol	SW-846 8270D	7.3	0.038	JL-MS/SD,FD	0.00035	0.0020	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.032	JL-MS/SD	0.00030	0.010	10	HS16120073-16
HAP-UA11-121	FD	12/1/2016	mg/L	Sulfate	SW-846 9056A	NS	2700	JI-FD	100	250	500	HS16120073-16
HAP-UA12-120	N	12/1/2016	mg/L	Total dissolved solids	SM2540C	NS	2250		5.00	10.0	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.0279		0.000400	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Barium	SW-846 6020A	2.0	0.0549		0.00190	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Cadmium	SW-846 6020A	0.0050	0.000503	J	0.000250	0.00200	1	HS16120073-14

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-UA12-120	N	12/1/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	0.0369		0.000400	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Lead	SW-846 6020A	0.015	0.00399	J	0.000600	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Selenium	SW-846 6020A	0.050	0.00559	UH-CCRB	0.00110	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Benzene	SW-846 8260C	0.0050	12		0.020	0.10	100	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.0030	U	0.0030	0.010	10	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Toluene	SW-846 8260C	1.0	0.016		0.0020	0.010	10	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Xylene (total)	SW-846 8260C	10	0.11		0.0030	0.010	10	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	m & p-Xylene	SW-846 8260C	10	0.11		0.0050	0.020	10	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Phenol	SW-846 8270D	7.3	0.019	JL-MS/SD	0.00089	0.0051	25	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.17	JL-MS/SD	0.00077	0.026	25	HS16120073-14
HAP-UA12-120	N	12/1/2016	mg/L	Sulfate	SW-846 9056A	NS	580		10.0	25.0	50	HS16120073-14
HAP-UA14-120	N	12/1/2016	mg/L	Total dissolved solids	SM2540C	NS	15700		5.00	10.0	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.103		0.000400	0.00500	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Barium	SW-846 6020A	2.0	0.766		0.00190	0.00500	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Cadmium	SW-846 6020A	0.0050	0.0107		0.000200	0.00200	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	0.421		0.000400	0.00500	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Lead	SW-846 6020A	0.015	0.0242	J	0.00300	0.0250	5	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Selenium	SW-846 6020A	0.050	0.0213		0.00110	0.00500	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	0.000168	J	0.0000300	0.000200	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Mercury	SW-846 7470A	0.0020	0.000168	J	0.0000300	0.000200	1	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Benzene	SW-846 8260C	0.0050	18		0.040	0.20	200	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.0030	U	0.0030	0.010	10	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Toluene	SW-846 8260C	1.0	0.032		0.0020	0.010	10	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Xylene (total)	SW-846 8260C	10	0.15		0.0030	0.010	10	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	m & p-Xylene	SW-846 8260C	10	0.15		0.0050	0.020	10	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Phenol	SW-846 8270D	7.3	0.022	JL-MS/SD	0.00088	0.0051	25	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.13	JL-MS/SD	0.00076	0.025	25	HS16120073-12
HAP-UA14-120	N	12/1/2016	mg/L	Sulfate	SW-846 9056A	NS	142		2.00	5.00	10	HS16120073-12
HAP-UA15-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	320		5.00	10.0	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.0214		0.000400	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	0.0715		0.00190	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-08

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-UA15-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	<0.00020	U	0.00020	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.00030	U	0.00030	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.00020	U	0.00020	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.00050	U	0.00050	0.0020	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.00030	U	0.00030	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	<0.000036	UJL-MS/SD	0.000036	0.00020	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.024	<0.000031	UJL-MS/SD	0.000031	0.0010	1	HS16120073-08
HAP-UA15-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A	NS	50.7		1.00	2.50	5	HS16120073-08
HAP-UA16-120	N	11/30/2016	mg/L	Total dissolved solids	SM2540C	NS	912		5.00	10.0	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Arsenic	SW-846 6020A	0.010	0.000598	J	0.000400	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Barium	SW-846 6020A	2.0	0.128		0.00190	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Cadmium	SW-846 6020A	0.0050	<0.000200	U	0.000200	0.00200	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Chromium (total)	SW-846 6020A	0.10	<0.000400	U	0.000400	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Lead	SW-846 6020A	0.015	<0.000600	U	0.000600	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Selenium	SW-846 6020A	0.050	<0.00110	U	0.00110	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Silver	SW-846 6020A	0.12	<0.000200	U	0.000200	0.00500	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Mercury	SW-846 7470A	0.0020	<0.0000300	U	0.0000300	0.000200	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Benzene	SW-846 8260C	0.0050	6.4		0.020	0.10	100	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Ethylbenzene	SW-846 8260C	0.70	<0.0030	U	0.0030	0.010	10	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Toluene	SW-846 8260C	1.0	<0.0020	U	0.0020	0.010	10	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Xylene (total)	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	m & p-Xylene	SW-846 8260C	10	<0.0050	U	0.0050	0.020	10	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	o-Xylene	SW-846 8260C	10	<0.0030	U	0.0030	0.010	10	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Phenol	SW-846 8270D	7.3	0.0017	JL-MS/SD	0.000035	0.00020	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Pyridine	SW-846 8270D	0.024	0.0038	JL-MS/SD	0.000030	0.0010	1	HS16120073-09
HAP-UA16-120	N	11/30/2016	mg/L	Sulfate	SW-846 9056A		198		2.00	5.00	10	HS16120073-09

HAP-SD01-123	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	13.9		0.0100	0.0100	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	2.25		0.110	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	2.25		0.110	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	45.4		0.0850	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	45.4		0.0850	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.053	U	0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.053	U	0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	5.96		0.0960	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	5.96		0.0960	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	7.07		0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	7.07		0.0530	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	0.388	J	0.190	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	0.388	J	0.190	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.085	U	0.0850	0.531	1	HS16120124-05

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-SD01-123	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.085	U	0.0850	0.531	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	0.0112		0.000590	0.00416	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	0.0112		0.000590	0.00416	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00046	U	0.00046	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00064	U	0.00064	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00055	U	0.00055	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00092	U	0.00092	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0015	U	0.0015	0.0092	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00092	U	0.00092	0.0046	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0013	U	0.0013	0.0077	1	HS16120124-05
HAP-SD01-123	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0010	U	0.0010	0.0077	1	HS16120124-05
HAP-SD02-120	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	18.6		0.0100	0.0100	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	1.98	JI-FD	0.120	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	1.98	JI-FD	0.120	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	124	JI-FD	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	124	JI-FD	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.059	U	0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.059	U	0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	6.22		0.110	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	6.22		0.110	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	6.33		0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	6.33		0.0590	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	0.493	J	0.210	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	0.493	J	0.210	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.094	U	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.094	U	0.0940	0.587	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	0.00632	JI-FD	0.000630	0.00444	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	0.00632	JI-FD	0.000630	0.00444	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00050	U	0.00050	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00070	U	0.00070	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00060	U	0.00060	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.0010	U	0.0010	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0016	U	0.0016	0.010	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.0010	U	0.0010	0.0050	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0014	U	0.0014	0.0081	1	HS16120124-06
HAP-SD02-120	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0081	1	HS16120124-06
HAP-SD02-121	FD	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	19.4		0.0100	0.0100	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	1.28	JI-FD	0.120	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	1.28	JI-FD	0.120	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	36.5	JI-FD	0.0940	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	36.5	JI-FD	0.0940	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.0590	U	0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.0590	U	0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	4.13		0.110	0.590	1	HS16120124-07

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID
HAP-SD02-121	FD	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**4.13**		0.110	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**5.49**		0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**5.49**		0.0590	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	**0.408**	J	0.210	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	**0.408**	J	0.210	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.0940	U	0.0940	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.0940	U	0.0940	0.590	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00889**	JI-FD	0.000620	0.00439	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00889**	JI-FD	0.000620	0.00439	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00048	U	0.00048	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00067	U	0.00067	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00057	U	0.00057	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00096	U	0.00096	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0015	U	0.0015	0.0096	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00096	U	0.00096	0.0048	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0014	U	0.0014	0.0082	1	HS16120124-07
HAP-SD02-121	FD	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0082	1	HS16120124-07
HAP-SD03-120	N	12/2/2016	WT%	Percent moisture	ASTM D2216	NS	**17.7**		0.0100	0.0100	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**1.02**		0.110	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Arsenic	SW-846 6020A	24	**1.02**		0.110	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**17.4**		0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Barium	SW-846 6020A	8100	**17.4**		0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.057	U	0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Cadmium	SW-846 6020A	51	<0.057	U	0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**2.92**		0.100	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Chromium (total)	SW-846 6020A	27000	**2.92**		0.100	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**4.53**		0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Lead	SW-846 6020A	500	**4.53**		0.0570	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	<0.21	U	0.210	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Selenium	SW-846 6020A	310	<0.21	U	0.210	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.091	U	0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Silver	SW-846 6020A	97	<0.091	U	0.0910	0.571	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00815**		0.000610	0.00428	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Mercury	SW-846 7471A	2.1	**0.00815**		0.000610	0.00428	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Benzene	SW-846 8260C	69	<0.00041	U	0.00041	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Ethylbenzene	SW-846 8260C	5300	<0.00057	U	0.00057	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Toluene	SW-846 8260C	5400	<0.00049	U	0.00049	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Xylene (total)	SW-846 8260C	3700	<0.00081	U	0.00081	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	m & p-Xylene	SW-846 8260C	4700	<0.0013	U	0.0013	0.0081	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	o-Xylene	SW-846 8260C	29000	<0.00081	U	0.00081	0.0041	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Phenol	SW-846 8270D	950	<0.0013	U	0.0013	0.0080	1	HS16120124-08
HAP-SD03-120	N	12/2/2016	mg/kg	Pyridine	SW-846 8270D	82	<0.0011	U	0.0011	0.0080	1	HS16120124-08

Bolded Detected

Highlands Acid Pit December 2016 Sampling Data

Sample ID	Sample Type	Date Collected	Units	Analyte	Analytical Method	LORP	Result	Data Qualifier	Sample Detection Limit	Method Quantitation Limit	Dilution Factor	Laboratory ID

< - Not detected above the stated sample detection limit

Note - sample results, sample quantitation limits, and method quantitation limits reported to number of significant figures presented on the data reports

Sample Type

FD - Field duplicate sample

N - Normal field sample

Other Notes

ID - Identification

LORP (Level of Required Performance) - The groundwater and surface water LORP's are the Texas Risk Reduction Program (TRRP) Tier 1 Residential groundwater ingestion Protective Concentration Levels (PCLs) for Class 1 groundwater (TCEQ, March 2016). The

mg/L - milligrams per liter

mg/kg - milligrams per kilogram

NS - Not specified

SM - Standard Methods for the Examination of Water and Wastewater

SW-846 - Test Methods for Evaluating Solid Waste, Physical Chemical Methods

TCEQ - Texas Commission on Environmental Quality

Data Qualifier Definitions

J - Estimated. The analyte was detected and positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Not detected. The analyte was analyzed for but was not detected above the level of the associated value. The associated value is the sample detection limit (SDL).

UJ - Not detected, SDL is estimated. The analyte was analyzed for but was not detected above the reported SDL. However, the reported SDL is an estimate and may be inaccurate or imprecise

Data Review Qualifiers Codes

CCB - Continuing calibration blank contamination

FD - Field duplicate evaluation criteria not met

MS SD (organics) - Matrix spike/matrix spike duplicate accuracy and/or precision criteria not met

RB - Rinsate blank contamination

SCP - Surrogate recovery outside acceptance range

Bias Codes

H - Bias in sample result is likely to be high

I - Bias in sample result is indeterminate

L - Bias in sample result is likely to be low

APPENDIX I – INTERVIEW FORMS

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Eric Marsh
Affiliation: Skeo
Subject Name: Stephen Pereira
Affiliation: EPA
Subject Contact Information:
Time:
Date: 12/18/2016
Interview Location:

Interview Format (circle one): In Person Phone Mail Other: Email

Interview Category: Federal Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   My overall impression of the project is that the site has been well maintained and is protective of both human and environmental health. Operations and maintenance activities at the site are continuous. The EPA supports the possibility of the site being used for future reuse as long as it doesn't adversely impact the current remedy.

2. What is your assessment of the current performance of the remedy in place at the Site?

   The remedy for this site appears to be effective. This particular remedy was chosen because there were no Contaminants of Concern (COC) that were detected above the Federal Drinking Water Maximum Contaminant Limits (MCL) in any of the surface water or deeper aquifers. Sampling data shows that there have been detections of COC in both the middle and deep aquifers occurring during subsequent sampling events. Therefore, further sampling maybe needed.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

   There was an inquiry from Lone Star Legal Aid. I followed up with them with a phone call. Their inquiry was about another Superfund Site in the area.

4. Has your office conducted any site-related activities or communications in the past five years apart from routine activities? If so, please describe the purpose and results of these activities.

   The EPA has provided facts sheets, updated the repository, interviewed government officials, and updated the EPA website for Highlands Acid Pits.

5. Are you aware of any changes to state laws in the past five years that might affect the protectiveness of the Site's remedy?

   No, the EPA is not aware of any changes in state law that might affect the protectiveness of the remedy.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

   Yes, the EPA is comfortable with the institution controls at the site.

7. Do you feel that the recommendations from the 2012 Five-Year Review have been adequately addressed? Please explain.

   Yes, the EPA feels that the recommendations from the 2012 Five Year-Review have been adequately addressed.

8. Are you aware of any changes in projected land use(s) at the Site?

   No, the EPA is not aware of any changes in projected land use at the site.

9. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   The EPA recommends an investigation to assess the movement of site-related contaminants in both the middle and deep aquifers.

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Ian Penn
Affiliation: Skeo
Subject Name: Sherell Heidt
Affiliation: TCEQ
Subject Contact Information:
Time:
Date: January 17, 2017
Interview Location:

Interview Format (circle one): In Person Phone Mail Other: Email

Interview Category: State Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   My overall impression of the remedy at the site is that it continues to be protective of human health and the environment. Currently, the site is not being reused, and operations and maintenance activities at the site are ongoing. The TCEQ is supportive of the potential future reuse of the site that does not negatively impact the implemented site remedy.

2. What is your assessment of the current performance of the remedy in place at the Site?

   Currently, the remedy appears to be functioning as designed. However, the remedy was selected because no contaminants of concern were detected above the Federal Drinking Water Maximum Contaminant Limits (MCL) in any of the surface water bodies or deeper aquifers. Subsequent analysis of the groundwater on-site showed persistent detections of contaminants of concern in the middle and deep aquifers, which may warrant further analysis of remedy performance.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

   Yes. On July 11, 2016, I received a phone call from a representative of a legal organization pertaining to questions in regards to the site. I referred the representative to the EPA and informed the EPA of the referral.

4. Has your office conducted any site-related activities or communications in the past five years apart from routine activities? If so, please describe the purpose and results of these activities.

   No.

5. Are you aware of any changes to state laws in the past five years that might affect the protectiveness of the Site's remedy?

   No.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

   Yes.

7. Do you feel that the recommendations from the 2012 Five-Year Review have been adequately addressed? Please explain.

Yes. The TCEQ has addressed all operations and maintenance issues that were identified during the 2012 Five-Year Review. The TCEQ has regularly conducted O&M activities on a semi-annual basis for groundwater, surface water, and sediment sampling. The TCEQ removed two unlabeled drums, which were identified during the 2012 Five-Year Review from the site. As recommended in the 2012 Five-Year Review, the TCEQ has performed surveying activities at the site.

8. Are you aware of any changes in projected land use(s) at the Site?

   No.

9. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   Benzene concentrations have consistently exceeded the Federal Drinking Water MCL and the Texas Protective Concentration Limit (PCL) of 0.005 mg/L in the upper aquifer. However, since the last Five Year, benzene concentrations have been detected above the MCL in middle aquifer well MA-06 at estimated concentrations and below the MCL in other middle aquifer wells. Benzene concentrations have been detected above the MCL in deep aquifer well DA-06 and below the MCL in deep aquifer well DA-08 at an estimated concentration. Arsenic has consistently been detected at concentrations that exceed the MCL and PCL of 0.01 mg/L in the upper and middle aquifers and has been detected at concentrations that do not exceed the MCL and PCL in the deeper aquifer.

   Since the most recent Five-Year Review, benzene has been intermittently detected at concentrations that range from 0.00028 to 0.020 mg/L in the adjacent surface water. Arsenic is consistently detected at concentrations that range from 0.00204 mg/L to 0.00535 mg/L and 0.0403 mg/L to 2.80 mg/L in the collected surface water and sediment samples respectively.

   As of the date the Record of Decision (ROD) for operable unit 02 was finalized, no contaminants of concern were detected in the middle or deep aquifers. Also, upon the completion of the source removal action, it was expected that the surface water contamination from runoff would be eliminated and the source of the contaminant loading to the upper aquifer would be removed. With the exception of total chromium detected at a concentration of 0.005 mg/L in Grennel Slough, no of contaminants of concern were detected in the surface water (San Jacinto River, Grennel Slough, Clear Lake, or the Sand Pits). Also, it was expected that the middle aquifer would not be affected by contaminants already present in the shallow aquifer and the clay aquitard. The ROD states that if contamination does break through the clay aquitard, corrective action can be initiated before levels of concern are reached. According to the ROD, if an increase in contaminants from the site is detected during a monitoring period, an investigation would be initiated to determine the need for future action.

   The ROD states that if monitoring reveals that the site continues to release contamination such that the adjoining surface waters or deeper groundwater is adversely impacted, then further action will be considered. The TCEQ recommends that the EPA perform additional studies to assess the potential impact of the contamination in the middle and deep aquifers, adjacent surface waters, and site sediments.

   The TCEQ recommends that the EPA conduct a drinking water survey of the immediate area surrounding the site and sample any nearby private water wells to determine whether drinking water quality has been impacted. The TCEQ recommends an investigation to assess the movement of site-related contaminants in the middle and deep aquifers and an investigation of potential tidal influences.

10. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
    a) Your name? Yes __X__ No _____

b) Your affiliation? Yes __X___ No _____
c) Your responses? Yes ___X___ No _____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Ian Penn
Affiliation: Skeo/
Subject Name: John Hogue
Affiliation: AECOM
Subject Contact Information:
Time:
Date: 11/30/2016
Interview Location:

Interview Format (circle one): In Person Phone Mail Other: Email

Interview Category: O&M Contractor

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   The clean-up and maintenance activities conducted at the Highlands Acid Pit site have been adequate and cost effective to maintain the site and integrity of the cap & monitoring well network.

2. What is your assessment of the current performance of the remedy in place at the Site?

   Regular monitoring, occurring on a semi-annual basis, is sufficient to assess the continued effectiveness of the on-going natural attenuation processes. However, detections in the middle aquifer are becoming more frequent suggesting additional actions may be needed to assess the potential for further COC migration (i.e., impacts to deeper aquifers and off-site laterally). Also, given development in the area and the potential for associated additional groundwater use, it may be timely to review and evaluate the site area for new potential receptors (i.e., updated water well survey).

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

   Organic contaminant (i.e., benzene) concentrations in select shallow zone monitoring wells have not declined significantly and, in many wells, are still well above the maximum concentrations limit (MCL) and Texas protective concentration limit (PCL) of 0.005 mg/L in the shallow aquifer. Intermittent detections have also been observed in select middle aquifer wells which were predicted in the 1987 ROD should COCs migrate to deeper zones from the shallow aquifer.

   Inorganic contaminant concentrations continue to vary across the site in all aquifers with observed MCL exceedances occurring in the shallow and middle aquifers. The presence of organic COCs may result in reducing conditions which promote the mobility of select inorganic COCs. Turbidity in collected groundwater samples is often excessive and may also contribute to the variations in detected inorganic concentrations.

   There have been no exceedances detected in either the sediment or surface water samples; however, the limited sampling program may not be adequate to assess migration in these media as dilution/diffusion would also make it more difficult to recognize potential off-site migration in a timely manner.

4. Do you feel that the recommendations from the 2012 Five-Year Review have been adequately addressed? Please explain.

   Yes, recommendations from the 2012 Five-Year Review are being adequately addressed. Semi-annual groundwater in the upper, middle and deep aquifer continues as recommended. Surface water and surface

sediment sampling has been conducted semi-annually for the past five years as recommended. Well integrity is routinely inspected and maintenance performed as needed. A significant well maintenance effort was completed in August 2014. As recommended, the site was resurveyed in 2013. Monitoring well tops of casing and significant site benchmarks were re-established and are being used to calculate potentiometric surface elevations in the three site aquifers. Site-derived waste is being properly labelled, profiled, and removed promptly for disposal following each field event.

5. Can you describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence at the Site?

   Field personnel conduct site inspection and maintenance activities during each semi-annual monitoring event. The inspections include an assessment of site security fencing integrity along the perimeter of the site and surrounding the individual well enclosures. Vegetation along the perimeter fence may be treated with a commercial herbicide and subsequently cut/removed and the cap area mowed. The cap is inspected for erosion or thinning during the mowing and sampling events. Periodic fence repair activities, including replacement of internal chain-link fencing and additional barbed wire top fence, are completed as necessary. Signage is checked and/or secured during subsequent inspection/sampling events. The condition and security of the monitoring well network is inspected during each sampling event. The inspections include assessing the well cap, cover, lock, pad integrity and identification markings. Personnel complete the Operation and Maintenance Inspection Checklist at the conclusion of each O&M visit.

6. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

   There have been no significant changes in site O&M requirements, maintenance schedules or sampling routines in the last five years.

7. Have there been unexpected O&M difficulties or costs at the Site in the last five years? If so, please provide details.

   In August 2014, monitoring well maintenance repairs were implemented including the replacement of five (5) surface casings, painting and re-numbering as needed, the replacement of worn compression caps, and installation of several new locks to replace rusty locks securing the wells.

   There were minor additional expenses incurred during 2015 to repair sections of internal chain link fencing damage by a tree limb that feel from a tree onto an internal well enclosure.

8. Have there been opportunities to optimize O&M activities or sampling efforts in the last five years? Please describe changes and any resulting or desired cost savings or improved efficiencies.

   The sampling and O&M activities continue to be completed by trained AECOM personnel that have direct, past experience working at the Highlands Acid Pit site.

9. Please provide a general summary of O&M costs for the past five years in the table below:

Annual O&M Costs ***(based on TCEQ fiscal year work order costs)***

Date Range	Total Cost *(rounded to the nearest $1,000)*

2012	$88K
2013	$91K
2014	$90K
2015	$77K
2016	$80K

10. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

    None at present. The TCEQ project manager is very attentive to the O&M needs as they arise.

11. Do you give permission for the following to be included in the FYR Report and appendices, which becomes a public document? Please initial below.

    a) Your name? Yes ___x_ No _____
    b) Your affiliation? Yes ___x_ No _____
    c) Your responses? Yes ___x_ No _____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit **EPA ID No.:** TXD980514996
Interviewer Name: Eric Marsh **Affiliation:** Skeo
Subject Name: Bob Allen / Marisela Lozano **Affiliation:** Harris County Pollution Control Services Dept.
Subject Contact Information:
Time: 2:30 p.m. **Date:** 12/5/2016
Interview Location: Office for Harris County Pollution Control Services Department
Interview Format (circle one): (In Person) Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   We have some understanding of the Site.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   It is a Site that has been associated with the San Jacinto Waste Pits site. The Site has not risen to the level of concern requiring more resources from the County.

   No. Pollution Control Services Department files do not show any recent EPA updates regarding the Site. The latest update posted on EPA's website is the FYR Report from 2007. The FYR Report from 2012 is not yet posted. An EPA publication posted online dated March 8, 2013, states that annual site updates would begin. EPA has not been providing annual site updates. EPA can convey site-related information by sending updates via email or mail outs, hosting public meetings, and by posting information on the EPA website and at the local repository.

3. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   No complaints. The Site will come up in discussion every once in a while at San Jacinto Waste Pits site meetings. We have not heard anything about unusual activity at the Site that would warrant a response from us.

4. Are you aware of any changes to state laws or local regulations in the past five years that might affect the protectiveness of the Site's remedy?

   No.

5. Are you aware of any changes in projected land use(s) at the Site?

   No. Only conversation about the Site is at San Jacinto Waste Pits site meetings. People are aware. There are people in Highlands that feel surrounded by high levels of toxicity.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   Unsure about the extent to which EPA has kept involved parties and surrounding neighbors informed of activities at the Site. In terms of how EPA can best provide site-related information in the future: 1) get the

word out that you are doing the FYR – we would rather EPA do this than us. Once the FYR is complete, share the issues and recommendations with the public. It would also be nice if you could put the FYR and groundwater monitoring reports online, once they are complete. Also, recommend putting the 2012 FYR Report online.

7. Do you have any comments, suggestions or recommendations regarding the project?

   We would like to get a copy of the FYR Report once complete to include in our files.

   Delineate groundwater flow in the groundwater bearing units and conduct residential well sampling to determine if residential wells are being impacted due to concerns about contaminant level exceedances.

   Ensure that the Site's Community Involvement Plan is being followed.

8. Do you give permission for the following to be included in the FYR Report and appendices, which becomes a public document? Please initial below.
   a) Your name? Yes __X__ No _____
   b) Your affiliation? Yes __X__ No _____
   c) Your responses? Yes __X__ No _____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Eric Marsh
Affiliation: Skeo
Subject Name:
Affiliation: Resident
Subject Contact Information:
Time: 11:00 a.m.
Date: 12/05/2016
Interview Location: Highlands, Texas

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents, Businesses and Organizations

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Grew up in Channelview. Lived here for 15 years.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   Last I read was when they found a hole there and they were going to fix it. This was a few months ago.

3. What have been the effects of the Site on the surrounding community, if any?

   Causing skin cancer. My brother had it. Also, flesh-eating disease in water.

4. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   No.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   No. The best way to provide site-related information would be through my phone.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No. On city water.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   No.

8. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
   a) Your name? Yes _X_ No ____
   b) Your affiliation? Yes ____ No ____
   c) Your responses? Yes _X_ No ____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Eric Marsh
Affiliation: Skeo
Subject Name:
Affiliation: Resident
Subject Contact Information:
Time: 10:30 a.m.
Date: 12/05/2016
Interview Location: Highlands, Texas

Interview Format (circle one): (In Person) Phone Mail Other:

Interview Category: Residents, Businesses and Organizations

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   I know about it. I go down there when it floods. When it floods, it is all underwater – the signs are all underwater.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   Not aware of the cleanup really. There was an explosion on the water in the 1990s. We received some compensation from this.

3. What have been the effects of this Site on the surrounding community, if any?

   None identified.

4. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   None identified.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   No information given to us about the Site.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   No.

8. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
   a. Your name? Yes _____ No __X__
   b. Your affiliation? Yes _____ No _____
   c. Your responses? Yes __X__ No _____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Eric Marsh
Affiliation: Skeo
Subject Name:
Affiliation: Resident
Subject Contact Information:
Time: 12:00 p.m.
Date: 12/05/2016
Interview Location: Location Information Here

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents, Businesses and Organizations

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Came to Highlands in 1959, moved to this home in 1960. Yes, now it has been cleaned up. My husband has just died from a rare, aggressive form of cancer. There was a boy who developed a brain tumor when he was 3-4 years old, but survived. People nearby have had cancers. When you put them together, you get a big group of people that have died from cancers. I have Parkinson's disease. Not sure if it is related but the San Jacinto Coalition added me to their list because of my disease. I have two daughters – one is deceased.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   We have lived on this property since 1960. When we moved here in 1960 there was a swimming hole, but it was not too many years after that it was closed.

3. What have been the effects of this Site on the surrounding community, if any?

   I know lots of people down the road that have died of cancer. I do feel that something needs to be done.

4. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   I don't know about this. There is a half-way house down the road.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   No. The San Jacinto River Coalition has provided information.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   The only thing that pops in my head is that we should all work together to clean up the river and clean up the sites. EPA has resources that others do not have to do this.

8. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
    a. Your name? Yes _____ No __X____
    b. Your affiliation? Yes _____ No _____
    c. Your responses? Yes __X___ No _____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Ian Penn
Affiliation: Skeo
Subject Name:
Affiliation: Resident
Subject Contact Information:
Time: 11:00 a.m.
Date: 12/05/2016
Interview Location: Highlands, Texas

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents, Businesses and Organizations

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes, I am aware of the Site. There has been dioxin in people's yards that needs to be cleaned up.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   I do not know much about what went into the cleanup. I know some people on Clearlake Road used to have access to the oil drilling site next door.

3. What have been the effects of this Site on the surrounding community, if any?

   Not aware of any effects.

4. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   Probably trespassing and trash dumping. People used to have access to the adjoining property. Some swimming and fishing goes on in the ponds to the east of the Site.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   Not really. Periodic updates would be helpful.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No well, on City water.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   Because people do go back there some times to swim or fish or be on site, send out information so people better understand the Site.

8. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
   a. Your name? Yes X No ____
   b. Your affiliation? Yes ____ No X
   c. Your responses? Yes X No ____

Highlands Acid Pit Superfund Site — Five-Year Review Interview Form

Site Name: Highlands Acid Pit
EPA ID No.: TXD980514996
Interviewer Name: Eric Marsh
Affiliation: Skeo
Subject Name:
Affiliation: Resident
Subject Contact Information:
Time: 11:30 a.m.
Date: 12/05/2016
Interview Location: Highlands, Texas

Interview Format (circle one): In Person Phone Mail Other:

Interview Category: Residents, Businesses and Organizations

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Lived in Highlands for 12 years. Aware of the Site, but less so specific site issues.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   I have lived here for 12 years and I do not think it has changed. Used to fish off a dock near there.

3. What have been the effects of this Site on the surrounding community, if any?

   Some mention of people dying. Problems with fish, crabs in San Jacinto River?

4. Have there been any problems with unusual or unexpected activities at the Site in the past five years, such as emergency response, vandalism or trespassing?

   Have heard of people discarding hogs there that have been killed. Trash in the woods.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   No. I hear about people in Baytown having wells regularly tested. My understanding is there is a lawsuit regarding the river bottom. My uncle is involved in that lawsuit.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   My brother has had staph from swimming in river. Keep trying.

8. Do you give permission for the following to be included in the Five-Year Review Report and appendices, which becomes a public document? Please initial below.
   a. Your name? Yes X No ____
   b. Your affiliation? Yes X No ____
   c. Your responses? Yes X No ____

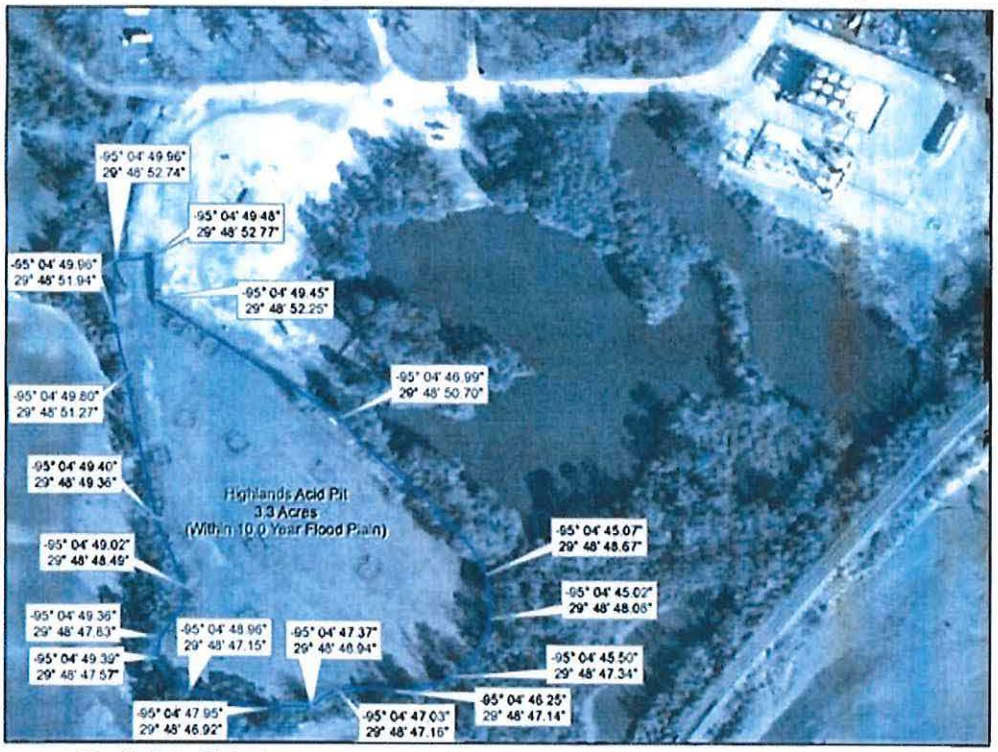
APPENDIX J – INSTITUTIONAL CONTROLS

Highlands Acid Pit Superfund Site
Highlands, Harris County, Texas

Posted Site Entrance with a 6 Foot Chain Link Fence/Locked Gate &
Cluster Fencing/Locked Gates Around All Locked Site Well Locations.

"BURIED CONTAMINANTS" - STOP BEFORE YOU DIG!

Any reuse or redevelopment involving subsurface utilities, excavation, fence removal, trenching, or well installation requires prior approval by TCEQ, USEPA, and the four (4) property owners.



Draft Deed Notice

EPA ID# TXD980514996
110th Congressional District 02

Owner	Appraisal Acc. #	Deed File #
(1) Harriet L. Day	ID# 0410390000204	Z132725
(2) Jacquelin K. Kellam	ID# 0410390000205	Z132725
(3) Harry K. Johnson	ID# 0410390000206	Z132725
(4) Ada J. Ganze	ID# 0410390000207	Z132725

as recorded in deed file number Z132725 (Abstract 83 J White)
filed for record in the Harris County, Texas Clerk's Office 03/06/2006
from deceased grantor Clothilde Johnson ID# 0410390000005 and Z132725.

Map Created 07/16/2007
by EPA Region 6 GIS Support
Image from GlobeXplorer
01/27/2002 1:3600

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Feet

As a representative of the U.S. Environmental Protection Agency, I hereby affirm that the facts and information contained herein are truthful and accurate to the best of my knowledge, and that the filing of this notice is required by the USEPA.

Ernest R Franke
Ernest R. Franke, Remedial Project Manager

State of Texas, County of Dallas
This instrument was acknowledged before me on this date: July 18, 2007
by: Jacqueline Samuel
Notary Public's Signature
Commission Expires: February 24, 2011

JACQUELINE SAMUEL
MY COMMISSION EXPIRES
FEBRUARY 24, 2011