

# State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



#6115

FOR OGCC USE ONLY

**RECEIVED**  
8/26/2011

## SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

### CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☒ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Pit closures

OGCC Operator Number: 100264

Name of Operator: XTO Energy, Inc.

Address: 382 County Road 3100

City: Aztec

State: NM Zip: 87410

Contact Name and Telephone:

Jody Mecham

No: (435) 722-4521

Fax: (435) 722-5004

API Number: 05-103-10655-00

County: Rio Blanco

Facility Name: Piceance Creek

Facility Number: Pit #1 - 414349 Pit #2 - 414350

Well Name: Federal #2S-95-15-22

Well Number: Federal #2S-95-15-22

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENW S15, T2S, R95W, 6th P.M. Latitude: 39.87825 Longitude: 108.045214

### TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Drill cuttings and fluids

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Irigul Parachute

Potential receptors (water wells within 1/4 mi, surface waters, etc.): There are no water wells or surface waters within 1/4 mile of the location.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

pH

How Determined:

Laboratory analyses on soil samples. The pH values exceed Table 910-1 allowable levels (refer to Table 1 - Laboratory Results Summary Table).

### REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

Two (2) pits exist at the 15-22 location which require closure activities (there is no Cuttings Pit, etc.): Freshwater (414349) and Reserve (A&B) (414350). Neither pit contains contents. Pit liners and contents were previously removed and disposed at a permitted landfill facility. The Reserve Pit contains an earthen berm sediment trap. For sampling purposes the larger portion is labeled Reserve Pit A and the smaller portion Reserve Pit B. Sub-liner samples were collected from the Freshwater Pit, Reserve Pit A and Reserve Pit B and submitted to an analytical laboratory for Table 910-1 analysis. In addition, background arsenic samples were collected from five undisturbed areas around the location. Initial laboratory results indicated elevated TPH at 2,070 mg/kg, pH at 9.79 and arsenic at 2.6 mg/kg above Table 910-1 allowable levels in the Freshwater Pit. Laboratory results indicated elevated TPH results of 1,200 mg/kg, a pH result of 9.89 and an arsenic result of 2.9 mg/kg above Table 910-1 allowable levels in Reserve Pit A. Arsenic results of 4.1 mg/kg and a pH of 9.92 exceeded Table 910-1 allowable levels in Reserve Pit B. Three of the five background arsenic sample results exceeded Table 910-1 allowable levels; two samples were below laboratory detection limits. See Table 1 - Laboratory Results Summary for a complete listing of constituent results.

Describe how source is to be removed:

Sub-liner samples collected from the Freshwater Pit and Reserve Pit A indicated TPH concentrations of 2,070 mg/kg and 1,200 mg/kg, respectively, exceeding Table 910-1 allowable levels. TPH concentrations for a sub-liner sample collected at the same time from Reserve Pit B were 356 mg/kg, below Table 910-1 clean-up levels. Pit bottoms of both the Freshwater Pit and Reserve Pit A were ripped with a D-8 dozer in incremental depths up to four (4) feet deep. Samples were collected in the Freshwater Pit at two (2) foot, two (2) to three (3) and four (4) foot intervals and submitted to an analytical laboratory for TPH analysis. Results from all three (3) samples were 404 mg/kg, 307 mg/kg and 281 mg/kg, respectively. Samples were collected in Reserve Pit A at the two (2) foot interval and analyzed for TPH. Results from this analysis indicated a TPH concentration 175 mg/kg, below Table 910-1 clean-up levels. All loose material in the pit bottoms was then mixed/blended with clean on-site spoils, samples collected of the mix and submitted to an analytical laboratory for Table 910-1 analysis. Analytical results for Reserve Pit A and Reserve Pit B indicated all concentration levels were below Table 910-1 with the exception of pH and arsenic. The Freshwater Pit mixed/blended material result for TPH was 549 mg/kg, exceeding Table 910-1 allowable levels. This material was re-mixed with additional clean soil and a sample collected for TPH analysis. Results from this subsequent sample was 298 mg/kg, below Table 910-1 clean-up levels. Please refer to Table 1 - Laboratory Results Summary Table. All remaining pit content material will be buried in place with a minimum 3-foot cover of clean, native soils.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

See attached Form 4 - Sundry Notice regarding arsenic levels.

FORM  
27  
Rev 6/99

State of Colorado  
Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801, Denver, Colorado 80203  
(303)894-2100 Fax: (303)894-2109



Page 2

**REMEDIATION WORKPLAN (Cont.)**

Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

OGCC Employee: \_\_\_\_\_

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

N/A

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

Since TPH concentrations in sub-liner analytical results exceeded Table 910-1 criteria for the Freshwater Pit and Reserve A Pit the pit bottoms were ripped with a D-8 dozer to remove additional impacted material. After removing an additional four (4) feet of material in the Freshwater Pit and an additional two (2) feet of impacted material in Reserve Pit A samples were collected and analyzed for TPH. Analytical results indicated TPH levels at this interval of the pits was below Table 910-1 clean-up criteria. This loose material was then mix/blended with clean on-site spoils to reduce TPH concentrations of the excavated soil and rock. Samples of the mix/blended material were collected to confirm TPH levels were below 500 mg/kg. Only pH and arsenic exceeded Table 910-1 requirements. Please see attached Form 4 - Sundry Notice regarding arsenic levels. All remaining pit content material will be buried in place with a minimum 3-foot cover of clean, native soils, thereby meeting criteria to allow placement of soils exceeding Table 910-1 pH values. Reclamation activities will be as specified in the Surface Use Plan and BLM Conditions of Approval.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

Soil samples were collected from each of the pit bottoms (Freshwater, Reserve A&B) and submitted to an analytical laboratory for Table 910-1 constituent analyses. Additionally, five (5) soil samples were collected from undisturbed areas adjacent to the pit locations and submitted to a laboratory to establish the background concentration level for arsenic. Analytical results are presented in the attached Laboratory Results Summary Table. With the exception of pH and arsenic, under-liner impacts were below Table 910-1 constituent levels; sub-liner arsenic levels were below maximum allowable levels when the 10% variability factor is applied to the highest background concentration for arsenic ( $8.0 \text{ mg/kg} \times 1.1 = 8.8 \text{ mg/kg}$ ). Complete laboratory reports are available upon request. A minimum 3-foot cover of clean, native soils will be placed over the pit contents; thereby, meeting criteria to allow placement of soils exceeding Table 910-1 pH values.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

Pit contents and liners were previously removed and disposed at a permitted landfill facility. Pit bottoms were processed on-site by mix/blend methods to reduce TPH constituent concentrations below Table 910-1 levels and will be buried on site. A minimum three (3) feet of clean, native soil will be placed over the buried material.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: 06/28/2011	Date Site Investigation Completed: 06/22/2011	Date Remediation Plan Submitted: 08/26/2011
Remediation Start Date: 9/1/2011	Anticipated Completion Date: TBD	Actual Completion Date: TBD

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: Jody Mecham

Signed: \_\_\_\_\_

Title: Construction Coordinator

Date: 8/28/2011

OGCC Approved: \_\_\_\_\_

Title: \_\_\_\_\_

Date: 09/06/2011

Chris Camfield  
EPS NW Region



**SUNDRY NOTICE**

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 100264		4. Contact Name: Jody Mecham		Complete the Attachment Checklist OP OGCC
2. Name of Operator: XTO Energy, Inc.		Phone: (435) 722-4521		
3. Address: 382 County Road 3100		Fax: (435) 722-5004		
City: Aztec	State: NM	Zip: 87410		
5. API Number: 05-103-10655-00		OGCC Facility ID Number: 414349/414350		Survey Plat
6. Well/Facility Name: Federal #25-95-15-22		7. Well/Facility Number: Federal #25-95-15-22		Directional Survey
8. Location (Ctr/Otr, Sec, Twp, Rng, Meridian): SENW S15, T2S, R95W, 6th P.M.				Surface Equipmt Diagram
9. County: Rio Blanco		10. Field Name: Piceance Creek		Technical Info Page
11. Federal, Indian or State Lease Number: COC 61047				Other

**General Notice**

<input type="checkbox"/> <b>CHANGE OF LOCATION:</b> Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)	
Change of Surface Footage from Exterior Section Lines:	<input type="checkbox"/> FHUFSL <input type="checkbox"/> FBLFWL
Change of Surface Footage to Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Change of Bottomhole Footage from Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Change of Bottomhole Footage to Exterior Section Lines:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> attach directional survey
Bottomhole location Ctr/Otr, Sec, Twp, Rng, Mer	
Latitude	Distance to nearest property line
Longitude	Distance to nearest bldg, public rd, utility or RR
Ground Elevation	Distance to nearest lease line
	Is location in a High Density Area (rule 603b)? Yes/No <input type="checkbox"/>
	Distance to nearest well same formation
	Surface owner consultation date:
<b>GPS DATA:</b>	
Date of Measurement	PDOP Reading
	Instrument Operator's Name
<input type="checkbox"/> <b>CHANGE SPACING UNIT</b>	
Formation	Formation Code
Spacing order number	Unit Acreage
	Unit configuration
<input type="checkbox"/> Remove from surface bond	
Signed surface use agreement attached	
<input type="checkbox"/> <b>CHANGE OF OPERATOR (prior to drilling):</b>	
Effective Date:	
Plugging Bond: <input type="checkbox"/> Blanket <input type="checkbox"/> Individual	
<input type="checkbox"/> <b>CHANGE WELL NAME</b> NUMBER	
From:	
To:	
Effective Date:	
<input type="checkbox"/> <b>ABANDONED LOCATION:</b>	
Was location ever built? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is site ready for inspection? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date Ready for inspection:	
<input type="checkbox"/> <b>NOTICE OF CONTINUED SHUT IN STATUS</b>	
Date well shut in or temporarily abandoned:	
Has Production Equipment been removed from site? <input type="checkbox"/> Yes <input type="checkbox"/> No	
MIT required if shut in longer than two years. Date of last MIT	
<input type="checkbox"/> <b>SPUD DATE:</b>	
<input type="checkbox"/> <b>REQUEST FOR CONFIDENTIAL STATUS</b> (5 mos from date casing set)	
<input type="checkbox"/> <b>SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK</b>	
*submit cbl and cement job summaries	
Method used	Cementing tool setting/perf depth
Cement volume	Cement top
Cement bottom	Date
<input type="checkbox"/> <b>RECLAMATION:</b> Attach technical page describing final reclamation procedures per Rule 1804.	
Final reclamation will commence on approximately	
<input type="checkbox"/> Final reclamation is completed and site is ready for inspection	

**Technical Engineering/Environmental Notice**

<input type="checkbox"/> <b>Notice of Intent</b>		<input type="checkbox"/> <b>Report of Work Done</b>	
Approximate Start Date:		Date Work Completed:	
Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)			
<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal	
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste	
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input type="checkbox"/> Status Update/Change of Remediation Plans	
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: See Page 2	for Spills and Releases	

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete

Signed: Jody Mecham  
Print Name: Jody Mecham

Date: 8/24/11 Email: Jody-Mecham@XTOenergy.com  
Title: Construction Coordinator

OGCC Approved: Chris Canfield  
CONDITIONS OF APPROVAL, IF ANY:

Title: FOR Date: 09/06/2011

Chris Canfield  
EPS NW Region



## TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

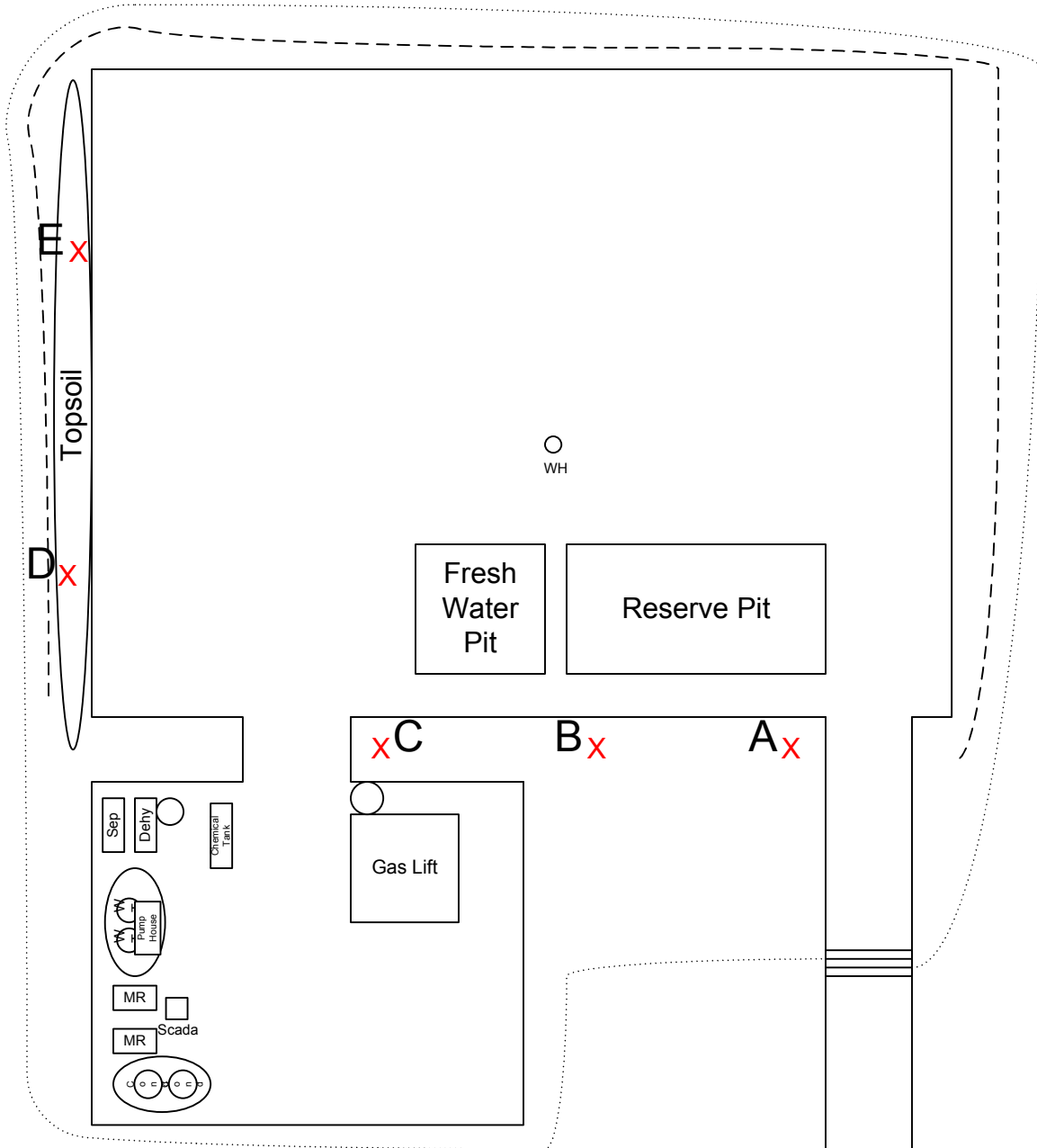
- |  |                               |                       |                 |
|--|-------------------------------|-----------------------|-----------------|
| 1. OGCC Operator Number:                       | 100264                        | API Number:           | 05-103-10655-00 |
| 2. Name of Operator:                           | XTO Energy, Inc.              | OGCC Facility ID #    | 414349/414350   |
| 3. Well/Facility Name:                         | Federal #2S-95-15-22          | Well/Facility Number: | #2S-95-15-22    |
| 4. Location (QtrQtr, Sec, Twp, Rng, Meridian): | SENW S15, T2S, R95W, 6th P.M. |                       |                 |

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

The operator is respectfully requesting a change in the allowable arsenic concentration level at the subject location. Specifically, COGCC Table 910-1 Concentration Levels lists the allowable concentration level for arsenic in soil at 0.39 mg/kg. However, COGCC has allowed site specific changes to allowable concentration levels based upon background concentration levels. At other locations, COGCC has allowed the determination of allowable levels based upon a 10% variability factor applied to background soil concentration values, where the maximum allowable level is computed by multiplying the highest detected background concentration by 1.1 (e.g.  $5.6 \times 1.1 = 6.2$ ). Five representative samples were collected from undisturbed areas adjacent to the subject location. Please see attached figure for background arsenic locations. Arsenic concentrations in those samples ranged from Non-Detect to 8.0 mg/kg. Applying the 10% variability factor to the highest concentration detected results in an allowable arsenic concentration level of 8.8 mg/kg for the subject location.

SENW, Twp 2S, Sec 15,  
Rng 95W, 6<sup>th</sup> P.M.



- \*Map Not to Scale

**Table 1 - Laboratory Results Summary**  
**Pit Contents, Underliner, and Background Samples**  
**XTO 15-22**

Updated 08/26/2011

Analytical Parameter  (with units)	15-22 Pits											BACKGROUND SAMPLES 15-22 (10/19/10)					COGCC	Maximum allowable based on background
	Fresh Water Pit Sub Liner (6/28/11)	Fresh Water Pit 2 ft (07/21/11)	Fresh Water Pit 2 ft - 3 ft (07/21/11)	Fresh Water Pit Bottom Confirmation 4 ft (7/21/11)	Fresh Water Mix/Blend (08/09/11)	Fresh Water Mix/Blend (08/22/11)	Reserve Pit A Sub Liner (6/28/11)	Reserve Pit A Confirmation 2 ft (7/21/11)	Reserve Pit A Mix/Blend (08/09/11)	Reserve Pit B Sub Liner (6/28/11)	Reserve Pit B Mix/Blend (08/09/11)	Bkgrnd A	Bkgrnd B	Bkgrnd C	Bkgrnd D	Bkgrnd E	Table 910-1 Allowable Levels	
	Updated 08/20/2011																	
TPH (TVH and TEPH) (mg/Kg)	2,070	404	307	291	549	298	1,200	175	271	356.0	340.0	-	-	-	-	-	500	-
Benzene (mg/Kg)	0.008	-	-	-	ND	-	0.005	-	ND	0.005	ND	-	-	-	-	-	0.17	-
Toluene (mg/Kg)	0.010	-	-	-	ND	-	0.008	-	ND	0.007	ND	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	0.004	-	-	-	ND	-	0.004	-	0.031	0.004	ND	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	0.017	-	-	-	0.116	-	0.009	-	0.171	0.010	0.139	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	1,000	-
Anthracene (mg/Kg)	ND	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/Kg)	0.236	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	0.372	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	0.137	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/Kg)	-	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	0.306	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	0.405	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	1,000	-
Fluorene (mg/Kg)	0.113	-	-	-	ND	ND	0.152	-	ND	0.046	ND	-	-	-	-	-	1,000	-
Indo(1,2,3,C,D)pyrene (mg/Kg)	ND	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	ND	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	23	-
Pyrene (mg/Kg)	0.293	-	-	-	ND	ND	ND	-	ND	ND	ND	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	0.544	-	-	-	0.222	-	0.532	-	0.191	0.383	0.194	-	-	-	-	-	<4or 2X background	-
Sodium Adsorption Ratio (SAR)	6.13	-	-	-	2.99	-	7.33	-	2.10	7.54	2.35	-	-	-	-	-	<12	-
pH	9.79	-	-	-	9.50	-	9.89	-	9.66	9.92	9.76	-	-	-	-	-	6-9	-
Arsenic (mg/Kg)	2.6	-	-	1.1	2.7	-	2.9	0.93	1.8	4.1	2.0	ND	ND	2.0	8.0	1.6	0.39	8.8
Barium (mg/Kg)	1,160	-	-	-	1,440	-	265	-	845	2,430	639	-	-	-	-	-	15,000	-
Cadmium (mg/Kg)	<1.1	-	-	-	<1.0	-	<0.96	-	<1.1	<1.0	<1.0	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	33.1	-	-	-	41.5	-	27.2	-	48.1	34.3	50.5	-	-	-	-	-	120,000	-
Chromium (VI) (mg/Kg)	1.0	-	-	-	<0.43	-	0.56	-	<0.44	<0.40	<0.43	-	-	-	-	-	23	-
Copper (mg/Kg)	18.5	-	-	-	15.9	-	12.8	-	12.7	15.0	13.2	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/Kg)	13.0	-	-	-	12.1	-	9.9	-	11.0	14.4	11.0	-	-	-	-	-	400	-
Mercury (mg/Kg)	<0.11	-	-	-	<0.11	-	<0.085	-	<0.10	<0.10	<0.11	-	-	-	-	-	23	-
Nickel (mg/Kg)	18.5	-	-	-	20.7	-	15.6	-	19.3	18.8	20.4	-	-	-	-	-	1,600	-
Selenium (mg/Kg)	<5.4	-	-	-	<5.0	-	<4.8	-	<5.4	<5.1	<5.0	-	-	-	-	-	390	-
Silver (mg/Kg)	<3.2	-	-	-	<3.0	-	<2.9	-	<3.2	<3.1	<3.0	-	-	-	-	-	390	-
Zinc (mg/Kg)	49.0	-	-	-	45.5	-	41.5	-	44.1	42.0	45.5	-	-	-	-	-	23,000	-

Notes:

- 1) "-" indicates no analysis.
- 2) ND = not detectible to the laboratory detection limit.
- 3) Results highlighted in yellow exceed Table 910-1 parameters. Results highlighted in Gray exceed Table 910 but are below maximum background levels.
- 4) Refer to the attached site map for approximate sample locations.
- 5) Refer to Appendix B for the complete laboratory results.