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

FOR OGCC USE ONLY

OGCC Employee
☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV
Tracking No

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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

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

OGCC Operator Number: 100264
Name of Operator: XTO Energy Inc.
Address: 9127 S Jamacia Drive
City: Englewood State: CO Zip: 80112

Contact Name and Telephone:
Jessica Dooling
No: 970-675-4122
Fax: 970-675-4150

API Number: 05-103-11099 County: Rio Blanco
Facility Name: Freedom Unit Facility Number: 293829 Drilling Pit Permit
Well Name: Freedom Unit Well Number: FRU 197-33A
Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSE, Sec 33, T1S, R97W, 6th PM Latitude: 39.915581 Longitude: -108.285658

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.): non-cropland rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Rentsac channery loam, 5 to 50% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): no water wells within 1/4 mile, nearest surface water is over 1/2 mile away

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

Impacted Media (check):	Extent of Impact:	How Determined:
☑ Soils	subliner impacts: elevated TPH, pH and SAR	laboratory analysis
☐ Vegetation		
☐ Groundwater		
☐ Surface Water		

REMEDIATION WORKPLAN

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

See Attachment I for details regarding initial action taken.

Describe how source is to be removed:

Pit contents and liners from the Fresh Water (including subliner impacted soil) and Reserve pits have been removed and transported to an offsite disposal/recycling facility. Cuttings pit #2 pit contents were mix-blended to below Table 910-1 concentrations and will be buried in place. Cuttings pit #1 pit contents (TPH 540 mg/kg) will be treated on site and confirmed to acceptable levels.

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.:

Any remaining impacted soils will either be treated on-site or removed to an offsite disposal/recycling facility.

Submit Page 2 with Page 1

XTO
Pit Closure update.

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

Tracking Number: REM # 6826
Name of Operator:
OGCC Operator No:
Received Date:
Well Name & No: FRV 197-33A
Facility Name & No: PIT FACILITY # 293829

Page 2

REMEDIATION WORKPLAN (Cont.)

OGCC Employee:

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

Available information indicates that the uppermost groundwater bearing zone is greater than 200 feet below ground surface. Soil samples were collected for laboratory analysis of subliner material (Reserve, Fresh Water and Cuttings pit #2), and from the base of the remedial excavation (Fresh Water pit) where impacted subliner soil was removed to confirm no groundwater impact potential exists.

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.

Reclamation as specified in the Surface Use Plan, the BLM Conditions of Approval, and the COGCC regulations 900 and 1000 series will be completed as applicable.

Please see Attachment 2

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:

Based on subliner testing to be completed beneath the Cuttings pit #1 additional assessment and remediation may be necessary (see Table 1).

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

The synthetic liners from the Reserve, Fresh Water and Cuttings pit #2 were removed and sent for offsite recycling/disposal. After the material has been removed from Cuttings Pit #1 the liner will be removed and sent for offsite recycling/disposal.
Pit contents from the Reserve and Fresh Water pits (including subliner impacted material) were transported to an approved disposal/recycling facility. Cuttings pit #2 material was mix-blended to below Table 910-1 concentrations and will be buried in place (see Table 1). Cuttings pit #1 material will be treated on-site to acceptable levels.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 08/19/11	Date Site Investigation Completed: in progress	Date Remediation Plan Submitted: 2/1/2012
Remediation Start Date: pending approval	Anticipated Completion Date: pending approval	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: Jessica Dooling Signed:

Title: Environmental Coordinator Date: 2/1/2012

OGCC Approved: Title: FOR Chris Canfield EPS NW Region Date: 08/01/2012

Table 1
Location: FRU 197-33A
Lab Summary

Updated. 7/10/2012

Analytical Parameter	Fresh Water Pit			Reserve Pit			Cuttings #1		Cuttings #2			BkGrnd Arsenic 08/30/11					COGCC	Background
(with units)	FW Pit Contents 8/19/11	FW Subliner 11/14/11	FW Subliner (-1.5') 11/30/11	Res Pit Contents 8/19/11	Res Pit Subliner 11/4/11	Res Pit Subliner Post Mix Blend 11/18/11	Cut #1 Pit Contents 1/06/12	Cut #1 Pit Subliner 2/23/12 [7]	Cut #2 Pit Contents 4/06/11	Cuttings Pile 10/25/11 [6]	Pit Subliner 4/06/11	#1	#2	#3	#4	#5	Table 910-1 Concentration Levels	Maximum based on Background
Accutest Job #	D26811	D29455	D29896	D26811	D29207	D29647	D30890	D32207	D22470	D28910	D22470	D27140					-	-
Sample Type (Composite/Discrete)	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D	D	-	-
TPH (GRO) (mg/Kg)	21100	51.8	ND	9410	30	14.6	57.0	11.6	34.6	ND	ND	-	-	-	-	-	-	-
TPH (DRO) (mg/Kg)	288000	2710	83.0	295000	752	189	483	167	190	ND	21.4	-	-	-	-	-	-	-
TPH (GRO + DRO) (mg/Kg)	309100	2762	83	304410	782	204	540	179	225	ND	21.4	-	-	-	-	-	500	-
Benzene (mg/Kg)	140	ND	0.0524	39.6	ND	ND	0.108	ND	0.634	0.122	ND	-	-	-	-	-	0.170	-
Toluene (mg/Kg)	1220	ND	0.130	424	ND	ND	0.845	0.162	1.69	0.382	0.075	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	187	0.043	0.0338	44.2	ND	ND	0.243	0.0535	0.227	0.0585	ND	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	3060	0.973	0.148	1180	0.215	ND	1.33	0.274	1.61	0.432	0.144	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	-	ND	2.64	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	1000	-
Anthracene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	1000	-
Benzo(A)anthracene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	2.2	-
Benzo(K)fluoranthene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	ND	-	0.0013	ND	ND	ND	ND	0.0050	ND	ND	ND	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	1000	-
Fluorene (mg/Kg)	77.9	-	0.0205	9.56	0.166	0.080	0.0525	0.0066	0.0851	ND	ND	-	-	-	-	-	1000	-
Indeno(1.2.3,C.D)pyrene (mg/Kg)	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	103	-	0.021	20.6	ND	ND	0.315	0.0453	0.353	0.215	ND	-	-	-	-	-	23	-
Pyrene (mg/Kg)	ND	-	ND	0.354	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	1000	-
Electrical Conductivity (mmhos/cm)	2.020	-	2.110	3.980	0.830	1.110	6.050	6.670	3.860	1.420	2.150	-	-	-	-	-	<4 or 2X BG	-
Sodium Adsorption Ratio (SAR)	23.9	-	7.42	34.8	11.9	11.5	89.1	28.3	17.9	11.4	14.1	-	-	-	-	-	<12	-
pH	7.79	-	9.77	9.42	10.06	10.08	11.85	10.84	9.8	9.93	9.77	-	-	-	-	-	6-9	-
Arsenic (mg/kg)	6.7	-	5.5	7	9.4	5.9	10.4	10.5	5.8	5.6	5.2	5.7	6.0	12.6	5.4	3.7	0.39	13.9
Barium (mg/kg)	21200	-	420	36700	826	1090	3640	4950	4180	5850	1590	-	-	-	-	-	15000	-
Cadmium (mg/kg)	<3.9	-	<1.1	<4.7	<1.1	<1.1	1.8	<1.1	<1.2	<1.1	<1.1	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	80.7	-	18.2	91.9	32.6	33.1	12.9	30.2	18.7	39.1	22.5	-	-	-	-	-	120000	-
Chromium (VI) (mg/Kg)	<1.6	-	<0.43	2.7	<0.44	<0.44	<0.49	<1.0	0.58	<0.45	0.8	-	-	-	-	-	23	-
Copper (mg/kg)	48	-	<11	113	13	11.8	29.9	19.9	22.5	15.1	14.4	-	-	-	-	-	3100	-
Lead (inorganic) (mg/kg)	<20	-	<55	<23	12.1	11.5	40.5	15.1	16.4	13.8	13.3	-	-	-	-	-	400	-
Mercury (mg/kg)	2.1	-	<0.11	1.3	<0.11	<0.11	<0.12	<0.12	<0.12	<0.12	<0.1	-	-	-	-	-	23	-
Nickel (mg/kg)	19.5	-	12.3	20.6	18.5	15.6	13.1	17.3	13.5	20.7	18.3	-	-	-	-	-	1600	-
Selenium (mg/kg)	<98	-	<5.5	<120	<5.5	<5.7	<6.1	<5.5	<12	<28	<5.4	-	-	-	-	-	390	-
Silver (mg/kg)	<12	-	<3.3	<14	<3.3	<3.4	<3.7	<3.3	<3.6	<3.3	<3.2	-	-	-	-	-	390	-
Zinc (mg/kg)	66.7	-	27.2	56.2	45.1	44.1	37.5	46.1	37.3	34.5	45.1	-	-	-	-	-	23000	-
% Solids	24.6	88.3	92.4	22.3	88.6	90.1	79.7	87.2	82.5	86.5	88.3	92.0	93.0	93.2	94.0	95.1	-	-

Notes

1) ND = not detectible to the laboratory detection limit.
2) Results highlighted in yellow exceed Table 910-1 concentration levels. Results highlighted in Gray exceed Table 910-1. but are below background levels.
3) "-" indicates no analysis.
4) See site map for sample locations
5) Cut 2 Backfilled with on site spoils. No visual staining or odor observed. QA performed by KRW.
6) Reserve pit backfill consists of Cut 1 Mix Blend (see Table 2), Cut 2 Mix Blend, and on-site backfill spoils (D28945). Cut 1 Backfill to consist of Cut 1 mix blend and on-site backfill spoils.
7) See mix/blend results on Table 2

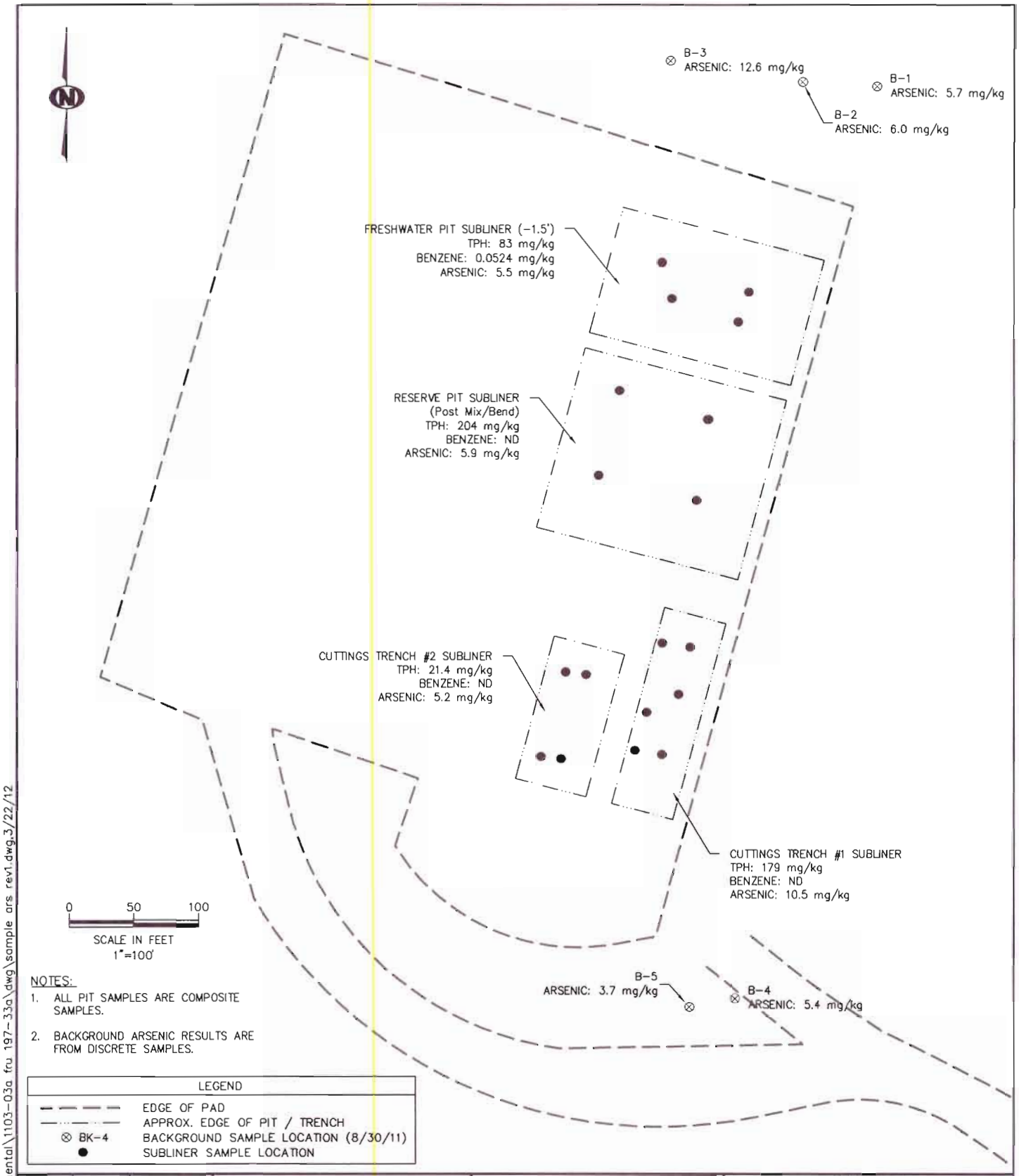
Table 2
Location: FRU 197-33A
Lab Summary - Cuttings 1 Mix/Blend

Updated: 3/22/2012

Analytical Parameter	Cuttings #1															COGCC
(with units)	Cut #1 Pit Contents (1/06/12)	Cut # 1 M/B Day 1 2/10 (2/14/12)	Cut # 1 M/B Day 2 2/14 (2/14/12)	Cut #1 M/B Day 3 2/15 (2/16/12)	Cut #1 M/B Day 4 2/16 (2/21/12)	Cut #1 M/B Day 5 2/17 (2/21/12)	Cut #1 M/B Day 6 2/20 (2/21/12)	Cut #1 M/B Day 7 2/21 (2/21/12)	Cut #1 M/B Day 8 2/23 (2/27/12)	Cut #1 M/B Day 9 2/24 (2/27/12)	Cut #1 M/B Day 10 2/27 (2/29/12)	Cut #1 M/B Day 11 2/28 (2/29/12)	Cut #1 M/B Day 12 2/29 (2/29/12)	Cut #1 M/B Day 13 3/1 (3/5/12)	Cut #1 M/B Day 14 3/2 (3/5/12)	Table 910-1 Concentration Levels
Accutest Job #	D30890	D31900		D32018	D32155				D32263		D32369			D32508		-
Sample Type (Composite/Discrete)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
TPH (GRO) (mg/Kg)	57.0	12.8	14.7	53.5	ND	19.2	19.4	38.3	8.80	8.56	8.23	10.5	11.4	13.9	17.5	-
TPH (DRO) (mg/Kg)	483	107	230	405	223	212	251	260	118	176	118	171	172	269	314	-
TPH (GRO + DRO) (mg/Kg)	540	120	245	459	223	231	270	298	127	185	126	182	183	283	332	500
Benzene (mg/Kg)	0.108	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.170
Toluene (mg/Kg)	0.845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85
Ethylbenzene (mg/Kg)	0.243	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100
Xylenes (total) (mg/Kg)	1.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175
Acenaphthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000
Anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000
Benzo(A)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
Benzo(A)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
Benzo(B)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2
Benzo(K)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022
Chrysene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022
Fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000
Fluorene (mg/Kg)	0.0525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000
Indeno(1,2,3,C,D)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
Napthalene (mg/Kg)	0.315	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000
Electrical Conductivity (mmhos/cm)	6.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4 or 2X BG
Sodium Adsorption Ratio (SAR)	89.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<12
pH	11.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6-9
Arsenic (mg/kg)	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39
Barium (mg/kg)	3640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15000
Cadmium (mg/kg)	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70
Chromium (III) (mg/Kg)	12.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120000
Chromium (VI) (mg/Kg)	<0.49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Copper (mg/kg)	29.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3100
Lead (inorganic) (mg/kg)	40.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400
Mercury (mg/kg)	<0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Nickel (mg/kg)	13.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1600
Selenium (mg/kg)	<6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390
Silver (mg/kg)	<3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390
Zinc (mg/kg)	37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23000
% Solids	79.7	86.4	86.0	87.7	84.0	83.6	83.1	82.2	90.7	92.9	86.2	87.6	84.9	87.7	87.4	-

Notes:

1) ND = not detectible to the laboratory detection limit.
2) Results highlighted in yellow exceed Table 910-1 concentration levels. Results highlighted in Gray exceed Table 910-1, but are below background levels.
3) "-" indicates no analysis.
4) See site map for sample locations
5) Cut 2 Backfilled with on site spoils. No visual staining or odor observed. QA performed by KRW.



NOTES:

1. ALL PIT SAMPLES ARE COMPOSITE SAMPLES.
2. BACKGROUND ARSENIC RESULTS ARE FROM DISCRETE SAMPLES.

LEGEND	
- - - - -	EDGE OF PAD
—·—·—	APPROX. EDGE OF PIT / TRENCH
⊗ BK-4	BACKGROUND SAMPLE LOCATION (8/30/11)
●	SUBLINER SAMPLE LOCATION

DESIGNED: –	CHECKED: DK	FIGURE 1	NOTES:
DATE: 3/22/12	DRAWN: DRF		
FILE NAME: sample ars rev1	SHEET NO.: 1 of 1		DATE / REVISIONS
PROJECT NO.: 1103-03A	SCALE: 1"=100'		

KRW CONSULTING, INC.
8000 W. 14TH AVENUE, SUITE 200
LAKEWOOD, COLORADO
(303) 239-9011

FIGURE 1
PICEANCE CREEK
FRU 197-33A
SAMPLE LOCATIONS WITH
ARSENIC LEVELS
PREPARED FOR XTO ENERGY

s:\proj\xto environmental\1103-03a fru 197-33a\dwg\sample ars rev1.dwg,3/22/12