

State of Colorado
Oil and Gas Conservation Commission



#8403

FOR OGCC USE ONLY

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

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: 2213268

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

Spill or Release Plug & Abandon Central Facility Closure Site/Facility Closure Other (describe): Reference Doc #2213268

OGCC Operator Number: <u>100264</u>	Contact Name and Telephone: <u>Jessica Dooling</u>
Name of Operator: <u>XTO Energy Inc.</u>	No: <u>970-675-4122</u>
Address: <u>PO Box 6501</u>	Fax: <u>970-675-4150</u>
City: <u>Englewood</u> State: <u>CO</u> Zip: <u>80155</u>	

API Number: <u>05-103-10112</u>	County: <u>Rio Blanco</u>
Facility Name: <u>Piceance Creek Unit</u>	Facility Number: <u>274345</u>
Well Name: <u>Piceance Creek Unit</u>	Well Number: <u>T35X-11G</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>NESW, Sec. 11, T2S, R97W, 6th PM</u> Latitude: <u>39.89114</u> Longitude: <u>-108.25096</u>	

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Condensate/Produced Water

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-Crop Land, Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Forelle Loam, 3 to 8% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): ~1400' to nearest surface water, nearest water well >1 mile.

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>TPH, BTEX, PAH's and Arsenic</u>	<u>laboratory analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

REMEDIATION WORKPLAN

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

Initial impacts identified in Form 19 (Spill Report Document #2213268), see Tables and Figures. Please refer to Attachment I for details regarding background Arsenic consideration.

Describe how source is to be removed:

Impacted soils will be removed and treated onsite or transported offsite to a permitted disposal/recycling facility.

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 be removed and either treated onsite or transported offsite to a permitted disposal/recycling facility.



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

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 100 feet below the ground surface. Soil samples will be collected for laboratory analysis 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.

Once the assessment and remediation is completed, a revised Form 27 (Site Investigation and Remediation Workplan) will be submitted. Pending approval of the workplan, the excavation will be backfilled with mix/blend processed or clean fill material in accordance with COGCC 900 & 1000 series rules. Upon completion of reclamation, a Notice of Completion will be submitted.

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:

As applicable, soil sample(s) will be collected below the tank area and submitted for laboratory analysis of Table 910-1 constituents.

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

Synthetic liners and any impacted soils will be removed and will either be mix/blend processed or disposed of offsite. Mix/blend processed material will be used for onsite fill.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 1/25/11 Date Site Investigation Completed: pending approval Date Remediation Plan Submitted: 5/7/2014
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: [Signature]
Title: Piceance EH&S Supervisor Date: 5/7/2014

OGCC Approved: Stanley C. Spencer Title: NW EPS Date: 5/7/14

ATTACHMENT I

PCU T35X-11G Tank Area, Form 27 Page 1

Background Arsenic:

XTO Energy herein requests consideration of site-specific background Arsenic levels as an alternative to the Table 910-1 value for the PCU T35X-11G location. COGCC Table 910-1 Concentration Levels list the allowable concentration level for Arsenic in soil at 0.39 mg/kg. Footnote 1 of Table 910-1 states "Consideration shall be given to background levels in native soils and ground water". 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.

1. Eight representative background samples were collected from areas adjacent to the subject location. Arsenic concentrations in those samples ranged from 3.7 mg/kg to 6.5 mg/kg. Applying the 10% variability factor to the highest concentration detected results in an allowable Arsenic concentration level of 7.2 mg/kg.
2. A composite Arsenic sample was collected from the North Containment area (3.7 mg/kg). This Arsenic concentration is within the allowable background Arsenic concentration of 7.2 mg/kg.
3. The South Containment area Arsenic concentration of 8.1 mg/kg is above the allowable background Arsenic concentration of 7.2 mg/kg. XTO Energy believes this Arsenic value reflects the heterogeneous nature of the substrate and does not indicate impacts due to operations.

Please find the Lab Data Summary Tables and the Site Map indicating Arsenic sampling locations attached.

Table 1
Location: PCU T35X-11G
Lab Summary - Tank Battery Containment Assessment

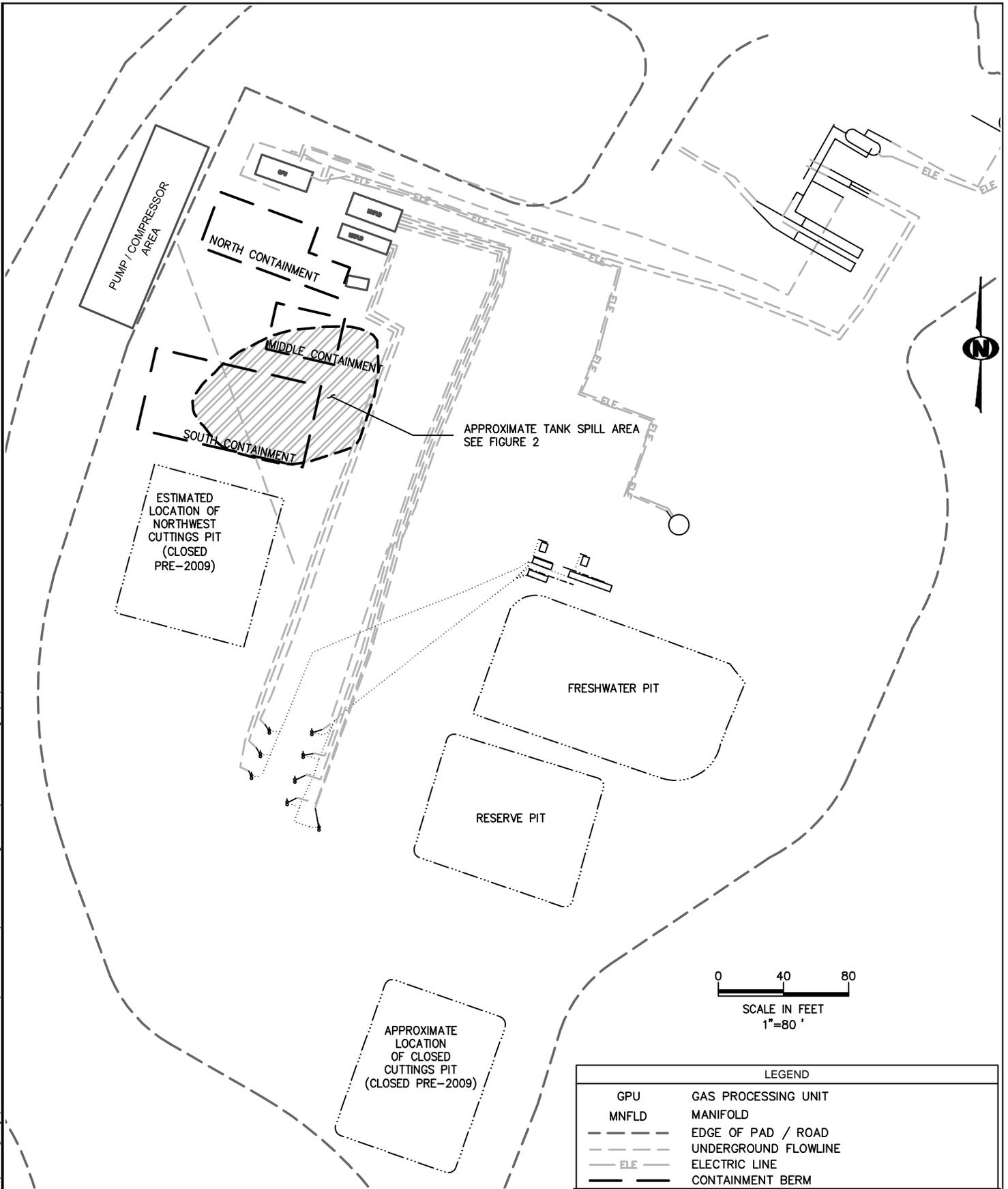
Last update 5/6/2014

Analytical Parameter (with units)	North Containment				South Containment Vertical	South Containment Lateral				Middle Containment Lateral		Background								COGCC	Maximum based on Background		
	NV-3 Surface Comp.	NL-1 Surface	NL-2 Surface	NL-3 Surface	SV-2 (7')	SL-1 Surface	SL-2A Surface	SL-3A Surface	SL-2 Surface	ML-1 Surface	ML-2 Surface	BG-1	BG-2	BG-3	BG-4	BG-5	BG-6	BG-7	BG-8	Table 910-1 Concentration Levels			
Accutest Job #	D21004 (2/10/11)				D21004 (2/10/11)	D21004 (2/10/11)				D21004 (2/10/11)		D20676 (1/25/11)				D42871 (1/23/13)				-	-		
Sample Type (Composite/Discrete)	C	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	-	-	
TPH (GRO) (mg/kg)	ND	ND	ND	ND	546	ND	ND	27.7	ND	ND	224	-	-	-	-	-	-	-	-	-	-	-	
TPH (DRO) (mg/kg)	23.8	12.0	ND	74.9	26100	168	3710	3120	83.2	134	9890	-	-	-	-	-	-	-	-	-	-	-	
TPH (GRO + DRO) (mg/Kg)	23.8	12.0	ND	74.9	26646	168	3710	3148	83.2	134	10114	-	-	-	-	-	-	-	-	-	500	-	
Benzene (mg/Kg)	ND	ND	0.0246	0.0271	0.220	0.0296	ND	ND	0.0636	ND	0.063	-	0.0296	-	-	-	-	-	-	-	-	0.17	-
Toluene (mg/Kg)	ND	ND	0.0682	0.0925	2.830	0.0857	ND	0.0707	0.202	ND	0.385	-	-	-	-	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	ND	ND	ND	3.200	ND	ND	0.0364	0.0313	ND	0.491	-	-	-	-	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	ND	ND	ND	0.0647	25.070	0.0541	0.0588	0.233	0.113	ND	3.600	-	-	-	-	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	-	-	-	5.840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Anthracene (mg/Kg)	ND	-	-	-	3.310	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/Kg)	ND	-	-	-	0.616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	ND	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	ND	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/Kg)	ND	-	-	-	0.158	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	ND	-	-	-	0.607	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	ND	-	-	-	0.929	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Fluorene (mg/Kg)	ND	-	-	-	13.900	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Indeno(1,2,3,C,D)pyrene (mg/Kg)	ND	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	ND	-	-	-	42.600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	ND	-	-	-	6.250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	1.480	0.624	0.691	0.798	5.790	0.458	2.170	1.600	2.310	0.955	3.290	-	-	-	-	-	-	-	-	-	-	4	-
Sodium Adsorption Ratio (SAR)	10.0	8.52	11.3	8.07	57.9	6.30	13.0	9.24	13.7	5.87	10.2	-	-	-	-	-	-	-	-	-	-	12	-
pH	9.50	9.93	10.06	9.58	11.53	9.72	9.63	9.43	9.79	9.66	10.10	-	-	-	-	-	-	-	-	-	-	6-9	-
Arsenic (mg/Kg)	3.7	-	-	-	8.1	-	-	-	-	-	-	4.4	6.1	4.8	6.5	4.0	3.8	3.7	5.4	-	-	0.39	7.2
Barium (mg/Kg)	271	-	-	-	3,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,000	-
Cadmium (mg/Kg)	<1.2	-	-	-	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	23.8	-	-	-	21.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120,000	-
Chromium (VI) (mg/Kg)	0.47	-	-	-	<0.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Copper (mg/Kg)	11.8	-	-	-	21.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/Kg)	10.6	-	-	-	19.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-
Mercury (mg/Kg)	<0.12	-	-	-	<0.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Nickel (mg/Kg)	15.4	-	-	-	15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600	-
Selenium (mg/Kg)	<6.0	-	-	-	<34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	-
Silver (mg/Kg)	<3.6	-	-	-	<4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	-
Zinc (mg/Kg)	39.2	-	-	-	54.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,000	-
% Solids	83.2	83.2	85.7	81.8	72.1	83.5	87.9	84.0	86.7	85.7	73.4	78.0	78.0	82.8	82.5	80.1	92.9	91.4	88.6	-	-	-	-

Notes:

- 1) ND = not detectible to the laboratory detection limit.
- 2) Results highlighted in yellow exceed Table 910-1 parameters. Results highlighted in gray are below allowable levels based on a 10% variability factor related to background samples.
- 3) "-" indicates no analysis.
- 4) See Figure(s) for sample locations

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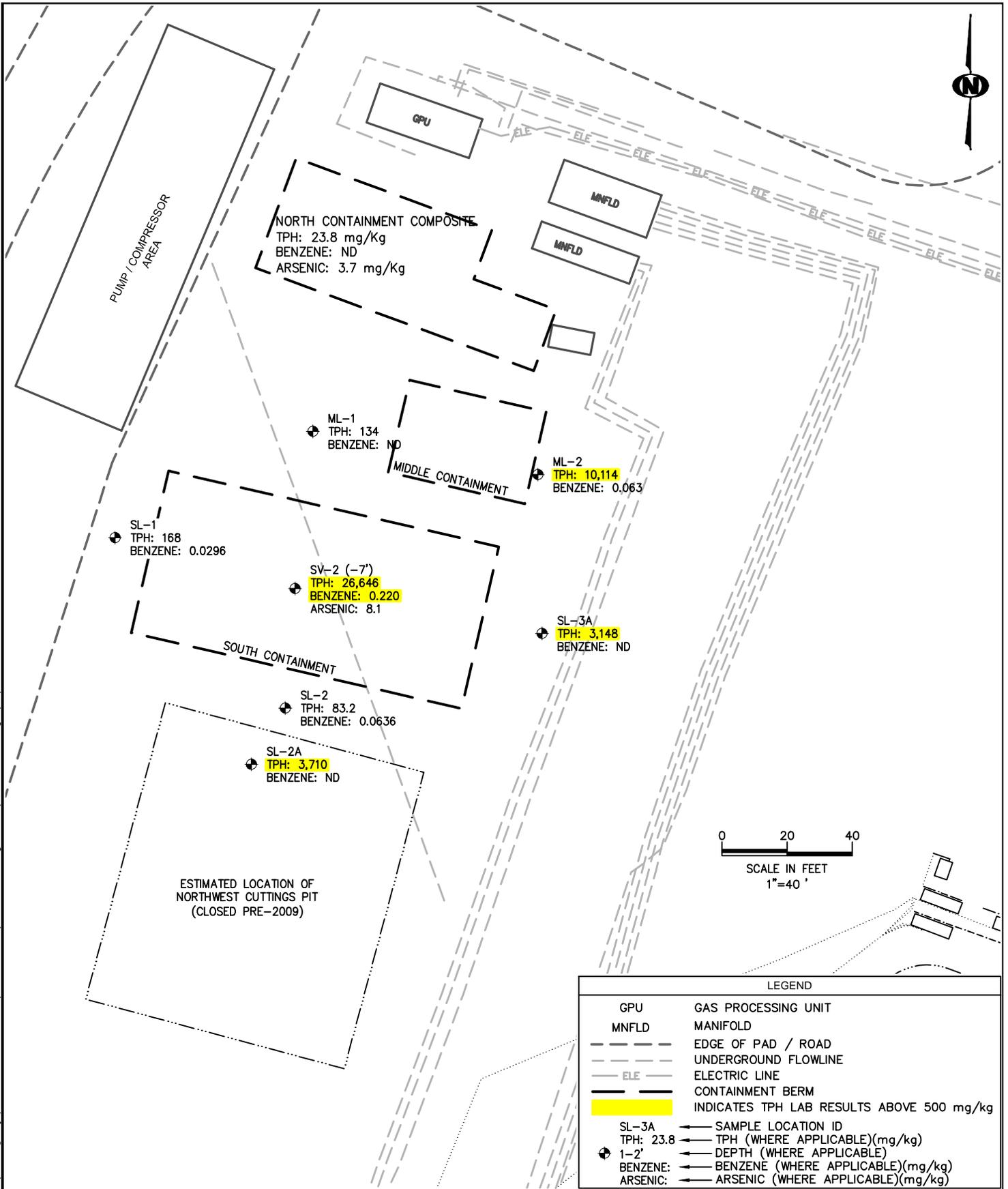


DESIGNED: -	CHECKED: DK	FIGURE	NOTES:	
DATE: 5/7/14	DRAWN: DRF		DATE	REVISIONS
FILE NAME: tankasses	SHEET NO. of 2			
PROJECT NO. 1101-04A	SCALE: 1"=80'			

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

FIGURE 1
 PICEANCE CREEK
 PCU T35X-11G
 TANK AREA ASSESSMENT
 PREPARED FOR XTO ENERGY

\\hyper-v03\lkwd-co\sdk\proj\cto environmental\1109-03a-pcu t35x-11g tank\tankasses.dwg,5/7/14



DESIGNED: -	CHECKED: DK	FIGURE	NOTES:
DATE: 5/7/14	DRAWN: DRF		
FILE NAME: tankasses	SHEET NO. of 2	DATE	REVISIONS
PROJECT NO. 1101-04A	SCALE: 1" = 40'		

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

FIGURE 2
 PICEANCE CREEK
 PCU T35X-11G
 TANK AREA ASSESSMENT
 PREPARED FOR XTO ENERGY