DOCUMENT #2229054

FORM 4 Rev 12/05

State of Colorado
Oil and Gas Conservation Commission

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

DE | ET | OE | ES

RECEIVED 12/16/2011

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: 28700
2. Name of Operator: ExxonMobil Oil Corp
3. Address: P.O. Box 4358, CORP-MI-P014E-1
   City: Houston State: TX Zip 77210-4358
4. Contact Name: M. Lee Skwirz
   Phone: 281-654-0494
   Fax: 281-654-8487
5. API Number 05- 103-10417 OGCC Facility ID Number
6. Well/Facility Name: Piceance Creek Unit 7. Well/Facility Number T18X-12G
8. Location (QtrQtr, Sec, Twp, Rng, Meridian): SW SW, 12, 2S, 97W, 6th PM
9. County: Rio Blanco 10. Field Name: Piceance Creek
11. Federal, Indian or State Lease Number: COD052141

Complete the Attachment Checklist

	OP	OGCC
Survey Plat		
Directional Survey		
Surface Eqpmt Diagram		
Technical Info Page	X	
Other	X	

General Notice

☐ **CHANGE OF LOCATION:** **Attach New Survey Plat** (a change of surface qtr/qtr is substantive and requires a new permit)

	FNL/FSL		FEL/FWL	
Change of **Surface** Footage **from** Exterior Section Lines:				
Change of **Surface** Footage **to** Exterior Section Lines:				
Change of **Bottomhole** Footage **from** Exterior Section Lines:				
Change of **Bottomhole** Footage **to** Exterior Section Lines:				

attach directional survey

Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer

Latitude Distance to nearest property line Distance to nearest bldg, public rd, utility or RR

Longitude Distance to nearest lease line Is location in a High Density Area (rule 603b)? Yes/No

Ground Elevation Distance to nearest well same formation Surface owner consultation date:

GPS DATA:

Date of Measurement PDOP Reading Instrument Operator's Name

☐ **CHANGE SPACING UNIT**

Formation	Formation Code	Spacing order number	Unit Acreage	Unit configuration

☐ **Remove from surface bond** Signed surface use agreement attached

☐ **CHANGE OF OPERATOR (prior to drilling):**
Effective Date:
Plugging Bond: ☐ Blanket ☐ Individual

☐ **CHANGE WELL NAME** **NUMBER**
From:
To:
Effective Date:

☐ **ABANDONED LOCATION:**
Was location ever built? ☐ Yes ☐ No
Is site ready for Inspection? ☐ Yes ☐ No
Date Ready for Inspection:

☐ **NOTICE OF CONTINUED SHUT IN STATUS**
Date well shut in or temporarily abandoned:
Has Production Equipment been removed from site? ☐ Yes ☐ No
MIT required if shut in longer than two years. Date of last MIT

☐ **SPUD DATE:**

☐ **REQUEST FOR CONFIDENTIAL STATUS** (6 mos from date casing set)

☐ **SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK** *submit cbl and cement job summaries

Method used	Cementing tool setting/perf depth	Cement volume	Cement top	Cement bottom	Date

☐ **RECLAMATION:** Attach technical page describing final reclamation procedures per Rule 1004.
Final reclamation will commence on approximately
☐ Final reclamation is completed and site is ready for inspection.

Technical Engineering/Environmental Notice

☐ Notice of Intent
Approximate Start Date:

☐ Report of Work Done
Date Work Completed:

Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

☐ Intent to Recomplete (submit form 2)
☐ Change Drilling Plans
☐ Gross Interval Changed?
☐ Casing/Cementing Program Change
☐ Request to Vent or Flare
☐ Repair Well
☐ Rule 502 variance requested
☐ Other:
☐ E&P Waste Disposal
☐ Beneficial Reuse of E&P Waste
☒ Status Update/Change of Remediation Plans 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: M. Lee Skwirz Date: Dec 16, 2011 Email: lee.skwirz@exxonmobil.com

Print Name: M. Lee Skwirz Title: Upstream Operations Team Lead

COGCC Approved: Title FOR Date: 06/08/2017

Chris Canfield
EPS NW Region

CONDITIONS OF APPROVAL, IF ANY:

FORM 4 Rev 12/05

TECHNICAL INFORMATION PAGE

FOR OGCC USE ONLY

1. OGCC Operator Number: 28700 API Number: 05 -103-10417
2. Name of Operator: ExxonMobil Oil Corp. OGCC Facility ID # COC 47666X
3. Well/Facility Name: Piceance Creek Unit Well/Facility Number: T18X-12G
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SW SW, 12, 2S, 97W, 6th PM

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**

Remediation # 5166

Completed:
Removed hydrocarbon impacted soils and weathered bedrock to approximately 4 feet below ground surface in September 2010;
Additional delineation activities and Sensitive Receptor Surveys conducted in 2011;
Hydrocarbon impact within weathered to medium-hard to very hard bedrock was encountered beneath the former containment area; and
Sensitive receptors have not been impacted.
See attached report.

Proposed:
An application of crushed gypsum, approximately 16 tons, will be applied to the excavation;
The excavation will be backfilled with clean fill material; and
Confirmation sampling will be conducted in conjunction with final abandonment activities.

Notes:
Hydrocarbon impact within the bedrock observed as limited to the bedding planes and/or fractured zones within the rock;
Complete excavation of remaining residual impact impracticable due to existing site constraints (ie interim reclamation complete, utility conflicts, excavation sidewall stability/execution safety, proximity to closed pit, adjacent topography).

KRW CONSULTING, INC.

November 10, 2011

Arcadis U.S., Inc.
1687 Cole Blvd., Suite 200
Lakewood, CO 80401

Attention: Mary Gilkison, Principal Geologist

Subject: **Assessment Findings Report**
Location PCU T18X-12G Former Containment Area
Section 12, Township 2 South, Range 97 West
Piceance Creek Development Project; Rio Blanco County, Colorado
COGCC Remediation No: 5166
KRW Project No. 1103-11B

Dear Ms. Gilkison:

As requested by ARCADIS for ExxonMobil Environmental Services, KRW Consulting, Inc. (KRW) conducted an environmental site assessment at the subject site to evaluate remaining impacts below a former tank containment area. This letter report presents site assessment findings, associated laboratory analyses, and sensitive receptor study for the identified residual impacts.

Background

Well pad PCU T18-X-12G is located in Section 12, Township 2 South; Range 97 West in Rio Blanco County, Colorado. Refer to Figures 1 and 2 in Appendix A for site location and aerial maps of the project area. A produced water/condensate release from within the containment area at the subject site was reported to the Colorado Oil and Gas Conservation Commission (COGCC) on September 3, 2009 (COGCC Spill/Release Tracking No. 2608631).

Initial soil sampling activities were completed at the site on March 4, 2010, and analytical results indicated elevated hydrocarbon impact (TPH: 438 to 22,220 mg/kg) to the unconsolidated sediments located beneath and immediately adjacent to the containment area. Given these soil sample findings, initial remedial activities were subsequently conducted at the site. The objectives for the initial remediation activities were to: (1) remove the previously identified hydrocarbon impacted soils (above COGCC Table 910-1 concentration levels) down to the top of shallow bedrock, (encountered at approximately 2 feet below existing grade), and then (2) evaluate the bottom of excavation to assess if further remediation and/or assessment was required.

These initial remedial activities were completed on September 2, 2010. Unconsolidated materials to a depth of approximately two feet below ground surface (bgs) were excavated and removed plus an additional two feet of weathered bedrock material in the containment area (to a total excavation depth of approximately four feet bgs). The remedial excavation was advanced into the upper, weathered bedrock due to field indications of impact, as evidenced by olfactory and visual observations, as well as PID field screening measurements. Refer to Figure 3 in Appendix A for the configuration of this excavation area. Approximately 1,200 cubic yards of impacted soils/rock were transported under manifest to the Wray Gulch Landfill, near Meeker, Colorado for disposal.

Following soil removal activities sampling was conducted to evaluate remaining soil/rock conditions. Sampling included the collection of composite excavation sidewall samples from all four sides of the excavation. In addition, a test pit was advanced at the base of the excavation, using a track-mounted excavator, to a depth of approximately 27 feet bgs. Discrete samples were collected at the base of the excavation (approx. 4 ft. bgs) and at test pit depths of approximately 12 and 27 ft bgs. Test results indicated residual impacts to soils/rock in the excavation bottom sample (TPH: 8086 mg/kg) as well as sidewall samples (TPH: 463 to 2,620 mg/kg). Vertical test pit samples at 12 ft bgs (TPH: 1,850 mg/kg) and 27 ft bgs (TPH: 898 mg/kg) indicated elevated TPH levels as well. Table 1 (Appendix A) summarizes the analytical results. These sample locations are presented on Figure 3 in Appendix A.

Additional Soil Assessment Activities

Additional assessment was subsequently conducted in the base of the excavation and locations adjacent to the excavation using a Central Mine Equipment Co. (CME), truck mounted, model CME-75 rotary drilling rig platform, with hollow-stem auger continuous sampling techniques. This additional assessment was conducted to determine the vertical and lateral extent of hydrocarbon impacted soils/rock (above Table 910-1 concentration levels) in and around the former containment area. A total of fourteen boreholes were advanced at the site; five beneath the former containment area (in the previous remedial excavation) and nine at locations adjacent to the containment area. Borehole depths ranged from 7 to 29 feet bgs. No groundwater was encountered during the borehole drilling and sampling efforts. Refer to Figure 3 in Appendix A for the location of each assessment boring.

Soils were collected continuously from each boring using a CME 5-foot continuous sampler. The soil borings were extended past field indications of impact. The soils from each boring were logged and field screened using an FID and/or PID. Based on field observations soil samples were selected from each borehole for laboratory analyses to aid in assessing vertical and lateral extent of hydrocarbon impacts above Table 910-1 concentration levels. Samples were analyzed for total petroleum hydrocarbons (TPH) as well as benzene, toluene, ethylbenzene, and xylenes (BTEX). It should be noted that no samples were submitted for laboratory analysis from borings BH-06 or BH-12, because these boreholes were aborted at relatively shallow depths due to drill rig refusal.

Soil sampling was conducted in general accordance with the soil sampling protocol presented in Appendix B. Given that samples were almost exclusively rock, the samples were processed in a field lab using a soil/rock crusher to facilitate homogeneity across sampling zones. The soil/rock crusher was thoroughly cleaned before and after each sample to avoid cross contamination. Samples were subsequently placed in laboratory provided glass containers and placed on ice for shipment to the laboratory. On completion the borings were backfilled with bentonite chips to the surface and hydrated.

Assessment Findings

Weathered to medium-hard to very hard bedrock was encountered beneath the site which consisted primarily of sandstone and siltstone. Refer to Appendix C for each of the boring logs. Hydrocarbon impact within the bedrock was observed to be limited to the bedding planes and/or the fractured zones within the rock.

Assessment findings indicate that the lateral extent of hydrocarbon impacted soils above Table 910-1 concentration levels (TPH > 500 mg/kg) is generally confined to the former containment area. A sample collected from boring BH-02 (located approx. 15 feet south of the former containment area) at 14 to 19 feet bgs also indicated TPH concentrations above Table 910-1 concentration levels. The vertical extent of elevated hydrocarbon impacted soils generally ranges from approximately 19 to 27 feet bgs, but is likely shallower in some areas. Refer to Figure 3 of Appendix A for an approximate delineation of impacted soils above the clean-up criteria and to Figure 4 for a cross section illustrating these findings across the project area.

Refer to Table 1 for a summary of laboratory analytical results. Refer to Appendix D for the complete laboratory reports.

Sensitive Receptor Study and Ground Truthing

Sensitive Receptor Study

An initial sensitive receptor study and a half-mile radius ground truthing of the subject area were conducted on June 16 and 17, 2011. A follow-up ground-truthing event was conducted on September 14, 2011. The purpose of this study and the ground truthing events was to identify potential sensitive receptors (springs, wetlands, active irrigation ditches, water wells, streams, seeps, etc.) that could potentially be impacted by releases from the subject site. Colorado Division of Water Resources Water Well Permit, AquaMap GIS, United States Geologic Survey (USGS), and U.S. Fish and Wildlife Service (Wetlands) databases were searched for nearby water wells, groundwater seeps, springs or other pertinent water related infrastructure within a one-mile radius of the location. Refer to Appendix E for the Database Search Records.

The Water Well Permit database identified 56 water well permits within a one mile radius of the location. Refer to Table 1 in Appendix F for this permit list. All of these permits are issued to ExxonMobil. The information available indicates these water well permits are not associated with domestic or irrigation water supply; rather the listed wells are natural gas production wells permitted as water wells because of the production water generated during the well installation process. The database indicates that the closest domestic water wells are permitted to Gunderland located approximately 2.8 miles south/southwest of the location and the Mantle Ranch located approximately 3.1 miles west/northwest of the location. The locations of these wells are shown on Figure 1 in Appendix E.

The Colorado Division of Water Resources AquaMap GIS database was utilized to search for springs, seeps, or other water supply structures or features within a half-mile of the location. No features were identified. The search was broadened with the closest springs shown approximately 0.9 miles northeast; 1.0 miles southeast; and 1.3 miles east/southeast. The locations of these three springs are shown on Figure 1 (Appendix E).

The USGS National Water Information System (NWIS) was utilized to identify additional wells in the project area that are reportedly monitored through USGS. This information was also utilized to evaluate groundwater levels in the project area. Refer to Table 2 in Appendix E for a summary of this well information. The wells in the nearby vicinity of the site are shown on Figure 1 (Appendix E) with recorded high groundwater level readings. Maximum groundwater levels reported in these wells ranged from 242 to 489 feet bgs. Based on this information, groundwater at the project site is estimated to be greater than 200 feet bgs at the site.

Based on U.S. Fish and Wildlife Service wetlands databases, two potential wetlands areas (drainage bottoms) are located just outside of the half mile radius at approx. 2,700 feet south and 3,200 feet northwest of the site, respectively. The U.S. Fish and Wildlife Service identify these drainage bottoms as potential wetlands classified as R4SBA (Riverine, Intermittent, Streambed, and Temporarily Flooded). The location of these drainage features are shown on Figure 1 and Attachment 1 (Appendix E).

Ground Truthing

The terrain within a one-half mile radius of the location was investigated to validate the database query. KRW personnel walked the area to search for springs, potential wetlands, active irrigation ditches, seeps, water wells, ponds, streams, or other water features that may not have been included in the available databases. The search focused on canyon and arroyo bottoms and sides at elevations lower than the elevation of PCU T18X-12G.

The closest surface drainage features to the subject project area are located approximately 240 feet south/southwest and 325 feet east of the project area. Based on the topography and overland flow patterns

from the site, these drainages are not likely to be in direct communication with run-off from the site. Based on both the June and September, 2011 ground truthing events, these drainages were both dry with no seeps or springs noted.

No other potential receptors were identified during the June and September 2011 ground truthing events. All drainages were dry with no seeps or springs noted within a one-half mile radius of the site.

Please contact us should you have any questions related to the findings of this report.

Respectfully Submitted,
KRW Consulting, Inc.

Gregory W. Knell, C.P.G.
Senior Environmental Scientist

Joe Hess, P.E.
Principal Engineer

List of Attachments

Appendix A
Figure 1 – USGS Site Location Map
Figure 2 – 2009 Aerial Map
Figure 3 – Site Map with Select Soil Sample Results
Figure 4 – Cross Section of Site Area
Table 1 – Summary of Soil Sample Analytical Results

Appendix B – KRW's Soil/Sediment Sampling Protocol

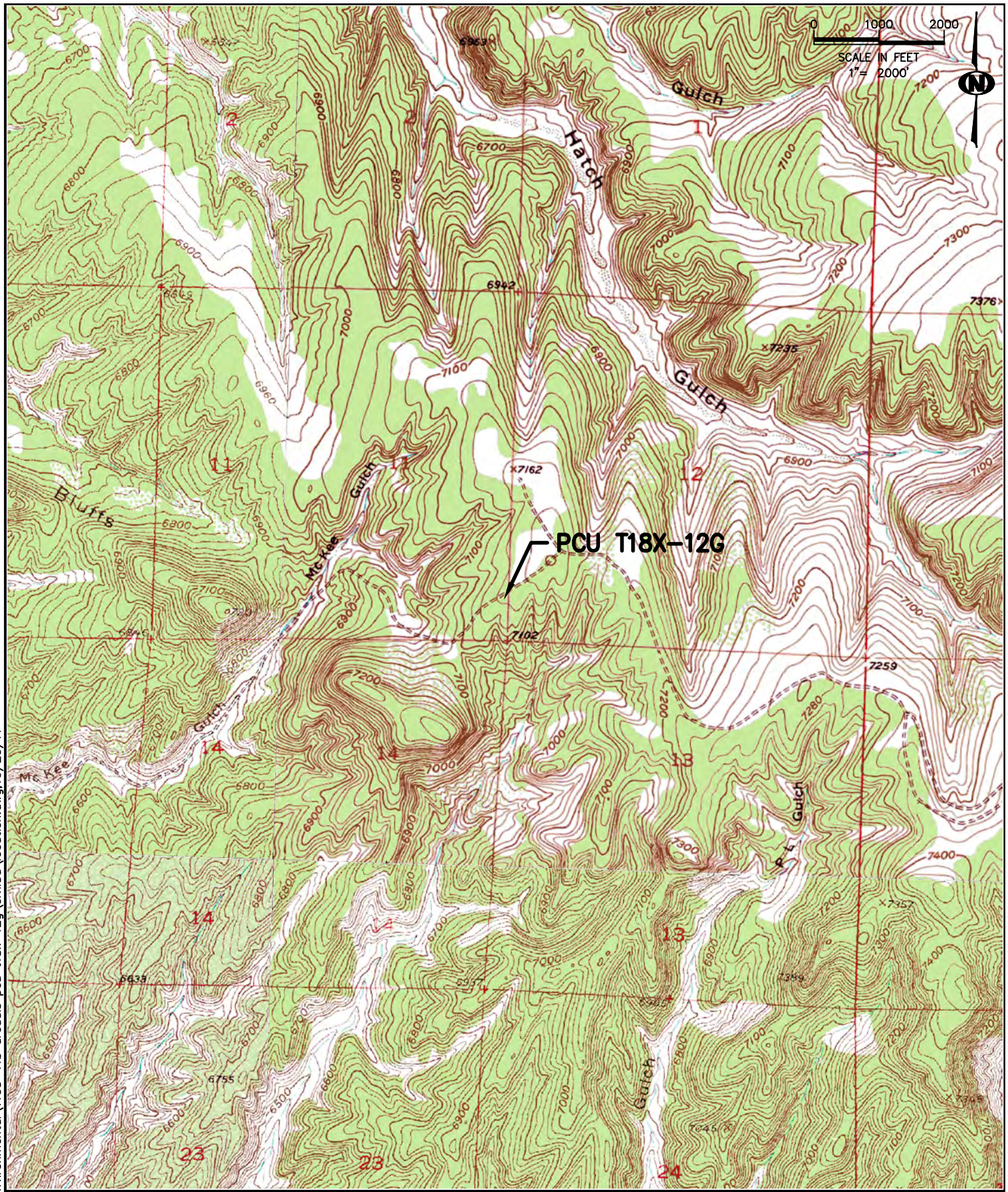
Appendix C – Soil Boring Logs

Appendix D – Laboratory Reports

Appendix E – Sensitive Receptor Study
Figure 1 – Sensitive Receptor Study
Table 1 – Division of Water Resources Water Well Permit Database Records
Table 2 - USGS National Water Information System Database Records
Attachment 1 – US Fish and Wildlife National Wetlands Inventory

Appendix F – Site Photos

APPENDIX A



DESIGNED: GK	CHECKED: GK	FIGURE 1	NOTES: Subject site located in S11, T2S, R97W of the 6th P.M.
DATE: 10/20/11	DRAWN: DRF		
FILE NAME: location		SHEET NO. 1 of 4	DATE / REVISIONS
PROJECT NO. 1103-11B		SCALE: 1"=2000'	

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

FIGURE 1
PICEANCE CREEK
PCU T18X-12G
LOCATION MAP

PREPARED FOR EXXONMOBIL

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The underground utilities identified were field located and subsequently mapped (see as-built date) only to the accuracy of the underground locating equipment used. Other underground utilities may exist. The drawings provided should serve only as a reference. Prior to any excavation activity on or near this location, a "One-Call" and an area "Line Sweep" must be properly conducted.

DESIGNED: JM/KR	CHECKED: MR	FIGURE 2	NOTES: Aerial photo from USDA field office. Flown September 14, 2009	KRW CONSULTING, INC. 8000 W. 14TH AVENUE, SUITE 200 LAKEWOOD, COLORADO (303) 239-9011	FIGURE 2 PICEANCE CREEK PCU T18X-12G AS-BUILT 12/9/09 PREPARED FOR EXXONMOBIL
DATE: 1/2/10	DRAWN: DRF				
FILE NAME: as-built		SHEET NO. 2 of 4	DATE: 1/11/10 — REVISIONS: Issued to client		
PROJECT NO. 1103-11B		SCALE: 1"=200'			

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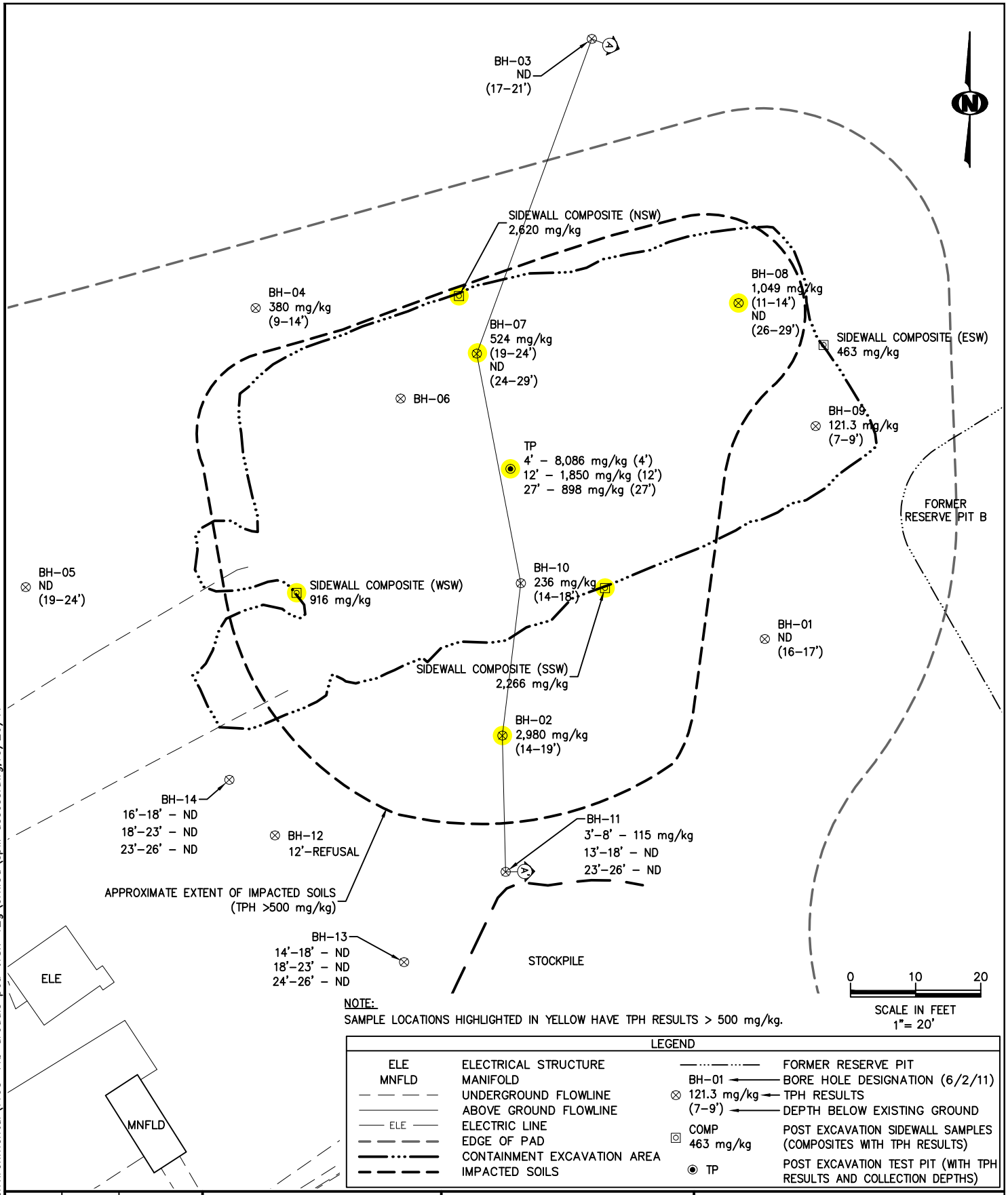

NOTE:
SAMPLE LOCATIONS HIGHLIGHTED IN YELLOW HAVE TPH RESULTS > 500 mg/kg.

LEGEND

ELE	ELECTRICAL STRUCTURE	— ··· — ··· —	FORMER RESERVE PIT
MNFLD	MANIFOLD	BH-01	BORE HOLE DESIGNATION (6/2/11)
— — — —	UNDERGROUND FLOWLINE	⊗ 121.3 mg/kg (7-9')	TPH RESULTS / DEPTH BELOW EXISTING GROUND
———	ABOVE GROUND FLOWLINE	⊡ COMP 463 mg/kg	POST EXCAVATION SIDEWALL SAMPLES (COMPOSITES WITH TPH RESULTS)
— ELE —	ELECTRIC LINE	◉ TP	POST EXCAVATION TEST PIT (WITH TPH RESULTS AND COLLECTION DEPTHS)
— — — —	EDGE OF PAD		
——— ··· ———	CONTAINMENT EXCAVATION AREA		
— — — —	IMPACTED SOILS		

DESIGNED: –	CHECKED: DK	FIGURE 3	NOTES:
DATE: 10/20/11	DRAWN: DRF		
FILE NAME: spill assess		SHEET NO. 3 of 4	DATE / REVISIONS
PROJECT NO. 1103-11B		SCALE: 1"=20'	

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

FIGURE 3
PICEANCE CREEK
PCU T18X-12G
FORMER TANK CONTAINMENT AREA
WITH SELECT LAB RESULTS

PREPARED FOR EXXONMOBIL

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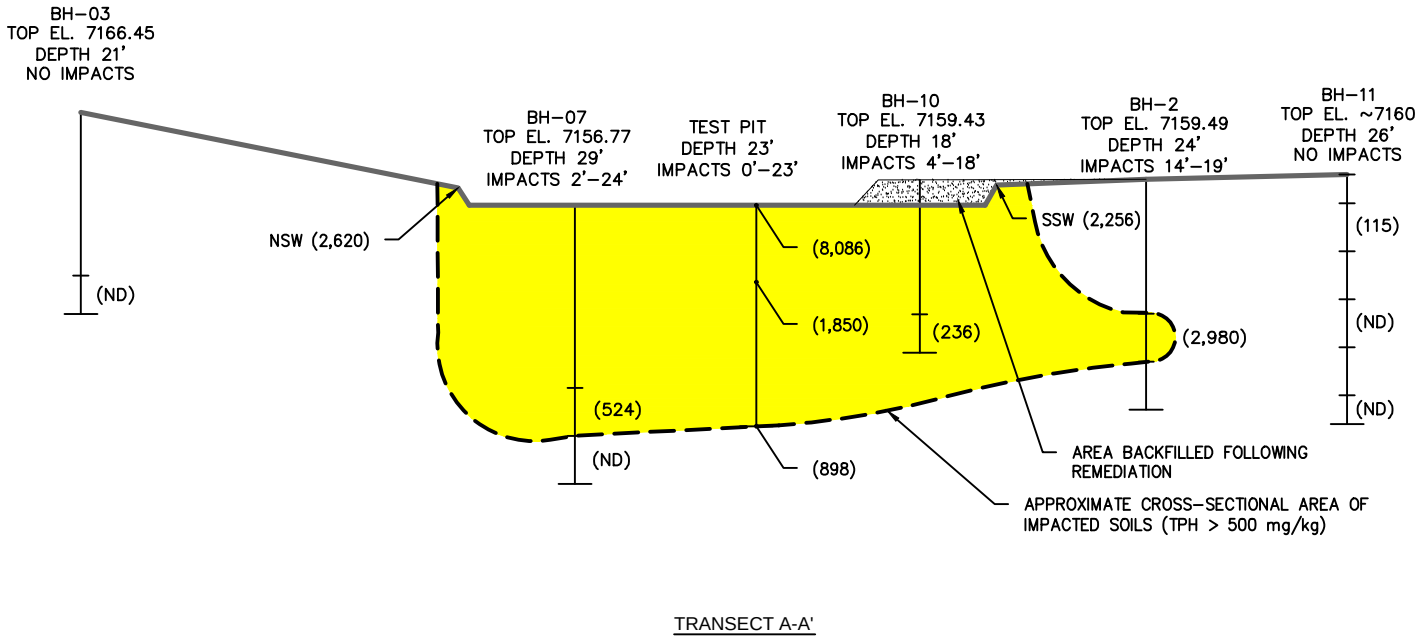

TRANSECT A-A'

NOTE: NUMBERS / INFORMATION IN PARENTHESES INDICATE TPH (TOTAL PETROLEUM HYDROCARBON) CONCENTRATIONS (mg/kg) DETECTED IN SAMPLES SUBMITTED FOR LABORATORY ANALYSIS.

FIGURE 4
PICEANCE CREEK
PCU T18X-12G
FORMER TANK CONTAINMENT AREA
CROSS SECTION A-A'
PREPARED FOR EXXONMOBIL

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

NOTES:

DATE	REVISIONS

DESIGNED: GK	CHECKED: GK	FIGURE 4	
DATE: 10/20/11	DRAWN: DRF	SHEET NO. 4 of 4	
FILE NAME: spill assess		SCALE: 1"=20'	
PROJECT NO. 1103-11B			

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Table 1
PCU T18X-12G Summary of Soil Sample Analytical Results
(Samples Collected Following Initial Impacted Soil Removal Activities in Condensate Tank Containment Area)

Samples	Analytical Parameters						
	TPH (GRO) (mg/kg)	TPH (DRO) (mg/kg)	TPH (GRO+DRO) (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	xylenes (total) (mg/kg)
Soil Removal Evaluation Samples							
18-12-4 (8/31/10)	476	7,610	8,086	-	-	-	-
18-12-12 (8/31/10)	120	1,730	1,850	-	-	-	-
18-12-27 (9/01/10)	251	647	898	-	-	-	-
18-12 ESW (9/02/10)	ND (11)	463	463	-	-	-	-
18-12 NSW (9/02/10)	260	2,360	2,620	-	-	-	-
18-12 WSW (9/02/10)	26.3	890	916	-	-	-	-
18-12 SSW (9/02/10)	15.8	2,240	2,256	-	-	-	-
Additional Assessment Samples							
18-12_BH-01_16-17 (5/31/11)	ND (6.2)	ND (9.8)	ND	ND (.027)	ND (.062)	ND (.031)	ND (.062)
18-12_BH-02_14-19 (6/01/11)	1,110	1,870	2,980	0.0485	6.350	2.900	60.600
18-12_BH-03_17-21 (6/01/11)	ND (6.5)	ND (10)	ND	ND (.029)	0.0868	0.0404	0.732
18-12_BH-04_9-14 (6/01/11)	32.0	348	360	ND (.029)	ND (.066)	ND (.033)	0.342
18-12_BH-05_19-24 (6/02/11)	ND (6.3)	ND (9.8)	ND	ND (.028)	ND (.063)	ND (.031)	ND (.130)
18-12_BH-07_19-24 (6/02/11)	67.0	457	524	ND (.029)	ND (.065)	0.0333	0.604
18-12_BH-07_24-29 (6/02/11)	ND (6.1)	ND (9.7)	ND	ND (.027)	ND (.061)	ND (.031)	ND (.120)
18-12_BH-08_11-14 (6/02/11)	249	800	1,049	ND (.030)	ND (.068)	0.312	5.380
18-12_BH-08_26-29 (6/02/11)	ND (6.5)	ND (10)	ND	ND (.029)	ND (.065)	0.0427	ND (.130)
18-12_BH-09_7-9 (6/02/11)	34.6	86.7	121.3	ND (.029)	ND (.066)	ND (.033)	ND (.130)
18-12_BH-10_14-18 (6/03/11)	15.9	220	236	ND (.029)	ND (.067)	ND (.033)	ND (.130)
18-12_BH-11_3-8 (9/13/11)	ND (6.6)	115	115	ND (.029)	ND (.066)	ND (.033)	0.134
18-12_BH-11_13-18 (9/13/11)	ND (6.8)	ND (10)	ND	ND (.030)	ND (.068)	ND (.034)	ND (.140)
18-12_BH-11_23-26 (9/13/11)	ND (6.5)	ND (10)	ND	ND (.028)	ND (.065)	ND (.032)	ND (.130)
18-12_BH-13_14-18 (9/15/11)	ND (6.4)	ND (9.9)	ND	ND (.028)	ND (.064)	ND (.032)	ND (.130)
18-12_BH-13_18-23 (9/15/11)	ND (6.5)	ND (10)	ND	ND (.029)	ND (.065)	ND (.033)	ND (.130)
18-12_BH-13_24-26 (9/15/11)	ND (6.4)	ND (9.9)	ND	ND (.028)	ND (.064)	ND (.032)	ND (.130)
18-12_BH-14_16-18 (9/14/11)	ND (6.0)	ND (9.6)	ND	ND (.027)	ND (.060)	ND (.030)	ND (.120)
18-12_BH-14_18-23 (9/14/11)	ND (6.4)	ND (9.9)	ND	ND (.028)	ND (.064)	ND (.032)	ND (.130)
18-12_BH-14_23-26 (9/14/11)	ND (6.5)	ND (10)	ND	ND (.029)	ND (.065)	ND (.033)	ND (.130)
COGCC Table 910-1 Soil ConcentrationLevels	-	-	500	0.17	85	100	175

Notes:
1) ND = not detectable at the laboratory method detection limit shown in parentheses.
2) "-" indicates no analysis was performed.
3) Results highlighted in yellow exceed Table 910-1 concentration levels.
4) The date of sample collection is listed in parentheses following the sample number.
5) Samples 18-12-4, 18-12-12, and 18-12-27 were collected from a test pit, advanced after initial soil removal activities at the bottom of the remedial excavation, at depths of 4, 12, and 27 feet below ground surface, respectively.
6) ESW, NSW, WSW, and SSW are composite samples from the east, north, west, and south sidewalls of the soil removal excavation, respectively.
7) The numbered interval following the sample borehole number for the assessment samples (e.g. BH-01) indicates sample depth, in feet.

APPENDIX B
KRW's Soil/Sediment Sampling Protocol

KRW CONSULTING, INC.

SOIL/SEDIMENT SAMPLING PROTOCOL

INTRODUCTION

The purpose of this document is to provide KRW personnel with instructions for the collection of soil/sediment samples consistent with appropriate federal and state regulations and guidelines for soil sampling protocols. The following sections provide information on the equipment requirements, sample collection, and handling procedures. Information regarding important precautions is also provided to help insure the integrity of the sample collection and handling.

This is a "working" document, in that changes will be necessary from time to time to accommodate regulatory changes and site specific conditions.

Sampling personnel are encouraged to call Greg Knell or Bill Brown at KRW, (303) 239-9011, with any questions which may arise during sampling or use of this manual, as well as if revisions to the manual are required.

1. EQUIPMENT REQUIREMENTS

Soil/sediment samples are typically collected using the following types of equipment:

1. drilling rig/drive or continuous sampling
2. Geoprobe® rig (direct push rig)
3. excavator/backhoe
4. sampling spoons/shovels
5. stainless steel trowels
6. stainless steel sampling auger
7. beaker with extendable pole

Field instruments typically used to measure organic gas and vapors during soil sampling include:

1. photoionization detector (PID)
2. flame ionization detector (FID)

Field instruments used to measure approximate field pH and conductivity include:

1. pH/conductivity meter (WTW pH/Cond 3400i with auto temp adjustments)

Field instruments should be calibrated according to the manufactures' specifications, prior to each sampling event.

2. EXPENDABLE SAMPLING SUPPLIES

Expendable sampling supplies which will be required each time soil/sediment samples are collected include:

1. distilled or deionized water (DI water)
2. Liquinox® (or similar) soap
3. Brushes
4. paper towels
5. 5-gallon plastic buckets
6. sample bottle kits

7. ice
8. ball-point pen
9. indelible marker
10. resealable plastic bags
11. disposable rubber gloves
12. disposable teflon sampling spoons
13. mason jars

The majority of these items can be purchased at local grocery stores.

Sample bottle kits are provided by the laboratory and should be ordered by phone at least five working days prior to each planned sampling date. The sample bottle kits will include necessary bottles, labels, and chain of custody forms.

3. RECORD KEEPING

A field book will be used for soil sampling events to record the following minimum information:

1. sampling conditions (i.e. climate);
2. soil sample identification/sampling location/depth of sample (a sketch is especially usefull for documenting sample location and other relevant site features);
3. Surveyed sample location (each sample location will be identified using a Trimble GPS instrument; elevation as well as either latitude and longitude or northing/easting coordinates will be utilized);
4. any notable conditions of the site and/or soil/sediment samples;
5. deviations from recommended sampling protocol (due to equipment failures, or special site conditions);
6. dates and results of calibration of field instruments; and
7. physical description of samples – amounts, color, texture, odor, relative moisture content, etc.
8. sampling rationale (e.g. assessment, confirmation, etc.)

Additional record keeping will include preparation of a chain of custody record for the samples which is consistent with both the field sampling record and sample labels on each of the sample bottles. A ball-point pen will be required to record sampling data and an indelible marker will be required to complete the sample labels.

4. SAMPLING METHODS

Soil sampling will include the following tasks:

1. collection of soil/sediment samples in zip lock-type plastic bags for field screening purposes;
2. head space readings in the plastic bag with PID and/or FID (if required);
3. field pH and conductivity readings on 1:1 soil/DI water mixture (well mixed by shaking) in mason jars (if required);
4. collection of the sample for laboratory analysis directly into laboratory provided containers if a discrete grab sample (if samples are composites they should be collected into zip lock-type bags and throughly mixed prior to placement into laboratory provided containers);
5. packaging and shipment of the samples; and
6. documentation of sampling activities and conditions.

The sampling equipment must be decontaminated prior to the initial collection of soil/sediment samples and prior to collection of each subsequent soil/sediment samples. A solution of Liquinox® (or similar) soap and DI water is used for the decontamination activity, followed by a DI water rinse. Samples must be collected with disposable teflon sampling spoons or decontaminated stainless steel trowels or auger. Disposable rubber gloves must be worn by the sampler during all sampling activities. A new set of gloves must be used for each soil sample collected.

Label the laboratory sample bottles with the following information:

1. time and date of sampling
2. sample identification/location/depth of sample
3. sampler's name
4. company name
5. Additional information, such as requested analyses and sample type (grab versus composite) may also be included

Fill out the appropriate entries on the chain of custody form provided by the laboratory, including:

1. sampler's name
2. sample identification/location/depth
3. sample type (phase: solid, liquid, sludge, etc.)
4. time/date of sample collection (same as sample label)
5. number of sample bottles
6. method of shipment
7. requested analytical parameters

Note: A separate line entry is required on the Chain of Custody form for each soil sample (refer to Figure 1, Example Chain of Custody Form). A parameters list identifying requested analyses can be included with the Chain of Custody for submittal to the laboratory if there is not adequate space on the form to list all requested analyses.

Immediately following the collection of a soil sample, place the containerized sample on ice in the cooler provided. Samples should be packed to prevent breakage during shipping. Sample packaging can be completed following collection of all project samples (but at least, daily) or at the time of each sample collection. The chain of custody form must remain with the samples and should be signed (by both the personnel relinquishing custody and the personnel receiving custody) whenever the sample cooler(s) change hands. The form should be placed in a zip lock-type plastic bag to assure it stays dry.

Ship or deliver the samples as soon as possible to the laboratory.

5. Pit or Trench Sampling (Above Liner)

Drilling pits or trenches (Reserve, Fresh Water and Cuttings) should be sampled in the following manner:

1. Survey location for safety concerns and document in JSA (job safety analysis). Safety concerns are as follows:
    i. Tie-off and life preservers are required if there is any liquid in the pit.
    ii. Only one person is to enter the pit at any time (minimum two man team).
    iii. Fall harness and secured rescue buoey are required for any pit entry.

2. Minimize safety risk by identifing the safest technique for collection of samples including:
    a. Use of equipment such as a backhoe or excavator to collect samples.
        i. Sampling should be completed with utmost caution to ensure liner integrity is not compromised.
    b. Use of a man-lift with an extendable boom and/or extendable sampling equipment can be used as appropriate when pits are accessible from the sides.
    c. Samples should be collected around all four sides and from different depths when possible to allow collection of a representative sample.
    d. If equipment is unavailable and extendable equipment will not provide the desired results, the sampling team may be required to physically enter into pits to obtain samples. In general, climbing into pits should not be attempted if significant standing water is present.
3. Whenever possible, under rig liner samples (soil/sediment on top of liner) should be collected prior to removal of material from the pit to facilitate the collection of a representative composite sample. As best as possible, soil/sediment samples should be collected from various locations atop the liner and composited. In an attempt to collect a representative sample, the sampler should exercise efforts to include all soil/sediment types observed in the pit (including materials with various degrees of soil staining) within the composite. The individual component samples of the composite should be of approximate equal volume and collected with a teflon sampling spoon or decontaminated stainless steel sampling trowel into a zip lock-type bag. The composite sample should be throughly mixed with the same sampling equipment used to collect the composite components, prior to placement into laboratory provided containers.

4. Follow section 4 for sample containerizing and shipping procedures.

6. Pit or Trench Sampling (Below Liner)

Per COGCC requirements, a minimum of one soil/sediment sample is required for collection and table 910-1 analysis at the lowest point beneath each pit liner. Based on evidence of release (staining, odor, PID readings, etc.) additional samples may be required.

1. Once pit liner has been removed the pit should be visually inspected for evidence of a release. If no evidence of a release is discovered one “confirmation” soil/sediment sample should be collected for laboratory analysis. To comply with COGCC requirements, a discrete surficial sample should be collected from the lowest point of elevation within the pit, if an identifiable low point exists. The COGCC directive assumes that there is a identifiable low point in the pit and that a release through the liner would tend to migrate to this low point. However, in many cases drill pits have nearly flat bottoms. If no definable low point is apparent, the confirmation sample should be a composite sample collected from the surface of sub-liner sediments. The composite should be composed of at least four components collected collected at equi-spaced locations within the pit.

2. If pit inspection provides evidence of a release (or if initial confirmation sampling indicates a significant release), activities should be completed to assess the extent and degree of potential impact. Assessment activities should target the area(s) of the pit bottom that exhibit the most evidence of a release to ascertain the “worst-case scenario” for the impact. If inspection indicates the area of impact is isolated (i.e. the entire pit bottom is not impacted), additional assessment should be completed adjacent to the area of impact in an effort to define the lateral extent of the impact. Assessment samples should be discrete samples collected from individual locations at specific depths, as appropriate.

3. Assessment activities should generally be completed using an excavator to facilitate collection of samples to a maximum depth of 10 feet below the bottom of the pit. Samples should be collected at discrete two-foot intervals until "clean conditions" are observed (through visual and olfactory observations, as well as field screening equipment measurements). A log detailing subsurface conditions should be recorded during these relatively shallow depth sampling activities. A confirmation sample should be collected for laboratory analysis from apparently non-impacted material beneath the impacted zone.

4. If assessment activities indicate that significant impact exists below a depth of ten feet beneath the pit bottom, additional equipment must be mobilized to the site to facilitate collection of deeper samples. This additional equipment will generally consist of a hollow-stem auger drill rig, but could also employ "direct push" sampling technology. Continuous samples will be collected, examined and field screened to evaluate the total depth of impact. Susurface samples will also be logged to evaluate geologic and hydrogeologic conditions. A sample will be collected for laboratory analysis from a depth interval below apparent impact to serve as a confirmation sample.

5. If the depth of impact cannot be determined through the use of auger drilling or direct push methods, other technologies will be evaluated and additional assessment implemented as necessary and feasible.

6. Follow section 4 for sample containerizing and shipping procedures.

By defining the depth of impact and the area of impact (as determined by sampling adjacent to the impacted area), a volume of material requiring remediation can be determined. The degree of impact (as indicated by analytical data) will provide useful data in determining the most cost effective remedial option.

7. Sampling Related to a Release

There is a potential for release of fluid products containing hydrocarbons and other contaminants from exploration and production activities. Generally, assessment sampling will be completed following initial spill response clean-up activities, if completed. Assessment must be undertaken to determine the extent and degree of impact so any required remedial actions can be completed consistent with COGCC clean-up guidelines.

1. The release location or area should be visually inspected for evidence of a release. If no evidence of a release is discovered "confirmation" soil/sediment samples should be collected for laboratory analysis. The number of samples to be collected will be determined by the size of the release area, but an adequate number should be collected to provide coverage across the impacted area(s). The samples should be surficial samples collected from locations within the release area that would be most likely impacted.

2. If release area inspection provides evidence of a release (or if initial confirmation sampling indicates a significant release), activities should be completed to assess the extent and degree of potential impact. Assessment activities should target the location(s) within the release area(s) that exhibit the most evidence of a release to ascertain the "worst-case scenario" for the impact. Additional assessment should be completed adjacent to the area(s) of impact in an effort to document the lateral extent of the impact.

3. Assessment activities should generally be completed using an excavator to facilitate collection of samples to a maximum depth of 10 feet below the surface. Alternatively, if equipment is not readily available and if site

conditions are suitable, a stainless steel hand auger can be used to collect shallow subsurface samples. Samples should be collected at discrete two-foot intervals until "clean conditions" are observed (through visual and olfactory observations, as well as field screening equipment measurements). A log detailing subsurface conditions will be recorded during these shallow depth sampling activities. A confirmation sample should be collected for laboratory analysis from apparently non-impacted material beneath the impacted zone.

4. If assessment activities indicate that significant impact exists below a depth of ten feet within the release area(s), additional equipment must be mobilized to the site to facilitate collection of deeper samples. This additional equipment will generally consist of a hollow-stem auger drill rig, but could also employ "direct push" sampling technology. Continuous samples will be collected, examined and field screened to evaluate the total depth of impact. Susurface samples will also be logged to evaluate geologic and hydrogeologic conditions. A sample will be collected for laboratory analysis from a depth interval below apparent impact to serve as a confirmation sample.

5. If the depth of impact cannot be determined through the use of auger drilling or direct push methods, other technologies will be evaluated and additional assessment implemented as necessary and feasible.

6. Follow section 4 for sample containerizing and shipping procedures.

By defining the depth of impact and the area of impact (as determined by sampling adjacent to the impacted area), a volume of material requiring remediation can be determined. The degree of impact (as indicated by analytical data) will provide useful data in determining the most cost effective remedial option.

7. Confirmation Sampling

Samples must be collected following remedial activities to confirm that remaining soil/sediment is not significantly impacted. Since remedial activities typically involve the removal of impacted materials, the remedial excavation must be sampled to document that all significantly impacted materials have been removed. Analytical parameters for these samples will be dependent upon the constituents of concern recognized during assessment sampling.

Typically, excavation side-wall samples should be collected to document that the lateral extent of the impact has been removed. At least four side-wall samples should be collected roughly equi-spaced around the excavation; i.e. on four sides. Side-wall samples will typically be collected as "channel" samples, from ground surface to the base of the excavation. The channel samples are essentially vertical composite samples. The sample will not be composed of discrete components, but rather be composed of "scrapings" along the excavation wall so that the entire vertical interval being sampled is equally represented by all depths.

Samples must also be collected from the remedial excavation base to document that vertical extent of the impact has been removed. Excavation base samples will generally be discrete samples, spaced approximately equal distances apart in a grid pattern. The number of excavation base samples will be dependent upon the size of the remedial excavation, but generally, every 500 square feet of excavation base will be represented by one discrete sample.

If confirmation sampling indicates that remnant significantly impacted materials remain in the excavation, the excavation will likely be advanced to remove indentified materials. Following any additional excavation, confirmation samples must be collected in the additional excavation area(s), as appropriate to document that significantly impacted materials have been removed.

8. Precautions

1. Disposable rubber gloves must be used during all sampling activities. A new set of gloves must be used for each soil sample collected. Disposable gloves used for sampling activities should be constructed of inert rubber or plastic materials.

2. Decontamination of sampling equipment between the collection of each sample is essential for the collection of representative, discrete samples.

3. Always store and transport the sampling equipment and supplies in an environment which is free of chemical odors, dust etc. Do not store this equipment in areas which are exposed to solvents, gasoline, diesel fuel, oil, paints, vehicle exhaust, or any critical or suspect materials.

4. Samples are to remain in iced coolers following collection. Ice should be adequately containerized to prevent leakage of water within the sample coolers.

5. If possible, schedule sampling so that samples can be shipped or delivered to the laboratory the same day.

5. It is essential to keep good records of all sampling activities, including a clear site sketch to document sample location(s) and rationale.

6. Retain a copy of the Chain of Custody form, upon submittal to the laboratory or commercial carrier, for internal records.

7. Submit documentation/field notes, as required, to client.

APPENDIX C
Soil Boring Logs

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: May 31, 2011

Boring No.: 18-12_BH-01

Logged By: RR

Sheet: 1 of 1

FID (ppm)	Graphic Log	Sample Location	
			0–2' Hand augured.
0			2–3' (100% recovery) Unconsolidated weathered bedrock.
0			3–4' (100% recovery) Silty sandstone, thinly bedded, yellow / brown, no hydrocarbon odor or staining, moist.
0			4–7.5' Silty sandstone, thinly bedded, yellow / brown, moist.
0			7.5–9' (90% recovery) Siltstone, quartzitic, very hard, gray, greenish ~6' with red staining, no odors, dry.
2			9–11' (50% recovery) Unconsolidated to thinly bedded, last 1' very hard, light brown, no hydrocarbon odors or staining, slightly moist.
2.4			11–14' (45% recovery) Sandstone, fine grained, massive, light brown, slightly moist.
0.4			14–16' (40% recovery) Same as above.
6.6			16–17' (40% recovery) Alternating beds of siltstone and sandstone, very hard, yellow / brown, slightly moist.

T.D. = 17' - Auger refusal

Notes:
1. Near Southeast corner of impacted containment area.
2. 9–11' barrel "unconsolidated" is a result of auger pulverizing the rock as it grinds through hard strata.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 1, 2011

Boring No.: 18-12_BH-02

Logged By: G. Knell

Sheet: 1 of 1

SW of containment

FID (ppm)	Graphic Log	Sample Location	
			0–1' Hand augured. Sand with rock, light brown, dry.
0			1–4' (50% recovery) Sand with rock, brown, dry.
0			4–9' (45% recovery) Sandstone, fine to medium grained, massive, moderately friable, brown, some iron staining along horizontal partings, dry.
194			9–14' (40% recovery) Same as above, however, some layers more friable interbedded with harder less friable layers.
10000			14–19' (100% recovery) Same as above except mild hydrocarbon odor.
15			19–24' (100% recovery) Same as above except no apparent hydrocarbon odor.
			T.D. = 24'

Note:
Near Southwest corner of impacted containment area.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 1, 2011

Boring No.: 18-12_BH-03

Logged By: G. Knell

Sheet: 1 of 1

North of containment

FID (ppm)	Graphic Log	Sample Location	
0			0–4' (80% recovery) Sandy soil, dark brown, abundant roots, dark brown, slightly moist.
0			4–9' (80% recovery) Sandstone, fine to medium grained, massive, moderatley friable, brown, dry.
0			9–10.5' (50% recovery) Same as above.
0			10.5–12' (50% recovery) Siltstone, very fine grained, hard, light brown, dry.
0			12–17' (25–30% recovery) Same siltstone as above.
2			17–21' (35% recovery) Same siltstone as above, very hard, some interbedded sandstone similar to 4–10.5', fossiliferous, slightly moist.

T.D. = 21' - drill refusal

Note:
North of impacted containment area.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 1, 2011

Boring No.: 18-12_BH-04

Logged By: G. Knell

Sheet: 1 of 1

Northwest of containment

FID (ppm)	Graphic Log	Sample Location	
4.3			0–4' (60% recovery) Sandstone, fine grained, massive, moderately friable, brown, slightly moist.
3.1			4–9' (50% recovery) Same as above.
1740			9–14' (60% recovery) Same sandstone as above with some fine grained hard siltstone interbeds, brown, moderate hydrocarbon staining along partings, mild odor, dry.
139			14–19' (30% recovery) Interbedded sandstone and hard siltstone, brown to light gray, mild odor, no apparent hydrocarbon staining, dry.
38			19–24' (100% recovery) Sandstone, fine to medium grained, massive, friable, brown, slightly moist.
			T.D. = 24'

Note:
Near Northwest corner of impacted containment area.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
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Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 2, 2011

Boring No.: 18-12_BH-05

Logged By: G. Knell

Sheet: 1 of 1

West side of containment, near Northwest corner

FID (ppm)	Graphic Log	Sample Location	
			0-1' Hand auger, sand and rock, compacted fill.
5			1-4' (70% recovery) Sandstone, fine to medium grained, massive, moderately friable, brown, dry.
3			4-9' (90% recovery) Same as above.
2			9-14' (85% recovery) Same sandstone as above, harder drilling 13-15'.
4			14-19' (15% recovery) Interbedded sandstone as above with very hard quartzitic sandstone, light brown, dry.
5			19-24' (20% recovery) Sandstone, fine to medium grained, less hard than above, brown, dry.
2			24-27' (100% recovery) Sandstone as above becoming very hard 26.5-27'
			T.D. = 27'

Note:
West of the Northwest corner of the impacted containment area.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME - 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 2, 2011. 09:30

Boring No.: 18-12_BH-06

Logged By: G. Knell

Sheet: 1 of 1

In containment excavation, near NW corner

FID (ppm)	Graphic Log	Sample Location	
125			0-1.5' (90% recovery) Sand and rock, apparent fill, brown, dry.
25			1.5-4' (90% recovery) Sandstone, fine to medium grained, massive, friable, trace of hydrocarbon staining, very mild odor.
100			4-7' (60% recovery) Sandstone as above, becoming very hard, abundant hydrocarbon staining, very mild odor.

T.D. = 7' - Auger refusal

Note:
In containment area excavation, near Northwest corner.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME - 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 2, 2011. 11:30

Boring No.: 18-12_BH-07

Logged By: G. Knell

Sheet: 1 of 1

15' East of BH-06

FID (ppm)	Graphic Log	Sample Location	
			0-2' Not sampled, sand and rock fill
1400			2-4' (100% recovery) Sandstone, fine to medium grained, massive, friable, brown, abundant hydrocarbon staining, faint odor, dry.
1400			4-9' (100% recovery) Same sandstone as above, hydrocarbon impact along partings (bedding or fracture) not permeated through entire rock, some impacted zones appear wet.
10000 +			9-14' (80% recovery) Same as above, except 12.5-14' even stronger impact with green tinted permeated sandstone.
10000 +			14-17' (95% recovery) Same as above.
1200			17-19' (95% recovery) Same sandstone with 6" siltstone layer at 18.5', moderate hydrocarbon impact along partings (ie. not permeated through formation).
10000 +			19-24' (90% recovery) Same sandstone as above, hydrocarbon impact appears to lessen with depth.
200			24-29' (95% recovery) Same sandstone as above, moderately friable, brown, no apparent hydrocarbon impact.
			T.D. = 29'

Note:
In containment area excavation, near the Northwest corner (15 feet East of 18-12_BH-06).

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME - 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 2, 2011. 14:00

Boring No.: 18-12_BH-08

Logged By: G. Knell

Sheet: 1 of 1

In containment excavation near Northeast corner

FID (ppm)	Graphic Log	Sample Location	
3000			0–4' (70% recovery) Sandstone, fine to medium grained, friable, massive, brown, moderate to abundant hydrocarbon staining along fractures and bedding, mild odor, dry.
1700			4–9' (95% recovery) Same as above, except hydrocarbon impact appears to increase with depth – wet, dark, hydrocarbon permeated sandstone 8.5–9'.
8000			
10000 +			9–11' (90% recovery) Same sandstone as above, abundant hydrocarbon impact with wet, dark staining appearing throughout.
10000 +			11–14' (90% recovery) Same sandstone as above, abundant to moderate hydrocarbon impact, mostly along partings and decreasing with depth.
8000			14–19' (100% recovery) Same sandstone as above, moderate hydrocarbon impact mainly along partings.
1700			19–24' (35% recovery) Sandstone as above, inter–bedded hard quartzitic layers; no apparent hydrocarbon staining.
2000			24–26' (95% recovery) Sandstone, fine to medium grained, moderately friable, massive, brown, trace of hydrocarbon staining, dry.
300			26–29' (95% recovery) Same as above except no apparent hydrocarbon staining.

T.D. = 29'

Note:
In containment area excavation, near the Northeast corner.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X-12G

Project No: 1103-11B

Date: June 2-3, 2011. 14:00

Boring No.: 18-12_BH-09

Logged By: G. Knell

Sheet: 1 of 1

In containment excavation area near Southeast corner

FID (ppm)	Graphic Log	Sample Location	
96			0-2' (100% recovery) Sandstone, fine to medium grained, massive, friable, brown, trace hydrocarbon staining.
65			2-4' (100% recovery) Sandstone as above except finer grained, moderately friable, moderate hydrocarbon staining along partings.
80			4-7' (90% recovery) Same as above.
300			7-9' (90% recovery) Same as above except abundant hydrocarbon staining, 8.5-9' very hard.
70			9-14' (100% recovery) Same sandstone as above, however, only trace of hydrocarbon staining visible.
34			14-16.5' (80% recovery) Same sandstone as above.
19			16.5-19' (80% recovery) Same sandstone as above, trace of hydrocarbon impacts.
97			19-21.5' (100% recovery) Same sandstone as above, no apparent hydrocarbon staining.
97			21.5-24' (100% recovery) Same sandstone as above, trace to moderate hydrocarbon staining.
			24-25' No recovery. Auger cuttings indicate siltstone, very hard, gray, dry.

T.D. = 25' - Auger refusal

Note:
In containment area excavation, near the Southeast corner.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME - 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239-9011

Project Name: PCU T18X–12G

Project No: 1103–11B

Date: June 3, 2011. 10:15

Boring No.: 18–12_BH–10

Logged By: G. Knell

Sheet: 1 of 1

In containment excavation area near Southwest corner

FID (ppm)	Graphic Log	Sample Location	
			0–4' no sample, fill material used to construct drill pad.
10000 +			4–9' (40% recovery) Sandstone, fine to medium grained, massive, moderately friable, brown, moderate to abundant hydrocarbon staining throughout rock, dry. Much harder 8–9'.
3500			9–14' Sandstone as above except moderate hydrocarbon staining along partings (bedding and / or fracture partings).
2300			14–18' Sandstone as above with imterbedded, very hard siltstone layers, trace to moderate hydrocarbon staining.

T.D. = 18' - Auger refusal

Note:
In containment area excavation, near the Southwest corner.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239–9011

Project Name: PCU T18X–12G

Project No: 1103–11B

Date: September 13, 2011

Boring No.: 18–12_BH–11

Logged By: G. Knell

Sheet: 1 of 1

27' southerly of BH-02

PID (ppm)	FID (ppm)	Graphic Log	Sample Location	
37	0.5			0–3' (80% recovery) Sand with rock, brown, dry.
				3–3.5' (90% recovery) Same as above.
192	17.8			3.5–7' (90% recovery) Silty sandstone, fine–grained, thin–bedded, light brown, dry.
				7–8' (90% recovery) Sandstone, fine to medium grained, massive, brown, dry.
52	0			8–13' (100% recovery) Sandstone, fine to medium grained, thin–bedded with a few 6"–1' massive layers, brown, abundant iron staining along bedding planes and fractures, no apparent hydrocarbon impact, dry.
88	0.8			13–18' (100% recovery) Sandstone as above, predominantly thin–bedded.
46	3.9			18–23' (100% recovery) Same as above.
50.8	0			23–26' (100% recovery) Same as above.
				T.D. = 26'

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239–9011

Project Name: PCU T18X–12G

Project No: 1103–11B

Date: September 13, 2011

Boring No.: 18–12_BH–12

Logged By: G. Knell

Sheet: 1 of 1

PID (ppm)	FID (ppm)	Graphic Log	Sample Location	
530	0			0–1.5' (90% recovery) Sand and rock, brown, dry. 1.5–3' (90% recovery) Sandstone, fine to medium grained, massive, brown, moderate to abundant iron staining, dry.
50	0			3–8' (100% recovery) Same sandstone as above.
				8–12' (100% recovery) Same sandstone as above, extremely hard, auger refusal at 12'.
				T.D. = 12'

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation:

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239–9011

Project Name: PCU T18X–12G

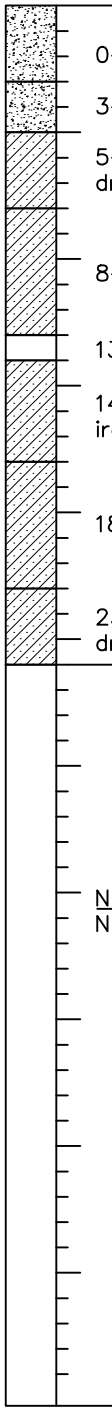
Project No: 1103–11B

Date: September 14 and 15, 2011

Boring No.: 18–12_BH–13

Logged By: G. Knell

Sheet: 1 of 1



0–3' (95% recovery) Sand and rock, brown, dry.

3–5' (90% recovery) Same as above.

5–8' (90% recovery) Sandstone, fine to medium grained, massive, brown, moderate iron staining, dry.

8–13' (85% recovery) Same as above, except extremely hard silty limestone 12.5–13' (no recovery).

13–14' (0% recovery) Pieces in top of sample recovery barrel indicate silty limestone.

14–18' (90% recovery) Sandstone, fine to medium grained, massive, brown, moderate to abundant iron staining, dry.

18–23' (90% recovery) Same sandstone as above, becoming finer grained and thin–bedded at 21.5'.

23–26' (100% recovery) Alternating beds of sandstone, fine to medium grained, massive, brown, dry, and silty sandstone, very fine to fine grained, thin–bedded, brown to gray, dry.

T.D. = 26'

NOTE:
No apparent hydrocarbon impact.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation: GPS

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239–9011

Project Name: PCU T18X–12G

Project No: 1103–11B

Date: September 14, 2011

Boring No.: 18–12_BH–14

Logged By: G. Knell

Sheet: 1 of 1

10-12' offset from BH-12

Graphic Log | Sample Location

0–3' (70% recovery) Sand and rock, brown, dry.

3–8' (20% recovery) Sandstone, fine to medium grained, massive, friable, brown, dry.

3–11' (80% recovery) Same sandstone as above.

11–13' (0% recovery) Extremely hard, limestone, silty, fine grained, dry. (Based on pieces of material in sampler.)

13–16' (0% recovery) Same limestone as above.

16–18' (80% recovery) Sandstone, fine grained, massive, brown, dry.

18–23' (90% recovery) Sandstone, fine to medium grained, massive, hard, brown, dry.

23–26' (90% recovery) Same sandstone as above, becoming thin–bedded at 25'.

T.D. = 26'

NOTE:
No apparent hydrocarbon impact.

Drilling Method: hollow stem auger

Hole Diameter: 8"

Rig Type: CME – 75

Test Boring Elevation: GPS

Sample Method: continuous barrel

KRW CONSULTING, INC.
8000 W. 14th Avenue
Suite 200
Lakewood, CO 80214
(303) 239–9011

APPENDIX D
Laboratory Reports

(Submitted on a separate CD – not included in this report)

APPENDIX E
Sensitive Receptor Study

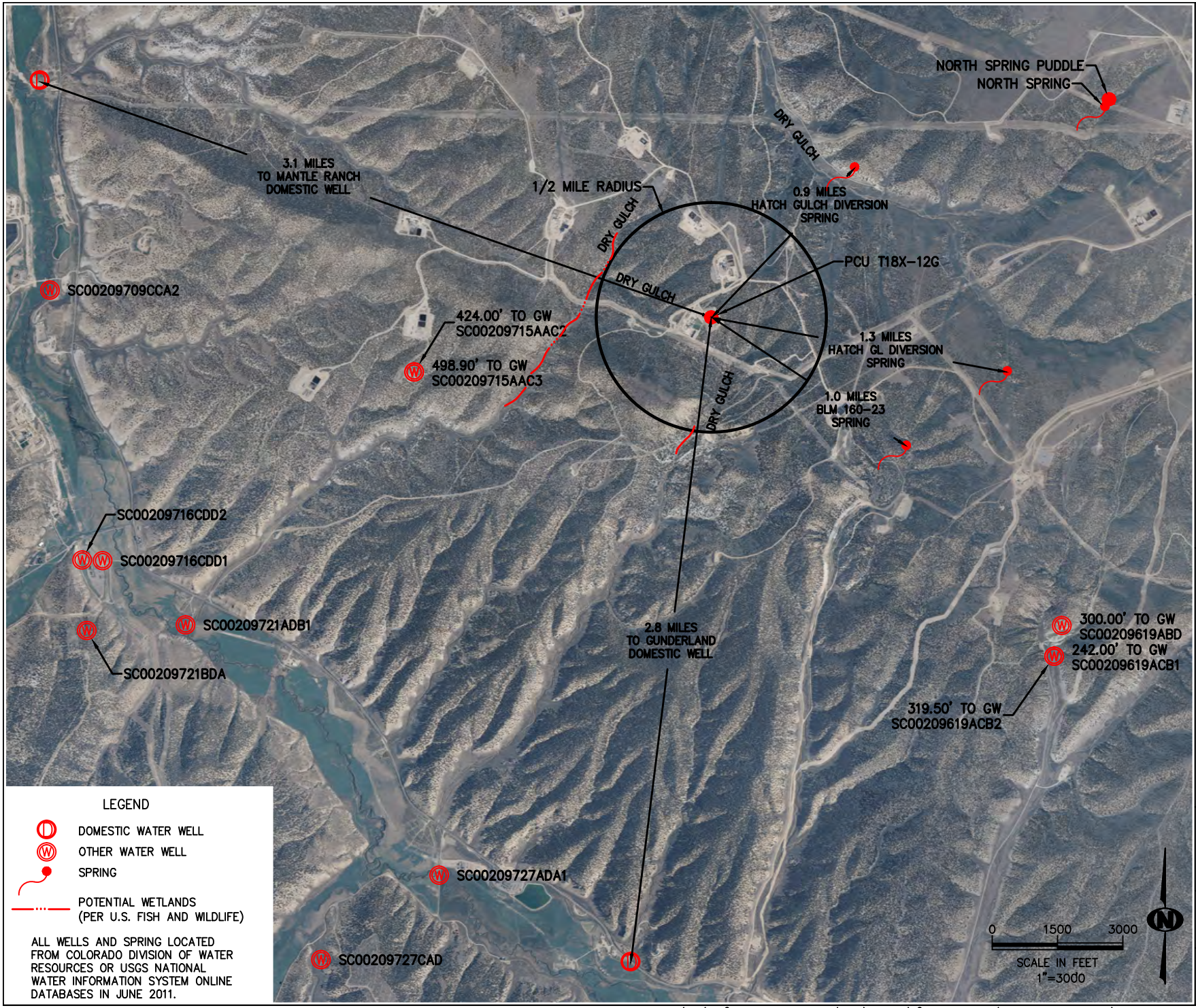


FIGURE 1
PICEANCE CREEK
PCU T18X-12G
SENSITIVE RECEPTOR SURVEY

PREPARED FOR EXXONMOBIL

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

NOTES:

DATE	REVISIONS

DESIGNED:	CB
DRAWN:	DRF
CHECKED:	JH
DATE:	10/31/11
FILE NAME:	recept aerial small
PROJECT NO.	1103-11B
SHEET NO.	1 of 1
SCALE:	1"=3000'

FIGURE 1

s:\proj\exxonmobil environmental\1103-11b arcadis pcu t18x-12g\civil3d\recept aerial small.dwg,10/31/11

Table 1

PCU 18-12

Division of Water Resources Water Well Permit Database Search

Colorado Division of Water Resources Well Permit Database Search - 1 mile radius of PCU 18-12 in T2S R97W Section 12 (N4420118.5 E223107)

receipt	permitno	well_name	UTM_x	UTM_y	use1	use2	aquifer1_n	pump_rate	static_wat	full_name	mailing_address	mailing_cit	mailing_st	mailing_ZIP
0048649C	68427	USA-PICEANCE CREEK #T22-11G	221872.3	4421201	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647Y	68398	PICEANCE CR UNIT #T35X-11G7	222018.8	4420745	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647X	68395	PICEANCE CR UNIT #T35X-11G6	222020.8	4420750	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647W	68394	PICEANCE CR UNIT #T35X-11G5	222021.9	4420754	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645F	68280	PICEANCE CREEK UNIT #T35X-11G4	222027.9	4420744	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645E	68279	PICEANCE CREEK UNIT #T35X-11G3	222029.3	4420748	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648H	68406	PICEANCE CREEK UNIT #T35X-11G3	222029.3	4420748	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645G	68281	PICEANCE CREEK UNIT #T35X-11GS	222031	4420753	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648I	68407	PICEANCE CREEK UNIT #T35X-11G2	222032.7	4420757	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645D	68278	PICEANCE CREEK UNIT #T35X-11G	222034.3	4420743	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648J	68408	PICEANCE CR UNIT #T35X-11G1	222034.3	4420761	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645V	68298	USA-PICEANCE CREEK #T45-14G	222134.6	4419048	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645I	68284	PICEANCE CREEK UNIT #T48X-2G	222309.5	4421721	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648B	68401	PICEANCE CR UNIT #T62X-11G5	222554.2	4421336	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648A	68400	PICEANCE CR UNIT #T62X-11G4	222563.1	4421346	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048648C	68402	PICEANCE CREEK UNIT #T68X-11G	222565.5	4420094	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645O	68290	PICEANCE CREEK UNIT #T62X-11G3	222575.7	4421364	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645N	68289	PICEANCE CREEK UNIT #T62X-11G2	222578.9	4421367	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048645M	68288	PICEANCE CREEK UNIT #T62X-11G1	222581.8	4421371	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048646M	68356	USA-PICEANCE CREEK #T73-11G	222832.6	4421133	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
1505053	74866	297-11A9	222995	4420737	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505046	74856	297-11A2	222996	4420741	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505052	74865	297-11A8	222999	4420734	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505047	74857	297-11A3	222999	4420738	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505051	74864	297-11A7	223002	4420731	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505045	74855	297-11A1	223003	4420735	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505050	74860	297-11A6	223006	4420729	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505048	74858	297-11A4	223006	4420732	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505049	74859	297-11A5	223010	4420729	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
3641189S	68247	PICEANCE CREEK UNIT #T14X-13G	223087.7	4419299	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
3641189U	68269	PICEANCE CREEK UNIT #T18X-12G2	223099.3	4420117	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
3642706A	68754	PICEANCE CR UNIT #T18X-12GI	223107	4420119	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXONMOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
3641189T	68268	PICEANCE CREEK UNIT #T18X-12G	223113	4420117	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
1505059	74872	297-12A6	223194	4420460	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505060	74873	297-12A7	223195	4420456	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505061	74879	297-12A8	223196	4420451	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505062	74880	297-12A9	223197	4420447	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505054	74867	297-12A1	223197	4420463	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505055	74868	297-12A2	223198	4420459	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505057	74870	297-12A4	223199	4420449	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505056	74869	297-12A3	223199	4420454	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
1505058	74871	297-12A5	223200	4420445	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
0048649I	68433	USA-PICEANCE CREEK #T35-12G	223664.1	4420644	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
1505063	74881	297-13A8	223946	4419475	IRRIGATIO	COMMERC	ALL UNNAMED AQUIFERS			EXXON MOBIL CORPORATION	P.O. BOX 4358	HOUSTON	TX	77210-4358
0048647R	68389	PICEANCE CREEK UNIT #297-13A7	223952.3	4419493	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647S	68390	PICEANCE CREEK UNIT #297-13A9	223959	4419499	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
3642706C	68757	PICEANCE CR UNIT - GOV 5 #54-13	223973.8	4419178	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXONMOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647Q	68388	PICEANCE CREEK UNIT #297-13A5	223997.1	4419462	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647P	68385	PICEANCE CREEK UNIT #297-13A4	224001.2	4419465	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647O	68384	PICEANCE CREEK UNIT #297-13A2	224011.1	4419475	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048647V	68393	PICEANCE CREEK UNIT #F32-13G	224043.4	4419260	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048649E	68429	USA-PICEANCE CREEK #F31-13G	224248	4419552	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
74980	21880	W.W. #3	224253.1	4419567	INDUSTRIAL		ALL UNNAMED AQUIFERS			MOBIL OIL CORP. ATTN A J MCCREDIE	PO BOX 1934	OKLAHOM	OK	73101
201548	24738		224282	4418678	COMMERCIAL		ALL UNNAMED AQUIFERS			MOBIL OIL CORP		DENVER	CO	80217
0048649F	68430	USA-PICEANCE CREEK #T63-12G	224300.2	4421018	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358
0048646O	68358	PICEANCE CREEK UNIT #T78-12G1	224460	4419973	INDUSTRIA	COMMERC	ALL UNNAI	50		EXXON MOBIL OIL CORPORATION	PO BOX 4358	HOUSTON	TX	77210-4358

Table 2
PCU T18X-12G
USGS National Water Information System Database

Site Name	Dec. Lat.	Dec. Lon	Elevation	Well depth	High Water	GW Elevation	Aquifer
SC00209727CAD	39.8446951	-108.2684195	6276	2563	-2.9	6279	GR
SC00209727ADA1	39.8502506	-108.2589747	6210	99	2.2	6208	VF
SC00209721BDA	39.86497269	-108.2884203	6470	1504	305	6165	GR, CP
SC00209619ACB1	39.8652507	-108.2092507	6840	495	242	6598	GR
SC00209721ADB1	39.86552824	-108.2803644	6170	101	7.6	6162	VF
SC00209619ABD	39.8671951	-108.2086951	6980	511	300	6680	GR
SC00209716CDD2	39.86941709	-108.2889759	6149	104	2.9	6146	VF
SC00209716CDD1	39.86941709	-108.2873092	6148	51	7.4	6141	VF
SC00209715AAC2	39.88191697	-108.2623083	6740	810	424	6316	GR, CP
SC00209715AAC3	39.88191697	-108.2623083	6740	1375	498.9	6241	GR, CP
SC00209709CCA2	39.88636139	-108.2923094	6130	56	5.4	6125	VF

VF - Valley-Fill Deposits
CP - Colorado Plateaus national aquifers
GR - Green River Formation local aquifer.

U.S. Fish and Wildlife Service
National Wetlands Inventory

18-12

Jun 14, 2011

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:

Wetlands

APPENDIX F
Site Photos

PCU 18-12 – looking southeast

PCU 18-12 – looking south/southwest