Basin Pipeline WC-4 Vault Release
Remediation #12401
Spill Point ID #460722
Supplemental Form 27 – Site Investigation and Remediation Workplan
Report of Work Completed

Please refer to COGCC Documents 401905874, 401908998, 401914437, 401924462, 401954557, 401929715, and 401955659 for investigative actions completed prior to May 1st, 2019.

Between February 5th and March 28th, 2019, a total of 14 water samples and 28 soil samples were collected in association with the Basin Pipeline WC-4 Vault Release. Of the 14 water samples, 12 were collected from surface water, and 2 were collected from monitoring wells installed to the South and South West of the Quarry Pond. Of the 28 soil samples, 2 were collected from within the vault at the point of release (POR), 14 were collected within the Orchard Compressor Station spill path, 10 were collected from outside the release area but within the boundary of the Orchard Compressor Station and 2 were collected from immediately above the interface of the saturated zone in the soil borings during monitoring well installation. All samples collected in association with the Basin Pipeline WC-4 Vault Release were submitted for laboratory analysis of all or a portion of the analytes listed in COGCC Table 910-1.

Water Remediation and Sampling Efforts

Please refer to COGCC Document 401929715 for water sampling efforts prior to March 8th, 2019.

Quarry Pond Remediation

Due to the initial Quarry Pond water exceeding COGCC Table 910-1 Concentration Levels for benzene in samples Quarry Pond Mid (3') and Quarry Pond Bottom (6') collected on January 31st, 2019 a plan was put in place to remediate the low-level dissolved phase hydrocarbons within the lower 3-feet of water within the quarry pond. The plan was outlined and submitted in the previous Supplemental Form 27 document #401929715. The circulator pump was started on February 27th, 2019 with the inlet set approximately 1 foot above the bottom of the pond with the use of a float tied to a lanyard attached to the seventy-five-foot inlet hose to prevent debris from being pulled into the pump impeller. The pump was operated for 21 days over a 4-week period, the pump inlet and discharge outlet were moved every week to ensure the entire pond was treated. Sampling was conducted weekly to measure remediation progress. Based on the pump manufactures specifications flow through capacity was estimated at 190 gallons per minute and total run time was 121 hours, processing 1,306,800 gallons of water. Total fluid within the pond was estimated at 1,194,219 based on aerial measurements assuming a depth of 5 throughout the pond. See Table 1 for Circulator pump remediation details.

Quarry Pond Sampling

On March 8th, 2019, a water sample was collected from the Quarry Pond circulation pump discharge line outlet valve. After the first week of remediation startup laboratory analytical results indicated that the Quarry Pond water complied with COGCC Table 910-1 Concentration Levels for hydrocarbons. The pump and inlet were then moved west, and pumping resumed. On March 15th, 2019 the pond was again sampled from the discharge line outlet valve and hydrocarbons were below laboratory detectable limits. The pump and inlet were then moved further west, and pumping resumed. On March 20th, 2019 the pond was again sampled from the discharge line outlet valve and hydrocarbons were below laboratory detectable limits. On March 25th, 2019 the pump and inlet were then moved to the center of the pond, and pumping resumed. Upon receiving the laboratory result of the March 25th sampling the pump was shut down and sampling was scheduled to conduct sampling from 3 locations from the surface, middle at approximately 3 feet below the surface and from the bottom at approximately 6 feet below the pond surface. Circulation efforts were placed on hold pending results of the March 28th, 2019 sampling event. Laboratory analytical results from the three sample depths at each sampling location identified all hydrocarbons were below laboratory detectable limits. As a result of these compliant sample results, the circulator pump efforts were ceased.

Laboratory analytical results are summarized on attached Table 2 and attached as laboratory reports. Water sampling locations are detailed on Figure 2.

Monitoring Well and Piezometer Installation and Sampling

On March 19th, 2019 two monitoring wells were installed per the COGCC COA issued on the Supplemental Form 27 document #401908998. Caerus also installed two Piezometers on March 18th, 2019 up-gradient of the Quarry Pond to determine groundwater flow. The boring logs can be found attached to this report per the COGCC COA issued on the Supplemental Form 27 document #401929715. Upon completion of drilling the monitoring wells on March 19th, 2019 the wells were developed by purging 10 well volumes from each well via 3-foot bailer.

On March 20th, 2019 water levels were recorded to within 0.01 of a foot from the two piezometers and the two monitoring wells. Three well volumes were then purged from the monitoring wells 1 and 2, and water samples were collected for constituents of COGCC Table 910-1. Laboratory analytical results indicated exceedances of sulfates, chlorides, and total dissolved solids above COGCC Table 910-1 Concentration Levels in monitoring well 1 and exceedances in sulfates and total dissolved solids in monitoring well 2. Hydrocarbons were below laboratory detectable limits.

The monitoring wells and piezometers were surveyed, and water levels are detailed on the potentiometric map attached as Figure 3. Groundwater flows in a south eastern direction toward the gravel pit dewatering pump away from monitoring well 1.

Laboratory analytical results are summarized in attached Table 2 and attached as laboratory reports. Water sampling locations are detailed on Figure 1.

Following discussions with the COGCC, on April 25th, 2019 Caerus collected a second round of monitoring well water samples and a sample from the Una Gravel Pit Pond (West Quarry Pond) to determine if the previously observed inorganic constituents were reproducible. This data will be included in a follow up Supplemental Form 27.

Soil Sampling Efforts

Please refer to COGCC Document 401929715 for soil sampling efforts prior to January 31st, 2019.

POR Vault Assessment and Sampling

On February 11th, 2019, 2 to 3 feet of soil was removed from the base of the Vault via hydrovac from below and around the carbon steel section of pipe and valve sets. The pipe and valves were removed, and a replacement piece of stainless-steel piping was bolted onto the existing pipe flanges. On February 14th, 2019 two confirmation soil sample were collected and submitted for analysis of COGCC Table 910-1 constituents. Laboratory analytical results indicate that these soil samples are compliant with COGCC Table 910-1 Concentration Levels with the exception of pH on the west side of the Vault (Basin PL Vault 1) and SAR pH and arsenic on the east side of the vault (Basin PL Vault 2). All soil removed during the Vault cleanout was disposed of at GreenLeaf Environmental Services. Waste disposal manifests were submitted in the previous Supplemental Form 27 document #401929715.

Laboratory analytical results are summarized in attached Tables 3 and 4 and attached as laboratory reports. Soil sampling locations are detailed on Figure 2.

Spill Path and Background Compressor Station Sampling

On February 14th, 2019, a composite soil sample was collected from the stockpiled material located at the west sediment basin which had been excavated prior to the release. Soil samples were submitted for laboratory analysis of electrical conductivity (EC), SAR, and pH. The exceedance of EC within the stockpile indicates preexisting elevated levels of inorganic compounds.

On March 12th, 2019, LTE personnel collected soil samples from seven locations (POC04, SS03, SS04, SS09, SS10, SS12, and SS15) based on previously identified elevated SAR concentrations. Two soil samples were collected from each sampling location. One surface soil sample was collected from 0 to 6 inches below ground surface (bgs). Using a hand auger, a second soil sample was collected from each location at approximately 2 feet bgs. Soil samples were submitted for laboratory analysis of SAR. Additionally, LTE collected ten surface soil samples (SS33 through SS42) outside of the release area and within the

boundary of the Orchard Compressor Station to establish onsite background inorganic concentrations outside of the release area. Surface soil samples were collected from 0 to 6 inches bgs. Soil samples were submitted for laboratory analysis of electrical conductivity (EC), SAR, and pH.

Laboratory analytical results are summarized in attached Tables 3 and 4 and attached as laboratory reports. Soil sampling locations are detailed on Figure 2.

Soil Boring Sampling

On March 19th, 2019, two soil borings were completed within the gravel pit South and Southwest of the Basin Pipeline Quarry Pond per COGCC request. The soil samples were collected during drilling activities from a 2-foot split spoon sampling device immediately above the interface of the saturated zone within the soil borings prior to monitoring well installation.

Monitoring well boring logs are attached.

Laboratory analytical results indicated exceedances of EC and SAR, above COGCC Table 910-1 Concentration Levels in monitoring well 1.

Laboratory analytical results are summarized in attached Tables 3 and 4 and attached as laboratory reports. Soil sampling locations are detailed on Figure 2.

FORM 27 Rev 3/16

State of Colorado
Oil and Gas Conservation Commission

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

Document Number: 401996869
Receive Date: 05/17/2019
Report taken by: Steven Arauza

Site Investigation and Remediation Workplan (Supplemental Form)

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. However, this shall not preclude the Operator from taking immediate action to protect public health or safety, the environment, wildlife, or livestock.
This Form 27 describes site conditions as currently understood by the Operator; approval of this Form 27 by COGCC is based on the site conditions accurately described herein; any changes in site conditions identified during or subsequent to the performance of the approved workplan may necessitate additional investigation or remediation which shall be described on a supplemental Form 27.
This Form 27 is intended to provide basic information regarding the proposed site investigation and remediation actions, but the workplan may be more fully described in attached documentation.
Refer to Rules 340, 905, 906, 907, 908, 909, and 910

OPERATOR INFORMATON

Name of Operator: CAERUS PICEANCE LLC Operator No: 10456
Address: 1001 17TH STREET #1600
City: DENVER State: CO Zip: 80202
Contact Person: Brett Middleton Email: bmiddleton@caerusoilandgas.com

Phone Numbers
Phone: (970) 285-2739
Mobile: (970) 987-4650

PROJECT, PURPOSE & SITE INFORMATION

PROJECT INFORMATION

Remediation Project #: 12401 Initial Form 27 Document #: 401908998

PURPOSE INFORMATION

- [ ] 901.e. Sensitive Area Determination
- [ ] 909.c.(1), Rule 905: Pit or PW vessel closure
- [x] 909.c.(2), Rule 906: Spill/Release Remediation
- [ ] 909.c.(3), Rule 907.e.: Land treatment of oily waste
- [ ] 909.c.(4), Rule 908.g.: Centralized E&P Waste Management Facility closure
- [ ] 909.c.(5), Rule 910.b.(4): Remediation of impacted ground water
- [ ] Rule 909.e.(2)A.: Notice completion of remediation in accordance with Rule 909.b.
- [ ] Rule 909.e.(2)B.: Closure of remediation project
- [ ] Rule 906.c.: Director request
- [ ] Other

SITE INFORMATION

N Multiple Facilites (in accordance with Rule 909.c.)

Facility Type: SPILL OR RELEASE Facility ID: 460722 API #: County Name: GARFIELD
Facility Name: Basin Pipeline WC-4 Vault Release Latitude: 39.403993 Longitude: -108.099484
** correct Lat/Long if needed: Latitude: Longitude:
QtrQtr: SESW Sec: 27 Twp: 7S Range: 96W Meridian: 6 Sensitive Area? Yes

SITE CONDITIONS

General soil type - USCS Classifications: ML
Most Sensitive Adjacent Land Use: Gravel Pit/Riparian Area
Is domestic water well within 1/4 mile? Yes
Is surface water within 1/4 mile? Yes
Is groundwater less than 20 feet below ground surface? Yes

Other Potential Receptors within 1/4 mile

SITE INVESTIGATION PLAN

TYPE OF WASTE:

- [x] **E&P Waste**
  - [x] Produced Water
  - [ ] Oil
  - [ ] Condensate
  - [ ] Drilling Fluids
  - [ ] Drill Cuttings
- [ ] **Other E&P Waste**
  - [ ] Workover Fluids
  - [ ] Tank Bottoms
  - [ ] Pigging Waste
  - [ ] Rig Wash
  - [ ] Spent Filters
  - [ ] Pit Bottoms
  - [ ] Other (as described by EPA) _____
- [ ] **Non-E&P Waste** _____

DESCRIPTION OF IMPACT

Impacted?	Impacted Media	Extent of Impact	How Determined
Yes	SOILS	Undetermined	Laboratory Analysis
Yes	SURFACE WATER	Isolated to Quarry Pond	Laboratory Analysis

INITIAL ACTION SUMMARY

Description of initial action or emergency response measures take to abate, investigate, and/or remediate impacts associated with E&P Waste.

Please see attached narrative.

PROPOSED SAMPLING PLAN

Proposed Soil Sampling

[x] Will soil samples be collected as part of this investigation? (Number, type (grab/composite), analyses, and locations of samples):

Pending soil conditions associated with winter conditions, soil samples will be collected from within Section 1 (Please see attached Figure 2) to further delineate the spill path and to assess background levels of EC, SAR, and pH. The sampling plan which details the sampling locations is attached.

Proposed Groundwater Sampling

[x] Will groundwater samples be collected as part of this investigation? (Number, analyses, and locations of samples):

The COGCC has issued a COA stating that Caerus must install two temporary monitoring wells South and Southwest of the Quarry Pond. This will be to verify that groundwater has not been impacted from the low-level hydrocarbons in the bottom three feet of the pond and to determine groundwater flow direction. Pending landowner and quarry operator approval, it is estimated the wells would be installed the week of March 18th, 2019 and sampled for analytes listed in COGCC Table 910-1. If all data is in compliance with COGCC Table 910-1 Concentration Levels, the wells would be pulled and backfilled or plugged per state regulations. Please see Figure 1 for the placement of these monitoring wells.

Proposed Surface Water Sampling

[x] Will surface water samples be collected as part of this investigation? (Number, analyses, and locations of samples):

Once remediation activities (Please reference the "Remediation Summary" portion of this form) associated with addressing impacts to the Quarry Pond have initiated, weekly samples will be collected from the Quarry Pond and submitted for analytes listed in COGCC Table 910-1. Please see Figure 1 for this sampling point (identified by "Pond Sample"). This sample may be collected from a port set up on the pump being utilized to circulate the pond water if the pond conditions are considered unsafe for sampling from the center of the pond.

Additional Investigative Actions

[x] Additional alternative investigative actions described in attached Site Investigation Plan (summary):

Two piezometer wells will be installed northwest and northeast of the Quarry Pond to assist in the determination of groundwater flow. Please see Figure 1 for the placement of these piezometer wells.

SITE INVESTIGATION REPORT

SAMPLE SUMMARY

Soil

Number of soil samples collected: 48

Number of soil samples exceeeding 910-1: 39

Was the areal and vertical extent of soil contamination delineated? No

Approximate areal extent (square feet): 1300

NA / ND

-- Highest concentration of TPH (mg/kg): 653.7

-- Highest concentration of SAR: 40

BTEX > 910-1: Yes

Vertical Extent > 910-1 (in feet): 0

Groundwater

Number of groundwater samples collected: 3

Was extent of groundwater contaminated delineated? No

Depth to groundwater (below ground surface, in feet): 25`

Number of groundwater monitoring wells installed: 0

Number of groundwater samples exceeding 910-1: 0

ND Highest concentration of Benzene (µg/l):

ND Highest concentration of Toluene (µg/l):

ND Highest concentration of Ethylbenzene (µg/l):

ND Highest concentration of Xylene (µg/l):

-- Highest concentration of Methane (mg/l): 0.0145

Surface Water

37 Number of surface water samples collected

27 Number of surface water samples exceeding 910-1

If surface water is impacted, other agency notification may be required.

OTHER INVESTIGATION INFORMATION

☒ Were impacts to adjacent property or offsite impacts identified?

Please refer to COGCC Document 401924462 for offsite impacts to soil.

Laboratory analytical results from surface water samples collected throughout the project area have indicated that surface water down gradient of the Basin Pipeline WC-4 Vault Release has been impacted. Please refer to the attached laboratory analytical results, summary table, and Figure 1 for details on offsite impacts.

☒ Were background samples collected as part of this site investigation?

Four background water samples have been collected. They are sample locations Quarry Spring, Basin Vault River Up, Strong water well and MW1. Please reference Figure 1 for their locations.

☒ Was investigation derived waste (IDW) generated as part of this investigation?

Volume of solid waste (cubic yards): 484

Volume of liquid waste (barrels): 8700

☒ Is further site investigation required?

Extent of impact will continue to be delineated.

REMEDIAL ACTION PLAN

Does this Supplemental Form 27A include changes to a previously approved Remedial Action Plan? No

SOURCE REMOVAL SUMMARY

Describe how source is to be removed.

Please refer to COGCC Document 401924462 for this information.

REMEDIATION SUMMARY

Describe how remediation of existing impacts to soil and groundwater is to be accomplished (i.e. summarize remedial action plan). Provide a brief narrative description including: technical justification, schedule for implementation, estimated time to attain NFA status, plus plans and specifications for the selected remedial action technology.

Please see attached narrative.

Soil Remediation Summary

☐ **In Situ**

- ____ Bioremediation (or enhanced bioremediation)
- ____ Chemical oxidation
- ____ Air sparge / Soil vapor extraction
- ____ Natural Attenuation
- ____ Other ____

☒ **Ex Situ**

- Yes Excavate and offsite disposal
  - If Yes: Estimated Volume (Cubic Yards) 484
  - Name of Licensed Disposal Facility or COGCC Facility ID # ____
- ____ Excavate and onsite remediation
  - ____ Land Treatment
  - ____ Bioremediation (or enhanced bioremediation)
  - ____ Chemical oxidation
  - ____ Other ____

Groundwater Remediation Summary

- ☐ Bioremediation (or enhanced bioremediation)
- ☐ Chemical oxidation
- ☐ Air sparge / Soil vapor extraction
- ☐ Natural Attenuation
- ☐ Other ____

GROUNDWATER MONITORING

If groundwater has been impacted, describe proposed monitoring plan, including # of wells or sample points, monitoring schedule, analytical methods, points of compliance. Attach a groundwater monitoring location diagram.

2 monitoring wells were installed south and southwest of the Basin Quarry Pond

REMEDIATION PROGRESS UPDATE

PERIODIC REPORTING

Frequency: ☐ Quarterly ☐ Semi-Annually ☐ Annually ☒ Other Remediation update

Report Type: ☒ Groundwater Monitoring ☐ Land Treatment Progress Report ☒ O&M Report

☐ Other

WASTE DISPOSAL INFORMATION

Was E&P waste generated as part of this remediation? Yes

Describe beneficial use, if any, of E&P Waste derived from this remediation project:

Potentially contaminated stormwater runoff continued to be recovered from down gradient sediment traps and disposed of at the High Mesa Water Treatment Facility (COGCC ID 149013) to ensure contaminants didn't migrate down gradient of these control points. The volume of liquid E&P Waste listed below is as of February 7, 2019. No fluid was available to be recovered from Febrary 8, 2019 through February 13, 2019. On Febrary 13, 2019, we ceased recovery operations of stormwater runoff and allowed it migrate through the project area and downgradient.

All soil represented by sample Basin PL Stock E identified as being impacted on COGCC Document 401924462 was transported to Greenleaf Environmental Services. Waste Manifests are attached.

Volume of E&P Waste (solid) in cubic yards 484

E&P waste (solid) description Soil impacted by produced water

COGCC Disposal Facility ID #, if applicable:

Non-COGCC Disposal Facility: Greenleaf Environmental Services

Volume of E&P Waste (liquid) in barrels 8700

E&P waste (liquid) description Produced Water/Stormwater runoff

COGCC Disposal Facility ID #, if applicable: 149013

Non-COGCC Disposal Facility:

REMEDIATION COMPLETION REPORT

REMEDIATION COMPLETION SUMMARY

Is this a Final Closure Request for this Remediation Project? No

Do all soils meet Table 910-1 standards?

Does the previous reply indicate consideration of background concentrations?

Are the only residual soil impacts pH, SAR, or EC at depths greater than 3 feet below ground surface?

Does Groundwater meet Table 910-1 standards?

Is additional groundwater monitoring to be conducted?

RECLAMATION PLAN

RECLAMATION PLANNING

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.

Following remedial activities, any areas excavated will be backfilled to match preexisting grade and re-seeded if vegetation was disturbed.

Is the described reclamation complete? No

Does the reclamation described herein constitute interim or final reclamation of the Oil and Gas Location?

☐ Interim? ☐ Final?

Did the Surface Owner approve the seed mix?

If NO, does the seed mix comply with local soil conservation district recommendations?

IMPLEMENTATION SCHEDULE

PRIOR DATES

Date of Surface Owner notification/consultation, if required. 01/16/2019

Actual Spill or Release date, if known.

SITE INVESTIGATION DATES

Date of Initial Actions described in Site Investigation Plan (start date). 01/14/2019

Date of commencement of Site Investigation. 01/14/2019

Date of completion of Site Investigation.

REMEDIAL ACTION DATES

Date of commencement of Remediation. 02/27/2019

Date of completion of Remediation. 03/27/2019

SITE RECLAMATION DATES

Date of commencement of Reclamation.

Date of completion of Reclamation.

OPERATOR COMMENT

attn: Steven Arauza

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

Signed:` Brett Middleton

Title: Sr EHS Specialist

Submit Date:` 05/17/2019

Email: bmiddleton@caerusoilandgas.com

Based on the information provided herein, this Application for Site Investigation and Remediation Workplan complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: Steven Arauza

Date: 05/28/2019

Remediation Project Number: 12401

COA Type	Description
	Operator shall provide summary discussions of Table 910-1 exceedances for surface water samples, groundwater samples, surface soil samples (i.e., flow path samples vs background compressor station samples), and exceedances for Basin PL - MW1&2 soil samples via a Supplemental eForm 27.
	Laboratory analytical reports for 4/25/2019 water samples (Basin - MW1, Basin - MW2, and West Quarry Pond) are missing from attachments. Laboratory analytical reports are also missing for 3/19/2019 soil samples Basin PL - MW1 (20') and Basin PL MW2 (19'). Operator shall submit complete laboratory reports for 4/25/2019 water samples and 3/29/2019 soil samples via Supplemental eForm 27. Operator shall also provide a corrected analytical summary table for water samples (see comments below).

Attachment Check List

Upon approval, the approved Form 27 and all listed attachments will be indexed to the Remediation Project file. Only the approved Form 27 will also be indexed to the related Facilities.

Att Doc Num	Name
401996869	INVESTIGATION/REMEDIATION WORKPLAN (SUPPLEMENTAL)
402047526	LOGS
402047529	ANALYTICAL RESULTS
402047530	ANALYTICAL RESULTS
402047532	ANALYTICAL RESULTS
402047534	ANALYTICAL RESULTS
402047537	ANALYTICAL RESULTS

402047538	ANALYTICAL RESULTS
402047539	ANALYTICAL RESULTS
402047542	ANALYTICAL RESULTS
402047548	ANALYTICAL RESULTS
402047556	REMEDIATION PROGRESS REPORT
402047563	SOIL SAMPLE LOCATION MAP
402047568	GROUND WATER SAMPLE LOCATION
402047573	GROUND WATER ELEVATION MAP
402047589	MONITORING REPORT
402047615	ANALYTICAL RESULTS
402047616	ANALYTICAL RESULTS
402047618	ANALYTICAL RESULTS
402056835	FORM 27-SUPPLEMENTAL-SUBMITTED

Total Attach: 20 Files

General Comments

User Group	Comment	Comment Date
Environmental	Attached narrative (doc #402047589) describes remediation of impacted quarry pond, installation/sampling of monitoring wells and piezometers, and additional soil sampling at the POR vault in addition to background sampling inside of the compressor station.	05/28/2019
Environmental	Attached Table 2 (doc #402047615) reports Quarry Pond W Bottom (3/28/2019) results for TDS, chloride, and sulfate under "West Quarry Pond" sample collected 4/25/2019. See attached lab report (doc #402047548). Attached Table 3 (doc #402047616) reports that conductivity for sample OCS (SS35) 0-6' was Not Analyzed. Attached lab report (doc #402047534) indicates that actual EC value was 1.07.	05/28/2019

Total: 2 comment(s)

TABLE 1
QUARRY POND REMEDIATION
PUMP RUN TIME
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

Location	Date	Run Hours
1	2/27/2019	4
	2/28/2019	6
	3/1/2019	3
	3/4/2019	6
	3/5/2019	5
	3/6/2019	6
	3/7/2019	7
	3/8/2019	3
	TOTAL	*40*
2	3/11/2019	6
	3/12/2019	7
	3/13/2019	6
	3/14/2019	7
	3/15/2019	3
	TOTAL	*29*
3	3/18/2019	8
	3/19/2019	6
	3/20/2019	7
	3/21/2019	6
	3/22/2019	3
	TOTAL	*30*
4	3/25/2019	8
	3/26/2019	8
	3/27/2019	6
	TOTAL	*22*
TOTAL RUN TIME		**121**

Approximate Pond Volume	
Area of Pond (ft^2)	31,931
Depth of Pond (ft)	5
Pond Volume (CF)	159,655
Pond Volume (Gal)	**1,194,219**

Estimated Remediation Activity	
Total Run Time (hr)	121
Rate of Flow (GPM)	190
Volume of Water Processed During Remediation (Gal)	**1,306,800**

Table 2
Basin Pipeline WC-4 Vault Release
Water Analytical
Caerus Oil and Gas LLC
Piceance Basin, Colorado

			Organic Compounds				Inorganic Compounds		
Sample ID	**Sample Date**	**Sample Matrix**	**Benzene 0.005 mg/L**	**Toluene 1 mg/L**	**Ethylbenzene 0.7 mg/L**	**Xylene (Total) 10 mg/L**	**Total Dissolved Solids (TDS) *1975 mg/L**	**Chloride *340 mg/L**	**Sulfate *792 mg/L**
Quarry Pond Pump	3/8/2019	Surface Water	0.00436	0.00533	*<0.001*	0.0106			
Quarry Pond Pump	3/15/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*			
Quarry Pond Pump	3/20/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*			
Basin PL - MW1	3/20/2019	Monitoring Well	*<0.001*	*<0.001*	*<0.001*	*<0.003*	10,000	3,640	2,620
Basin PL - MW2	3/20/2019	Monitoring Well	*<0.001*	*<0.001*	*<0.001*	*<0.003*	2,640	398	517
Quarry Pond E Surface	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,380	333	491
Quarry Pond E Middle	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,420	338	472
Quarry Pond E Bottom	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,400	336	478
Quarry Pond S Surface	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,420	336	486
Quarry Pond S Middle	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,400	334	470
Quarry Pond S Bottom	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,390	344	494
Quarry Pond W Surface	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,420	330	473
Quarry Pond W Middle	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,400	336	481
Quarry Pond W Bottom	3/28/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	10,800	3,880	2,530
Basin - MW1	4/25/2019	Monitoring Well	*<0.001*	*<0.001*	*<0.001*	*<0.003*	2,530	568	846
Basin - MW2	4/25/2019	Monitoring Well	*<0.001*	*<0.001*	*<0.001*	*<0.003*	5,400	703	2,810
West Quarry Pond	4/25/2019	Surface Water	*<0.001*	*<0.001*	*<0.001*	*<0.003*	1,440	330	507

Notes:

< - less than the stated reporting limit

Highlight - indicates result exceeds the COGCC concentration level

TDS - total dissolved solids

mg/L - milligrams per liter

NA - not analyzed

ND - non detect

TABLE 3
BASIN PIPELINE WC-4 SPILL
SOIL ANALYTICAL RESULTS
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	Summit Stock	Basin PL Vault 1	Basin PL Vault 2	OCS (POC04) 0-6"	OCS (POC04) 2'	OCS (SS04) 0-6"	OCS (SS04) 2'	OCS (SS33) 0-6"	OCS (SS34) 0-6"	OCS (SS03) 0-6"	OCS (SS03) 2'	OCS (SS35) 0-6'	OCS (SS36) 0-6"	OCS (SS37) 0-6"	OCS (SS38) 0-6"	OCS (SS09) 0-6"	OCS (SS09) 2'	OCS (SS10) 0-6"	OCS (SS10) 2'	OCS (SS39) 0-6"
Sample Date			2/14/2019	2/14/2019	2/14/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019
Sample Matix			Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill
Arsenic	0.39	mg/kg	NA	<2.0	2.85	NA	NA	NA	NA	3.48	3.51	NA	NA	5.33	3.7	NA	NA	NA	NA	NA	NA	NA
Barium	15,000	mg/kg	NA	151	268	NA	NA	NA	NA	147	177	NA	NA	191	145	NA	NA	NA	NA	NA	NA	NA
Cadmium	70	mg/kg	NA	<0.5	<0.5	NA	NA	NA	NA	<0.5	<0.5	NA	NA	0.52	<0.5	NA	NA	NA	NA	NA	NA	NA
Chromium (III)	120,000	mg/kg	NA	14.3	10.4	NA	NA	NA	NA	17.2	14.7	NA	NA	8.47	17.8	NA	NA	NA	NA	NA	NA	NA
Chromium (VI)	23	mg/kg	NA	<2.0	<2.0	NA	NA	NA	NA	<2.0	<2.0	NA	NA	<2.0	<2.0	NA	NA	NA	NA	NA	NA	NA
Copper	3,100	mg/kg	NA	16.1	7.17	NA	NA	NA	NA	16.8	11.8	NA	NA	8.97	16.6	NA	NA	NA	NA	NA	NA	NA
Lead	400	mg/kg	NA	11.4	8.43	NA	NA	NA	NA	13.5	7.73	NA	NA	7.43	13.8	NA	NA	NA	NA	NA	NA	NA
Mercury	23	mg/kg	NA	0.0396	<0.02	NA	NA	NA	NA	0.0277	<0.02	NA	NA	<0.02	0.0327	NA	NA	NA	NA	NA	NA	NA
Nickel	1,600	mg/kg	NA	17.3	11.2	NA	NA	NA	NA	19.3	14.7	NA	NA	8.86	20.3	NA	NA	NA	NA	NA	NA	NA
Selenium	390	mg/kg	NA	<2.0	<2.0	NA	NA	NA	NA	<2.0	<2.0	NA	NA	<2.0	<2.0	NA	NA	NA	NA	NA	NA	NA
Silver	390	mg/kg	NA	<1.0	<1.0	NA	NA	NA	NA	<1.0	<1.0	NA	NA	<1.0	<1.0	NA	NA	NA	NA	NA	NA	NA
Zinc	23,000	mg/kg	NA	59.1	35	NA	NA	NA	NA	70	37.4	NA	NA	30.2	71.9	NA	NA	NA	NA	NA	NA	NA
EC	4 or 2x background	mmhos/cm	5.41	0.857	0.516	3.96	10.6	2.53	3.2	4.2	4.07	4.23	6.14	1.07	3.19	1.98	0.895	4.81	10.7	0.829	5.76	1.64
pH	6-9	SU	8.07	9.03	9.17	8.83	7.76	9.54	8.63	8.17	9.12	8.14	8.14	8.07	8.07	8.52	9.53	8.56	8.03	9.69	8.03	9.39
SAR	12	unitless	10.7	8.93	14.6	12.7	19.3	27.5	12.5	18.4	4.37	10.7	11.3	12.1	20.6	12.8	5.67	22.9	26.2	6.11	21.5	24.7
TPH-DRO			NA	<4.0	<4.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH-GRO			NA	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TPH	500	mg/kg	NA	<4.1	<4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.17	mg/kg	NA	<0.001	<0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	85	mg/kg	NA	<0.005	<0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	100	mg/kg	NA	<0.0025	<0.0025	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	175	mg/kg	NA	<0.0065	<0.0065	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	1,000	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	1,000	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	0.22	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.22	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2.2	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.022	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	22	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	0.022	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	1,000	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	1,000	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3,c,d)pyrene	0.22	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	23	mg/kg	NA	<0.02	<0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	1,000	mg/kg	NA	<0.006	<0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
< - less than the stated reporting limit
Highlight - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
NA - not analyzed
ND - non detect
SAR - sodium adsorption ratio
SU - standard unit
TPH-GRO - total petroleum hydrocarbons-gasoline range organics
TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO and TPH-DRO

TABLE 4
BASIN PIPELINE WC-4 SPILL
SOIL ANALYTICAL RESULTS
CAERUS OIL AND GAS LLC
PICEANCE BASIN, COLORADO

PARAMETER	COGCC CONCENTRATION LEVELS	UNITS	OCS (SS12) 0-6"	OCS (SS12) 2'	OCS (SS40) 0-6"	OCS (SS41) 0-6"	OCS (SS15) 0-6"	OCS (SS15) 2'	OCS (SS42) 0-6"	Basin PL - MW1 (20')	Basin PL - MW2 (19')
Sample Date			3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/12/2019	3/19/2019	3/19/2019
Sample Matix			Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill	Spill
Arsenic	0.39	mg/kg	NA	NA	NA	NA	NA	NA	NA	<2.0	<2.0
Barium	15,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	143	171
Cadmium	70	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.5	<0.5
Chromium (III)	120,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	20.9	15.5
Chromium (VI)	23	mg/kg	NA	NA	NA	NA	NA	NA	NA	<2.0	<2.0
Copper	3,100	mg/kg	NA	NA	NA	NA	NA	NA	NA	17.3	11.5
Lead	400	mg/kg	NA	NA	NA	NA	NA	NA	NA	13.9	15
Mercury	23	mg/kg	NA	NA	NA	NA	NA	NA	NA	0.0324	0.0215
Nickel	1,600	mg/kg	NA	NA	NA	NA	NA	NA	NA	21.2	14.9
Selenium	390	mg/kg	NA	NA	NA	NA	NA	NA	NA	<2.0	<2.0
Silver	390	mg/kg	NA	NA	NA	NA	NA	NA	NA	<1.0	<1.0
Zinc	23,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	75	56.3
EC	4 or 2x background	mmhos/cm	0.426	5.98	2.98	6.39	0.701	2.07	2.84	6.38	1.09
pH	6-9	SU	9.51	8.18	8.12	8.09	8.94	8.84	8.43	8.08	8.62
SAR	12	unitless	3.01	17.6	11.3	18.5	5.5	13.9	11.6	24.1	9.24
TPH-DRO			NA	NA	NA	NA	NA	NA	NA	<4.0	<4.0
TPH-GRO			NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1
TPH	500	mg/kg	NA	NA	NA	NA	NA	NA	NA	<4.1	<4.1
Benzene	0.17	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.001	<0.001
Toluene	85	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.005	<0.005
Ethylbenzene	100	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.0025	<0.0025
Total Xylenes	175	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.0065	<0.0065
Acenaphthene	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Anthracene	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Benz(a)anthracene	0.22	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Benzo(b)fluoranthene	0.22	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Benzo(k)fluoranthene	2.2	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Benzo(a)pyrene	0.022	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Chrysene	22	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Dibenzo(a,h)anthracene	0.022	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Fluoranthene	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Fluorene	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Indeno(1,2,3,c,d)pyrene	0.22	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006
Naphthalene	23	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.02	<0.02
Pyrene	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	<0.006	<0.006

Notes:
< - less than the stated reporting limit
Highlight - indicates result exceeds the COGCC concentration level
COGCC - Colorado Oil and Gas Conservation Commission
EC - electrical conductivity
mg/kg - milligrams per kilogram
mmhos/cm - millimhos per centimeter
NA - not analyzed
ND - non detect
SAR - sodium adsorption ratio
SU - standard unit
TPH-GRO - total petroleum hydrocarbons-gasoline range organics
TPH-DRO - total petroleum hydrocarbons-diesel range organics
TPH - combination of TPH-GRO and TPH-DRO

Soil Boring Field Sheet

Date:	3/19/2019	Boring Identification	MW1
Personnel:	Blair Rollins		
GPS Lat	39.3993467	Project #:	
Long	-108.0997467	Proj. Name:	Basin Pipeline

Sketch:

Date/Time Started:	3/19/19 0700	Bore Diameter:	6
Date/Time Finished:	3/19/19 1030	Boring Method:	ODEX
Drilling Contractor/Personnel:	Colorado Drilling & Sampling Scott McCracken		

Depth (ft)	Graphic	Description	Sample	PID (ppm)	Water Level	Depth (ft)
0		Large cobble for road base				0
5		Purple brown silty clay with small amount of gravel				5
10						10
15					▼	15
20		Brown silty clay with cobble				20
25		Light yellow shale bedrock				25
30						30
35						35

Stickup: 3.3'

Seal:	Bentonite pellets
Top	0' bgs
Bot:	4' bgs
Riser	2" Sch 40 PVC
Top	3.3' ags
Bot:	4' bgs
Screen	2" #10 Sch 40 PVC
Top	4' bgs
Bot:	24' bgs
Filter	10/20 silica sand
Top	4' bgs
Bot:	24' bgs

Soil Boring Field Sheet

Date:	3/19/2019	Boring Identification	MW2
Personnel:	Blair Rollins		
GPS Lat	39.3993317	Project #:	
Long	-108.1028266	Proj. Name:	Basin Pipeline

Sketch:

Date/Time Started:	3/19/19 1130	Bore Diameter:	4"
Date/Time Finished:	3/19/19 1230	Boring Method:	Solid Stem Auger
Drilling Contractor/Personnel:	Colorado Drilling & Sampling Scott McCracken		

Depth (ft)	Graphic	Description	Sample	PID (ppm)	Water Level	Depth (ft)
0						0
5		Purple brown silty clay				5
10						10
15						15
20		Brown silty clay with small amount of cobble				20
25		Light yellow shale bedrock				25
30						30
35						35

Stickup: 2.95'

Seal:	Bentonite pellets
Top	0' bgs
Bot:	6' bgs
Riser	2" Sch 40 PVC
Top	2.95' ags
Bot:	6' bgs
Screen	2" #10 Sch 40 PVC
Top	6' bgs
Bot:	26' bgs
Filter	10/20 silica sand
Top	6' bgs
Bot:	26' bgs

Soil Boring Field Sheet

Date:	4/2/2019	Boring Identification	P1
Personnel:	Blair Rollins		
GPS Lat	39.4009099	Project #:	
Long	-108.0990153	Proj. Name:	Basin Pipeline

Sketch:

Date/Time Started:	3/18/19 0830	Bore Diameter:	4"
Date/Time Finished:	3/18/19 1030	Boring Method:	Solid Stem Auger
Drilling Contractor/Personnel:	Colorado Drilling & Sampling Scott McCracken		

Depth (ft)	Graphic	Description	Sample	PID (ppm)	Water Level	Depth (ft)
0		Brown clay with silt				0
10		Brown silty sand with gravel				10
20						20
30		Brown silty clay with small amount of cobble				30
40						40
50						50
60						60
						35

Stickup: 2.14'

Seal:	Bentonite pellets
Top	0' bgs
Bot:	17' bgs
Riser	2" Sch 40 PVC
Top	0' bgs
Bot:	17' bgs
Screen	2" #10 Sch 40 PVC
Top	17' bgs
Bot:	37' bgs
Filter	10/20 silica sand
Top	17' bgs
Bot:	37' bgs

Soil Boring Field Sheet

Date:	4/3/2019	Boring Identification	P2
Personnel:	Blair Rollins		
GPS Lat	39.4009099	Project #:	
Long	-108.0990153	Proj. Name:	Basin Pipeline

Sketch:

Date/Time Started:	3/18/19 1100	Bore Diameter:	6"
Date/Time Finished:	3/18/19 1500	Boring Method:	ODEX
Drilling Contractor/Personnel:	Colorado Drilling & Sampling Scott McCracken		

Depth (ft)	Graphic	Description	Sample	PID (ppm)	Water Level	Depth (ft)
0		Reddish purple silty clay				0
5						5
10		Brown silty clay with gravel			▼	10
15						15
20		Sandy gravel				20
25						25
30						30

Stickup: 0.97'

Seal:	Bentonite pellets
Top	0' bgs
Bot:	12' bgs
Riser	2" Sch 40 PVC
Top	0' bgs
Bot:	12' bgs
Screen	2" #10 Sch 40 PVC
Top	12' bgs
Bot:	27' bgs
Filter	10/20 silica sand
Top	12' bgs
Bot:	27' bgs

N

APPROXIMATE SCALE 1" = 200'

Legend

PZ01 Monitoring Well Location and Identification

4954 Calculated Groundwater Elevation Potentiometric Surface (Feet)

4984.63 Measured Groundwater Elevation (Feet)

PROJECT NO:	018-037
DRAWN BY:	RAS
DATE:	04/03/2019

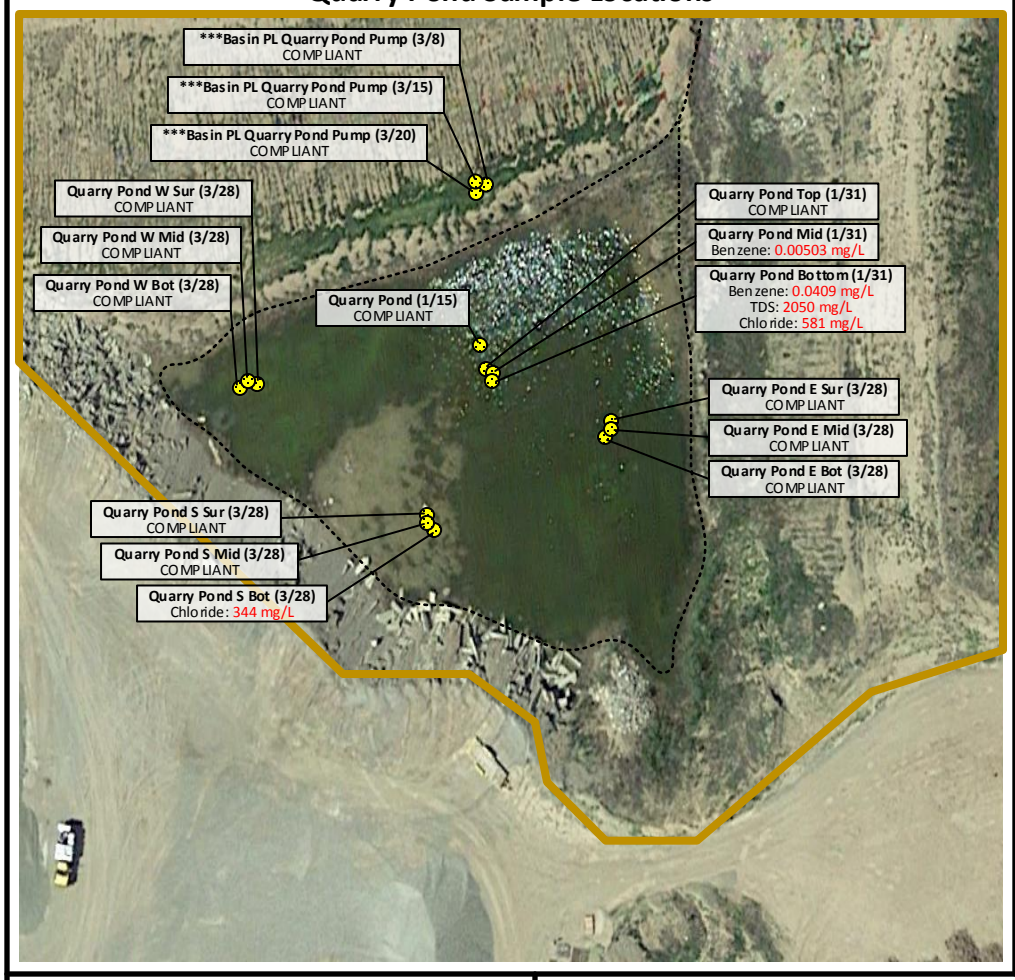
Groundwater Elevation Map - 04/03/2019 Una Pit
Section 34 T 7S R96W
Garfield County, Colorado

ENTRADA
Entrada Consulting Group
330 Grand Avenue
Grand Junction, CO 81501
TEL (970) 549-1015
www.entradainc.com

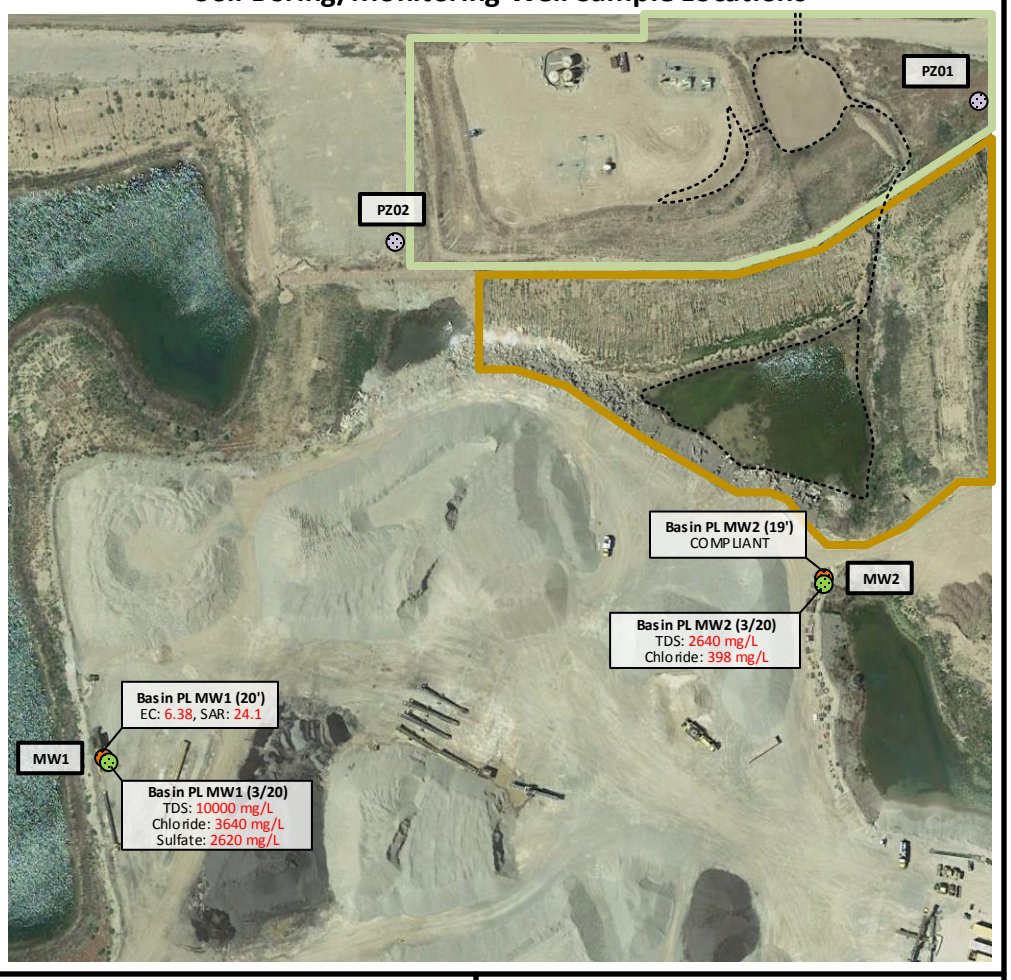
FIGURE
3

Basin Pipeline WC-4 Vault Release Water Sample Locations

Quarry Pond Sample Locations



Soil Boring/Monitoring Well Sample Locations



CAERUS OIL AND GAS LLC
143 Diamond Ave
Parachute, CO 81635
PHONE: 970-285-2600

Created By: Tyler Rust (EHS Specialist)
Date: 4/4/2019

LEGEND

- Surface Water Sample
- Water Sample
- Groundwater Sample
- Soil Boring Sample
- Piezometer
- Spill Path
- Section I Boundary
- Section II Boundary
- Section III Boundary

Each sample depicted on this diagram is labeled with the **SAMPLE ID,** any constituent which exceeded Table 910-1 standards, and the actual CONCENTRATION determined by laboratory analysis. If the sample was compliant with all Table 910-1 standards, the **SAMPLE ID** is labeled COMPLIANT.
***All 3 **"BASIN PLQUARRY POND PUMP"** surface water samples were collected from a sampling port on the pump being utilized to circulate and remediate the impacted quarry pond water. These samples were collected at approximately 5-6' deep at multiple locations throughout the Quarry Pond.

Figure 1
Basin Pipeline WC-4 Vault Release
Sections I, II, III
Water Sample/Monitoring Well Locations

Not to Scale

Site Location:
Orchard Unit (OU)
Garfield County, Colorado
Caerus Oil and Gas LLC

CAERUS OIL AND GAS LLC

143 Diamond Ave
Parachute, CO 81635
PHONE: 970-285-2600

Created By: Tyler Rust (EHS Specialist)
Date: 4/4/2019

LEGEND

- X Point of Release
- Spill Path
- Soil Sample Location
- Section I Boundary
- Section II Boundary
- Section III Boundary
- Stockpiled Soil
- Impermeable Liner
- Culvert

Each sample depicted on this diagram is labeled with the **SAMPLE ID**, any constituent which exceeded Table 910-1 standards, and the actual CONCENTRATION determined by laboratory analysis. If the sample was compliant with all Table 910-1 standards (*with the exception of arsenic), the **SAMPLE ID** is labeled COMPLIANT. Samples labeled in BLUE are from the most recent sampling event conducted on 3/12/2019. Stockpiled soil on the OD34 well pad is no longer present, clean soil was used as fill and contaminated soil was hauled off location. See COGCC Document ID 401929715 for waste manifests.

Figure 2

Basin Pipeline WC-4 Vault Release
Sections I, II, III
Soil Sample Locations w/ Exceedances

N
Not to Scale

Site Location:
Orchard Unit (OU)
Garfield County, Colorado
Caerus Oil and Gas LLC