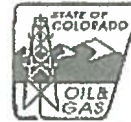


State of Colorado
Oil and Gas Conservation Commission



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

#8164

FOR OGCC USE ONLY

RECEIVED
10/31/2013

SITE INVESTIGATION AND REMEDIATION WORKPLAN

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

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Partially buried vault removal

OGCC Operator Number: 10456

Name of Operator: Caerus Piceance LLC

Address: 120 Railroad Ave. Suite D

City: Parachute State: CO Zip: 81635

Contact Name and Telephone:

Ed Winters

No: 970-285-9606

Fax: 970-285-9619

API Number: _____

County: _____

Facility Name: See attached list for locations

Facility Number: _____

Well Name: _____

Well Number: _____

Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____

TECHNICAL CONDITIONS

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

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

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

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

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

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

If present

How Determined:

Tank integrity test and/or removal

REMEDIALATION WORKPLAN

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

See attached document for details.

Describe how source is to be removed:

See attached document for details.

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

See attached document for details.



REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: Cherus Piceance LLC
OGCC Operator No: 10456
Received Date: _____
Well Name & No: Unocal 25-4D 045-07772
Facility Name & No: _____

OGCC Employee: _____

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

See attached documents for details.

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

See attached documents for details.

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

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

See attached documents for details.

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

See attached documents for details.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: _____ Date Site Investigation Completed: _____ Date Remediation Plan Submitted: _____
Remediation Start Date: _____ Anticipated Completion Date: _____ Actual Completion Date: _____

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

Print Name: Edward T. Winters

Signed: [Signature]

Title: Environmental Health and Safety Professional

Date: 29 October 2013

OGCC Approved: [Signature]

For Carlos Luján
PhD

Title: Environmental Protection Specialist

Date: 10/29/2013

Facility Name:
Facility ID#:

Name of Operator: Caerus Piceance LLC
Latitude: Longitude:
Location (QtrQtr, Sec, Twp, Rng, Meridian):

COGCC Operator #:10456
County: Garfield

FORM 27 ATTACHMENT:

Describe initial action taken

- Upon removal of the partially buried produced water tank, field screening will be performed and will utilize appropriate field equipment which may include, but is not limited to the following.
 - a photoionization gas detector (PID),
 - a PetroFlag® hydrocarbon test unit,
- Confirmation samples, Rule 905.b.(4), will be collected and submitted for lab analysis and verification to confirm compliance with Rule 910 and Table 910-1 relative to the above-mentioned field screen activity.
- Other areas of the excavation walls and floor will be inspected for evidence of impact via field screening and visual observation. Grab samples will be collected to demonstrate diligence and thoroughness of investigation activities performed as directed in Rule 905.b.(1). In addition, all field screening activities and results will be documented and compiled into a summary report, table and/or map to be provided with the project closure report.
- Grab samples will be submitted for laboratory analysis to confirm field screening activities. Soil samples analytes will include considerations identified by Rule 910 and contaminants of concern for soils from Table 910-1 excluding boron (see attached analyte list in Table 1 of Annex A).
- A visual assessment will be performed throughout the entire investigation process and will be adequately documented (e.g. field notes, photographs, observations, etc.) by qualified personnel.

Describe how source is to be removed

The presence of impacts has not been determined at this point. No impacts have been observed to date or any indication that would suggest there has been an event that would result in impact to the surrounding environment. However, should contamination be encountered the following actions will be taken:

- Any spill or release will be reported via Form 19 and in accordance with Rule 906 and remediation shall be performed in accordance with requirements specified in Rules 909 and 910.
- Notification and consultation with affected surface owner(s) shall be made with good faith effort and accordance with Rule 906.c.
- Should a release be identified and attributed to the contents of the partially buried tank, the impacted area will be:
 - Excavated in which field screen instruments will guide the excavation and laboratory confirmation samples collected to demonstrate compliance with Table 910-1 of the COGCC 900 series rule; and
 - Placed within a lined bermed containment cell pending remediation and disposal options described below.
- All tank contents will be evacuated and managed in accordance with all applicable local, state [i.e. Rule 905.b.(2)] and federal regulations. If disposal is required, the relevant media will be disposed of at an approved facility.
- The potential source, a partially buried produced water tank, will be removed from the location.

Facility Name:
Facility ID#:

Name of Operator: Caerus Piceance LLC
Latitude: Longitude:
Location (QtrQtr, Sec, Twp, Rng, Meridian):

COGCC Operator #:10456
County: Garfield

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

The presence of impacts has not been determined at this point. No impacts have been observed to date or any other indication that would suggest there has been an event that would result in impact to the surrounding environment. However, should contamination be encountered the following actions will be taken:

- Any areas determined to be impacted/contaminated will be excavated and managed in accordance with all applicable rules and regulations regarding solid waste including applicable portion of COGCC Rule 907.
- Field screen equipment will be utilized to guide excavation activities to ensure compliance with Table 910-1 of the COGCC 900 series rule.
- The excavated material will be placed within a lined bermed containment cell pending the following options. Remediation and disposal options may include:
 - on-site landfarming/bioremediation,
 - in-situ remediation,
 - and/or disposal at an approved waste management facility as consistent with Rule 907.
- Disposal of impacted media will occur at an approved waste facility (i.e. ECDC Environmental).
- Final disposition will be dependent upon identified contaminants, containment concentration, land availability, landowner approval and waste volume.

If groundwater has been impacted, describe proposed monitoring plan

The presence of impacts has not been determined at this point. No impacts have been observed to date or any other indication that would suggest there has been an event that would result in impact to the surrounding environment. However, should it be observed or determined that groundwater impacts exist an appropriate site specific monitoring and remediation plan will be developed and submitted for approval.

- The monitoring and remediation plan will be developed to include, but is not limited to:
 - number of sample wells and/or points;
 - proposed location of sample wells and/or points;
 - sampling schedule;
 - analytical methods including analyte list;
 - monitoring scheme including endpoint; and
 - potential mitigation or remediation approaches if necessary [Rule 910 (4) E].

Describe reclamation plan

- The excavation will be reclaimed to the present grade of the location or to the approximate original contour of the landscape.
- As this is a working facility, there are currently no further plans to perform reclamation on the proposed action described above.

Attach Samples and analytical results taken to verify remediation of impacts

- The presence of impact has not been determined at this point; therefore, the need for further site investigation has not been determined at this time.

Facility Name:
Facility ID#:

Name of Operator: Caerus Piceance LLC
Latitude: Longitude:
Location (QtrQtr, Sec, Twp, Rng, Meridian):

COGCC Operator #:10456
County: Garfield

- A determination of whether further site investigation is required is pending field assessments and screening, which are to be confirmed by analytical results from an accredited laboratory (e.g. ALS Environmental).
- Final documentation of investigation and closure activities shall be submitted within thirty (30) days after conclusion of any and all remediation and reclamation activity and in accordance with all applicable sections and subsections of Rule 909.

Final disposition of E&P waste

- If the stockpiles volume is small enough to manage onsite, there is available are on location, concentrations are within a reasonable range to be remediated in a timely manner and the identified contaminants are conducive to bioremediation, landfarming or in-situ remediation may occur as approved and in accordance with Rule 907.
- Should the aforementioned attributes not exist or concentrations are not conducive to bioremediation, then off-site disposal will be the final disposition of all impacted material.
- If the latter option is taken, disposal will occur at an approved treatment, storage of disposal facility (TDS) which may include, but is not limited to the following facility:
 - ECDC Environmental LLC (East Carbon, Utah).
- Any soils requiring treatment that, once treated, fall below the allowable concentrations and levels outlined in Table 910-1 may be recycled and reused at Caerus facilities as fill material.

Facility Name:
Facility ID#:

Name of Operator: Caerus Piceance LLC
Latitude: Longitude:
Location (QtrQtr, Sec, Twp, Rng, Meridian):

COGCC Operator #:10456
County: Garfield

ANNEX A:

Confirmation Analyte List for Potential Contaminants of Concern in Soil:

Table 1 – Sample collection, handling, and analysis summary

Analyte Class	Analysis	Method	Table 910-1 Standard	Holding Time	Container
Organics	TEPH (DRO)	SW8015 mod	500 mg/kg	14 days	4 oz. wide mouth jar
	TVPH (GRO)				
	BENZENE	SW8021	0.17	14 days	4 oz. wide mouth jar
	TOLUENE		85		
	ETHYLBENZENE		100		
	XYLENE TOTAL		175		
	ACENAPHTHENE	SW 8270	1,000 mg/kg	14 days	4 oz. wide mouth jar
	ANTHRACENE				
	BENZO(A)				
	ANTHRACENE				
	BENZO(B)		0.22mg/kg		
	FLUORANTHENE				
	BENZO(K)				
	FLUORANTHENE				
	BENZO(A)PYRENE		0.022 mg/kg		
	CHRYSENE		22 mg/kg		
	DIBENZO(A,H)		0.022 mg/kg		
	ANTHRACENE				
	FLUORANTHENE		1,000 mg/kg		
	FLUORENE				
	INDENO(1,2,3,C,D)		0.22 mg/kg		
	PYRENE				
	NAPHTHALENE		23 mg/kg		
	PYRENE		1,000 mg/kg		
Total Metals*	MERCURY	SW 6010, 6020, 7470	23 mg/kg	28 days for Hg & 180 days for remaining	4 oz. wide mouth jar
	ARSENIC		0.39 mg/kg		
	BARIUM		15,000 mg/kg		
	CADMIUM		70 mg/kg		
	CHROMIUM (III)		120,000 mg/kg		
	CHROMIUM (IV)		23 mg/kg		
	COPPER		3,100 mg/kg		
	LEAD (inorganic)		400 mg/kg		
	NICKEL (soluble salts)		1,600 mg/kg		
	SELENIUM		390 mg/kg		
	SILVER		390 mg/kg		
	ZINC		23,000 mg/kg		
Inorganics	Sodium Absorption Ratio (unitless)	USDA Hdbk 60 Method 20B or 3A	<12 ⁵	180days	1 gal. ziplock bag
	Electric Conductivity (mmhos/cm)	USDA Hdbk	<4mmhos/cm or 2x background	28 days	4 oz. wide mouth jar
	pH (unitless)	SW 9045	6-9	<24 hrs.	2 oz. wide mouth jar

General note: Preservation standards for organics and inorganics in soil are <4°C as per EAL protocol. Of the above sample methods and procedures, none require a preservative to preserve sample integrity.

Note (*): Boron (hot water soluble) has been excluded from the analyte list as no crops (citrus or nuts) or other vegetation which may be sensitive to boron are known or are expected to be encountered. Should the Director or COGCC EPS decide to, at his discretions, require a Boron analysis the above analyte list will be modified to reflect that change and requirement, at that point in time.



Caerus Piceance LLC
120 North Railroad Avenue
Suite D
Parachute, Colorado 81635

Chris Canfield, P.G.
Environmental Protection Specialist, Northwest Region
State of Colorado Oil & Gas Conservation Commission
796 Megan Avenue, Suite 201
Rifle, CO 81650

18 October 2013

RE: Removal of Partially Buried Vaults: Phased Approach

Summary

Caerus Piceance LLC (CAERUS) is in process of evaluating and ultimately determining the feasibility of continued utilization of partially buried vaults (in-ground tanks) throughout the Piceance District lease holdings. In-ground tanks allow CAERUS to operate effectively and efficiently during winter months. The in-ground tanks offer the ability to store produced water in a vessel that offers protection from freezing. This ultimately reduces the environmental risk of uncontrolled releases of hydrocarbons due to freezing of water. However, Caerus recognizes the directive from the Environmental Protection Agency (EPA) and Colorado Oil and Gas Conservation Commission (COGCC) regarding the use of in-ground tanks by the oil and gas industry. As it is not economically feasible to discontinue use, abandon, remove and remediate all in-ground tank locations, CAERUS would like to take a phased approach to complying with the directives at the federal and state level. CAERUS is proposing the following phased approach to tank evaluation and removal.

Phase I: Hydrostatic Integrity testing of tanks

Starting in 2012, CAERUS will begin testing in-ground tanks that are currently in service and tanks that have been temporarily removed from service that offer economic and environmental benefit by being placed back into service. Testing of tanks will be conducted in this manner:

- Inspection of visible portions of that tank will be performed.
- Tanks will be filled to the maximum level with fluid:
 - Tanks currently in service will be filled with like liquids (i.e. produced water).
 - Tanks that are not in service will be filled with fresh water from Logan Mesa or from Parachute Creek.
- Tanks will be shut in and isolated from further fluid introduction.
- An initial gauge strap will be collected by the field operator for the location and one other field personnel.
- The tank will be left isolated for 24 hours.
- The same two field personnel will re-gauge that tank after the 24-hour period.
- Strap measurements will be recorded and submitted to the field EHS Professional for record keeping.
- Tanks that demonstrate no net loss of fluid will be allowed to continue in service or will be evaluated for replacement to service.
- Tanks that demonstrate a net loss of fluid will be shut in for another 24-hours and re-gauged.
 - If the tank does not show a net loss after the second 24-hour period, evaluation of testing and measurement protocols will be evaluated for that particular case
 - If continued fluid loss is observed, the tank will be removed from service or remain out of service and appropriate action will be followed including reporting of the incident to the COGCC.

Upon completion of integrity testing of all in-ground tanks, CAERUS will begin planning removal of tanks starting in 2013. CAERUS will also continue to annually hydrostatic integrity test all in-ground tanks that will be in service from the conclusion of the 2012 hydrostatic integrity testing season. Tanks that are currently out of service and that will not be placed back in to service will move to a decommissioned state and will be scheduled for removal. This concludes Phase I.

Phase II: Identification and removal of Partially Buried Vaults

CAERUS will take the results from the 2012 integrity testing and compile a working list of tanks scheduled for removal. Recognizing that it would be economically in-feasible to remove all in-ground tanks in one year; CAERUS will conduct removal of tanks over a two year time frame. Beginning in 2013, CAERUS will begin removal of in-ground tanks. Each year, CAERUS will submit a Form 4 Sundry to the COGCC listing the tanks scheduled for removal that year:

- Tanks to be removed under this closure plan:
 - Garden Gulch Compressor Station tank Battery and Parachute Creek 9 concurrently
 - Parachute Creek 7
 - Chevron 41-8D
 - Parachute Creek 6
 - Parachute Creek 12
 - Parachute Creek 3
 - Parachute Creek 4
 - Parachute Creek 1
 - Garden Gulch 1
 - Garden Gulch 3
 - Garden Gulch 7
 - Garden Gulch 5
 - Garden Gulch 6
 - Mesa 1
 - Puckett 246-1
 - Starkey 4
 - Starkey 7
 - Unocal 4
 - Any PBV that fails hydrostatic testing

Any discovered contamination of soils will be reported to the COGCC.

At the conclusion of the removal project, CAERUS will re-evaluate the remaining in-ground tanks that are currently in-service for feasibility of continued service or decommissioning and removal.

Phase III: Remediation

The success of this program and economic viability is dependent upon the approval of and utilization of the proposed CAERUS Soil Treatment Facility. Given the timeframe for in-ground tank removal and remediation, in-situ processes are too slow and expensive for this project. CAERUS will utilize excavation and land treatment at the soil treatment facility or on location dependent upon contaminated soil volume. All contaminated soil will be analyzed for base line contamination, an aggressive treatment prescription developed and then implemented. All remediation activity will be reported to the COGCC and conducted by a third party contractor. Once the soils have been remediated, the soils will be replaced in an excavation. It is not guaranteed that the soil removed from a location will be replaced at the same location. By the use of the soil treatment facility, CAERUS will have a rolling inventory of soil available for replacement so no open excavations are left for an extended period of time.

Once an excavation has been completed, CAERUS will file the appropriate documentation with the COGCC requesting closure for that particular location.

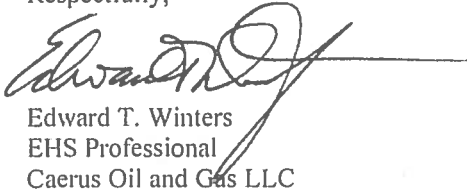
CAERUS reserves that right to keep all remediation options available. These can include in-situ to disposal. Parameters that will dictate this is soil volume from a location versus monthly throughput at the soil treatment facility, vertical depth of contamination and any other variables not identified at this point.

Phase II and Phase III will run concurrently during this project.

Conclusion

CAERUS believes that this phased approach is the most economical and effective way of implementing this program while offering maximum protection to the environment. If I can answer any further questions, please feel free to contact me.

Respectfully,

A handwritten signature in black ink, appearing to read 'Edward T. Winters', with a long horizontal line extending to the right.

Edward T. Winters
EHS Professional
Caerus Oil and Gas LLC
970.285.9606
970.319.0498
ewinters@caerusoilandgas.com