



State of Colorado
Oil and Gas Conservation Commission

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



RECEIVED	
FOR OGCC USE ONLY	
APR 30 2015	
COGCC	
OGCC Employee	
<input type="checkbox"/> Spill	<input type="checkbox"/> Complaint
<input type="checkbox"/> Inspection	<input type="checkbox"/> NOAV
Tracking No:	

SITE INVESTIGATION AND REMEDIATION WORKPLAN

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

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☒ Site/Facility Closure ☒ Other (describe): Form 15 Pit Closure

OGCC Operator Number: <u>10150</u>	Contact Name and Telephone: <u>Jessica Donahue</u>
Name of Operator: <u>Black Hills Exploration and Production</u>	No: <u>720-210-1333</u>
Address: <u>1515 Wynkoop St</u>	Fax: _____
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80202</u>	
API Number: <u>N/A</u> County: <u>Mesa</u>	
Facility Name: <u>Winter Flats / 10-43-99</u> Facility Number: <u>Pit Facility ID# - 430117</u>	
Well Name: <u>N/A</u> Well Number: <u>N/A</u>	
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>NESE, Sec 10, 9S, 99W</u> Latitude: <u>39.284326</u> Longitude: <u>-108.419341</u>	

TECHNICAL CONDITIONS

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

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

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Non-Crop Land - Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Barx Loam, 3 to 12 percent slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): One (1) ephemeral drainage is located approximately 860 feet to the west, and one (1) ephemeral drainage is located approximately 1085 feet to the northeast.

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>Unknown until liner system is removed</u>	<u>Visual/Field Instruments</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

REMEDIALTION WORKPLAN

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

See attached for details.

Describe how source is to be removed:

See attached 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 for details.



REMEDIAL WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: 10150
OGCC Operator No: _____
Received Date: 4/30/15
Well Name & No: Winte flats 10-43-99
Facility Name & No: 430117

OGCC Employee: _____

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

See attached pit closure plan 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 pit closure plan 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 pit closure plan for details.

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

See attached pit closure plan for details.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: TBD / 5 Date Site Investigation Completed: TBD Date Remediation Plan Submitted: TBD
Remediation Start Date: TBD Anticipated Completion Date: TBD Actual Completion Date: TBD

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

Print Name: Jessica Donahue

Signed: J. Donahue

Title: Black Hills Exploration and Production

Date: 4/29/15

OGCC Approved: [Signature] Title: Env. Sup. Date: 4/30/15

COA's: Provide actual Latitude and Longitude for Pit Facility, ID: 430117.

By June 1, 2015 Provide Implementation Schedule.

FORM 27 ATTACHMENT:

Describe initial Action taken:

- All fluids within the pit located on the Winter Flats 10-43-99 will be removed and disposed at an approved waste disposal facility.
- ✓ • The pit liner(s) will be removed in sections and the underlying layers will be examined by a qualified and trained professional. Each layer will be evaluated for evidence of contamination to aid in identifying if the liner system leaked or was faulty.
- ✓ • The bottom of the pit will be divided into four (4) equal quadrants, as well as each side segregated into two (2) quadrants, dividing them in half.
- ✓ • Within each quadrant, field-screening will be performed and will utilize appropriate field equipment which may include, but is not limited to the following.
 - a PetroFlag unit,
 - a photoionization gas detector (PID),
- Confirmation sample(s), Rule 905.b.(4), will be collected and submitted for lab analysis and verification from each quadrant to confirm compliance with Rule 910 and Table 910-1 (reference to specific analytes is provided below) relative to the aforementioned field screen activity.
- Other areas of the pit walls and floor will be inspected for evidence of impact via field screening and visual observation. Grab samples will be collected from areas of concern, as appropriate, 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 Notice of Completion (NOC) report.
- A visual assessment will be performed throughout the entire investigation process and will be adequately documented (e.g. field notes, observations, photographs, 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 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 spill or release will be reported via a 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 the affected surface owner(s) shall be made with good faith effort and in accordance with Rule 906.c.
- Should a release be identified and attributed to the contents of the pit, the impacted area will be:
 - Excavated in which field screen instruments will guide the excavation. Once field screening results indicate compliance with COGCC Table 910-1 standards,

laboratory confirmation samples will be collected to demonstrate compliance with COGCC 900-series rule; and

- All excavated material will be placed within a lined and bermed containment cell pending remediation and disposal option described below.
- All pit 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 a properly permitted and approved facility.
- The potential source - Production Pit - will be closed and reclaimed in accordance with the COGCC 900 and 1000 series rules, as well as COA's listed on the Form 15, respectively.
- The stockpiled synthetic liner will be removed either recycled/reused or disposed of at an approved facility as a solid waste and in accordance with Rule 905.b.(3).

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, in-situ bioremediation, burning of oily vegetation, etc.:

The presence of impact 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 area(s) 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 used to guide the excavation to ensure compliance with Table 910-1 of the COGCC 900 series rule.
- The excavated material will be placed within a lined and bermed containment cell pending the following options. Remediation and disposal options may include:
 - on-site landfarming/bioremediation,
 - 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. Garfield County Landfill, ECDC Environmental, Reams Construction) further defined in the "Final disposition of E&P waste" below.
- Final disposition will be dependent upon identified contaminants, contaminant concentration, land availability, landowner approval and waste volume.

If groundwater has been impacted, describe proposed monitoring plan:

- 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 may not be limited to,
 - number of sample wells and/or points;
 - proposed location of sample wells and/or points;
 - sampling schedule;
 - analytical methods including analyte list(s);
 - monitoring scheme including end point; and
 - potential mitigation or remediation approaches if necessary [Rule 910 (4) E].

Describe reclamation plan:

- The pit will be reclaimed to the present grade of the location or to the approximate original contour of the landscape and consistent with the 1000 series Rule.
- Seeding of the disturbed area will be performed in accordance with its' intended use. The seed mix will be prescribed by the landowner.
- There are no known noxious weeds in the immediate area of the disturbance.
- As a preventative measure, Black Hills seeds all disturbed areas as soon as practicable with temporary or sterile annual seed mixes to:
 - provide soil stability, and
 - serve as a nurse or cover crop for desired species; derived from the natural seed bank and/or the applied seed mix.
- Bare ground treatment is a common practice by Black Hills and any identified noxious weed species will be spot treated for immediate eradication and prevention of encroachment and dispersal.
- A plat of the location is attached for topographic and geographic reference.

Attach samples and analytical results taken to verify remediation of impacts. Show location of samples on an onsite schematic or drawing. Is further site investigation required?:

- 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.
- A determination of whether further site investigation is required and is pending field assessments and screening, which are to be confirmed by analytical results from an accredited - NELAP - laboratory (e.g. ALS Group Analytical Laboratory).
- Final documentation of investigation and closure activities shall be submitted to the Division 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 stockpiled volume is small enough to manage on-site, and there is available area 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.

Rem # _____
OGCC # _____

Facility Name: Winter Flats 10-43-99
Location Facility ID# 312743
Pit Facility ID# 430117

Name of Operator: Black Hills Production LLC
Latitude: 39.284326 Longitude: -108.419341
Location: NESE, Sec 10, T9S, R99W, 6th PM

COGCC Operator # 10150
County: Mesa

- 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 materials.
- If the latter option is taken, disposal will occur at an approved treatment, storage or disposal facility (TSD) which may include, but is not limited to, the following facilities:
 - West Garfield County Landfill (045-LFL-005; Parachute, CO);
 - ECDC Environmental LC, (East Carbon, UT)
 - Reams Construction (Naturita, CO)

Rem # _____
OGCC # _____

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COGCC Operator # 10150
County: Mesa

ANNEX A:

Confirmatory Analyte List for Potential Contaminants of Concern in Soil:

Table 1 – Sample collection, handling and analysis summary

Analyte Class	Analysis	Method	COGCC Table 910-1 Standard	Holding Time	Container
Organics	TVPH (GRO)	SW8015 mod	500 mg/kg	14 days	4 oz. wide mouth jar
	TEPH (DRO)				
	Benzene		0.17 mg/kg		
	Toluene		85 mg/kg		
	Ethylbenzene	SW8021	100 mg/kg	14 days	4 oz. wide mouth jar
	Xylenes (total)		175 mg/kg		
	Acenaphthene		1,000 mg/kg		
	Anthracene				
	Benzo (A) anthracene	SW8270	0.22 mg/kg		
	Benzo (B) flouranthene				
	Benzo (K) flouranthene				
	Benzo (A) pyrene			14 days	4 oz. wide mouth jar
	Chrysene		0.022 mg/kg		
	Dibenzo (A,H) anthracene		22 mg/kg		
	Fluoranthene		0.022 mg/kg		
	Fluorene		1,000 mg/kg		
Inorganics	Indeno (1,2,3,C,D) pyrene		0.22 mg/kg		
	Naphthalene		23 mg/kg		
	Pyrene		1,000 mg/kg		
	Electrical Conductivity	USDA Hdbk	<4 mmhos/cm or 2x background	28 days	4 oz. wide mouth jar
	Sodium Adsorption Rate	USDA Hdbk 60 Method 20B or 3A	<12	180 days	1 gal. ziplock bag

Rem # _____
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COGCC Operator # 10150
County: Mesa

pH	SW9045	6-9	< 24 hrs.	2 oz. wide mouth jar
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Table 1 Cont'd - Sample collection, handling and analysis summary

Analyte Class	Analysis	Method	COGCC Table 910-1 Standard	Holding Time	Container
Total Metals*	Arsenic	SW 6010, 6020, 7470	0.39 mg/kg	28 days for Hg & 180 days for remaining	4 oz. wide mouth jar
	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		
	Mercury		23 mg/kg		
	Nickel (soluble salts)		1,600 mg/kg		
	Selenium		390 mg/kg		
	Silver		390 mg/kg		
	Chloride		15,000 mg/kg		

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 this 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 discretion, require a Boron analysis the above analyte list will be modified to reflect that change and requirement, at that point in time.

Rem # _____
OGCC # _____

April 27, 2015

Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
WQCD-P-B2
Denver, CO 80246-1530

*Note: This correspondence
was attached to the
Jan 27 for Winter Flats
10-43-99
Final LID 4/30/17
JST
4/30/15*

RE: De Beque Water Station Colorado Discharge Permit System (CDPS)

Dear Water Quality Division:

On behalf of Black Hills Plateau Production, WWC Engineering is submitting a Colorado Discharge permit application for the De Beque Water Station project for review. The De Beque Water Station project is a proposed production water reuse and raw water facility that will conserve water by recycling flow-back and produced water for reuse in well stimulations or drilling. The project is located in the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 29, Township 8 South, Range 97 West, 6th P.M. as can be seen on Exhibit 1 – Location Map. The overall proposed De Beque Water Station project will consist of the construction of a pump house, site grading, storm water drainage measures, access roads, an office building and parking lot, fencing, and three produced water storage ponds. This project will be phased with the first phase consisting of one produced water pond (Pond 1), access roads, and storm water drainage measures. Phase 2 will consist of constructing an office building, pump station building and piping infrastructure for Pond 1 operation. Phase 3 will consist of constructing Ponds 2 and 3 separately. A detailed site layout is shown on Exhibit 2.

As part of the first phase of the project, Pond 1 is currently being constructed. The pond has recently been filled with water from the Colorado River in order to perform a hydrostatic leak test of the HDPE liner as required by the Colorado Oil and Gas Conservation Commission (COGCC). In order to facilitate operation of the facility and to finalize construction by installing a bird deterrent system on the pond, the pond will be required to be drained in order to install the bird deterrent system prior to operation.

Pond 1 currently contains approximately 12.8 million gallons of water from the Colorado River that will need to be discharged. The proposed discharge plan would be to utilize a portable 500 gpm pump. This would take approximately 18 days to pump the water from the pond. The water would be pumped into a constructed drainage ditch on the east side of the pond. During this discharge additional erosion control measures will be implemented by installing rock wattles across the full width of the drainage ditch. This ditch would convey the water to a constructed detention pond. The detention pond would allow any collected sediment to settle out before the water would flow out of the detention pond spillway into the natural drainage. The natural drainage would convey water approximately 1.2 miles before reaching the Colorado River. This drainage was modeled as part of the Hazard Classification Report approved by the Colorado Division of Water Resources. Copies or extracted information from this report are available upon request.

April 27, 2015

Page 2 of 2

A CDPS permit and exhibits are included with this submittal to provide the detailed site plan and the anticipated discharge path to the Colorado River. It is our sincere hope that the requirements have been adequately addressed and that the **Colorado Discharge Permit Application** be approved as soon as possible. Please do not hesitate to contact us should you have any further questions or require additional clarification. Please contact Drew Pearson at 406-443-3962 with WWC Engineering should further questions arise.

Sincerely,



Shawn Higley, P.E.,
Helena Branch Manager

SH/kg

Enc.: As Noted

cc: Black Hills Plateau Production & File