

State of Colorado Oil and Gas Conservation Commission

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FOR OGCC USE ONLY

Document Number:

401096530

Date Received:

09/20/2016

INJECTION WELL PERMIT APPLICATION

Submit a completed Form 33 with or after approval obtained on Form 31 (Underground Injection Formation Permit Application) or you must have a previously approved injection Well Permit.

1. Operator may not commence injection into this well until this form is approved.
2. Each individual injection well must be approved by this form.

Per Rule 325, this form shall be submitted with all required attachments.

A Form 33 – Intent shall be submitted and approved prior to completing an injection zone.

A Form 33 – Subsequent shall be submitted following completion of the well and must be approved prior to injection.

NOTE: Injection for Enhanced Recovery requires the field to be unitized according to the 400 Series Rules. Injection for Disposal into a producing field requires unitization of the formation in the field.

Form 33 Type ☒ Intent ☐ Subsequent

OPERATOR INFORMATION

OGCC Operator Number: 10580	Contact Name and Telephone:
Name of Operator: EXPEDITION WATER SOLUTIONS COLORADO LLC	Name: Jeremiah Demuth
Address: 1023 39TH AVENUE SUITE E	Phone: (303) 290-9414 Fax: ()
City: GREELEY State: CO Zip: 80634	Email: jdemuth@petrotek.com

WELL INFORMATION

Well Name and Number: EWS 3A API No: 05-123-43880-00
 Field Name and Number: WATTENBERG 90750 County: WELD
 QtrQtr: SWNW Sec: 23 Twp: 4N Range: 66W Meridian: 6

UIC FACILITY INFORMATION

UIC Facility ID: 159469 (as assigned on an approved Form 31)
 Facility Name: EWS Facility Number: 3 UIC

WELLBORE INFORMATION

Casing Type	Size of Hole	Size of Casing	Wt/Ft	Csg/Liner Top	Setting Depth	Sacks Cmt	Cmt Btm	Cmt Top	Status

Plug Back Total Depth: 12786 Tubing Depth: 10990 Packer Depth: 10950

List below all Plugs, Bridge Plugs, Stage Cementing or Squeeze Work performed on this wellbore:

There will be a stage tool in the 1st string at 6,829 feet MD. Cement will be placed from 11,024 feet MD to 6,829 feet MD, and 6,289 feet MD to surface.

Describe below any changes to the wellbore which will be made upon conversion (includes but not limited to changes of tubing and packer setting depths, any additional squeeze work for aquifer protection or casing leaks, setting of bridge plugs to isolate non-injection formations).

WELLBORE COMPLETIONS

Formation Name	Gross Completed Interval from Top	Gross Completed Interval from Bottom	Completion Type
ADMIRE	11862	11888	Open Hole
AMAZON	11676	11742	Open Hole
COUNCIL GROVE	11742	11862	Open Hole
FOUNTAIN	12451	12786	Open Hole
LOWER SATANKA	11226	11541	Open Hole

LYONS	11021	11226	Open Hole
MISSOURI	12299	12451	Open Hole
VIRGIL	11888	12299	Open Hole
WOLFCAMP	11541	11676	Open Hole

Operator Comments:

The estimated bottom of the Fountain Formation in this well is 10,647 feet (true vertical depth). The estimated true vertical depth of the EWS 3A well is 10,226 feet. The well will penetrate an estimated 238 feet of Fountain while remaining 421 feet from the base of the Fountain Formation and 445 feet from the top of basement based on the EWS 3 logs.

Following paragraph is copied from Form 31 Document # 401096527 Submittal:

"Expedition Water Solutions respectfully requests that water samples not be required from the EWS 3A due to its proximity to the EWS #3 (05-123-37120). The top of the injection zone in the EWS 3A will be approximately 5,280' from the EWS 3. The EWS 3 well acquired water samples in all the same formations as permitted for injection in the EWS 3A and no water samples obtained had a TDS of less than 17,410 mg/L. No sample was obtained in the Missouri Formation, and logs from the EWS 3 well indicate that obtaining a sample from this formation is likely impossible due to low porosity. One well where a sample was recovered from the Missouri and Virgil formations was the NGL C4A well (05-123-35841) which recovered a sample containing 155,882 mg/l TDS. The C4A well is approximately 12 miles NNE of the EWS 3A location."

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

Print Name: Jeremiah Demuth

Signed: _____ Title: Engineering Technician Date: 9/20/2016 8:33:12 PM

OGCC Approved:  _____ Title: _____ Date: 12/20/2016 1:18:00 PM

MAX. SURFACE INJECTION PRESSURE: _____ **If Disposal Well, MAX. INJECTION VOL. LIMIT:** _____

CONDITIONS OF APPROVAL, IF ANY:

COA Type

Description

	1.Injection is not authorized until approval of Subsequent Form 33. 2.PRIOR TO PERFORMING OPERATIONS: Operator is required to contact COGCC to discuss Step Rate Test or Injectivity Test criteria for Maximum Surface Injection Pressure determination. Prior approval of Form 4 is required for step rate and injectivity tests. 3.PRIOR TO PERFORMING OPERATIONS: Approval of Form 4 is required for acid and fracturing jobs. (New as of 4/13/2016). 4.Retrieve water sample(s) from injection zone(s) before stimulating formation. Samples must be analyzed for Total Dissolved Solids at a minimum. 5.For ALL NEW DRILL UNDERGROUND INJECTION WELLS a suite of open-hole Resistivity/Gamma Ray and Density/Neutron logs IS REQUIRED from Surface Casing shoe to TD. A PDF, TIFF, or PDS visual image and a LAS or DILS file version of each log is required. 6.For all new and converted Underground Injection Control wells a Cement Bond Log (CBL) is required on the cased portions of the hole from the bottom of the casing to the top of the next shallower casing string for all casing strings other than the Surface Casing. Only a PDF, TIFF, or PDS visual image is required. 7.Operator must provide all tops of formations encountered from surface to TD on the Form 5 when submitted.
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Attachment Check List

<u>Att Doc Num</u>	<u>Name</u>
401096530	FORM 33-INTENT-SUBMITTED
401102726	OFFSET WELL EVALUATION
401105195	LIST OF WATER WELLS ¼-MILE
401105260	REMEDIAL CORRECTION PLAN FOR WELLS ¼-MILE
401105367	NOTICE TO SURFACE & MINERAL OWNERS
401106973	WELLBORE DIAGRAM-PROPOSED
401106976	MAP OF O&G WELLS IN AREA OF REVIEW
401106977	MAP OF SURFACE OWNERS ¼-MILE
401115354	MAP OF MINERAL OWNERS ¼-MILE
401115358	LIST OF MINERAL OWNERS ¼-MILE
401115359	LIST OF SURFACE OWNERS ¼-MILE
401115360	SURFACE FACILITY DIAGRAM
401115361	CERTIFIED MAIL RECEIPT(S)
401115362	WELLBORE DIAGRAM-PROPOSED
401165687	LIST OF O&G WELLS 1/2-MILE
401166484	OFFSET WELL EVALUATION
401170871	Proof of Publication-General Announcement.
401170873	ANALYSIS OF INJECTION ZONE WATER

Total Attach: 18 Files

General Comments

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>
UIC	Operator Proposed Daily Injection Rate Range: 10,000 to 15,000 bbl/day. Operator Proposed Surface Injection Pressure Range: 2,200 to 2,600 psi.	12/20/2016
UIC	Proposed Injection Program copied from Form 31 Doc # 401096527: "The EWS 3A well will be drilled at the already existing EWS 3 facility. The facility currently serves the Greater Wattenberg and surrounding fields. Water will be trucked to the location, separated from hydrocarbon and sediment residue as needed, and injected. Maximum rate and pressure will be determined by a step-rate test to be done once the well is completed."	12/20/2016
UIC	Operator is the Surface Owner. No Surface Use Agreement is needed.	12/20/2016
UIC	Examination of the Area of Review Table in eForm reveals that the assertion of the Remedial Correction Plan (Doc 401105260) no O&G wells within 1/2-mile of the EWS-3A well penetrate the Lyons or underlying formations is correct. The only well penetrating the Lyons is the EWS-3 sister well.	12/20/2016
UIC	COGCC examined the original eForm Area of Review Table, saved as Offset Well Evaluation (Doc 401102726) and made updates and rare corrections. A. The Colorado Division of Water Resources; Denver Basin Aquifer - Specific Location Determination Tool, was used to calculate the Depth of Base of Aquifer = base of Laramie-Fox Hills aquifer. This data replaced the Depth of Aquifer data supplied by the operator derived from logs or permits. The "Tool" provided a more consistent and somewhat shallower bottom of the Aquifer. B. All wells either had CBLs or cementing data so where the COGCC Scout Card said that the TOC for the Production Casing was either 0 or was left blank a TOC was added from the CBL or by calculation. C. In the UPRR 21 Pan Am F 1 (123-09387) only 9 ft separate the base of the Laramie-Fox Hills aquifer @ 222 ft and base of surface casing @ 231 ft. COGCC believes that the two wells do not pose a threat for cross-contamination of groundwater because the EWS 3A will be cased to the surface, the Pan Am F 1 is 1/4-mile from the EWS-3A well path which passes below the TD of the Pan Am F1 @ 4567 ft, and the surface locations and vertical surface casings are separated by slightly over 1/2-mile. D. The Schwab 26-4F production casing TOC (@ 4180 ft) is below the top of the Sussex Formation (@ 4162 ft) a former production zone. COGCC does not believe there is danger of cross-contamination because the EWS-3A well path is about 0.44 miles from the Schwab 26-4F, the Sussex perms in the Schwab 26-4F at 4437-4452 ft are covered by 257 ft of cement, and the Sussex perforations were squeezed with 150 sacks on 11/30/2001.	12/20/2016
UIC	COGCC agrees that the injection zone water analyses as described in the Submittal Comment by the Operator will be acceptable for the EWS-3A UIC application.	12/20/2016
UIC	Moved Documents submitted for Form 31 Doc # 401096527 to Form 33 Doc # 401096530. Form 31 is not needed and if approved would have generated a new UIC Facility ID # that would not be used. This well, EWS-3A, is being appended to existing UIC Facility # 159469 so only a Form 33 is needed. Facility being changed from Single Well to Multiple Well.	12/20/2016
UIC	Updated Form 33 with Conductor information from Sundry 401156346.	11/29/2016

Total: 8 comment(s)