



DEPARTMENT OF NATURAL RESOURCES

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February 16, 2011

Ms. Catherine Dickert  
Environmental and Permitting Manager  
SG Interests I, Ltd.  
P.O. Box 26  
Montrose, CO 81402

Re: Review of Form 28 Centralized Exploration & Production (E&P) Waste Management Facility  
Permit Application  
Facility ID #421065  
McIntyre Flowback Pits #1 and #2  
SWNW Section 24 and NESE Section 23, T11S, R90W, 6<sup>th</sup> PM, Gunnison County, Colorado

Dear Ms. Dickert:

The Colorado Oil and Gas Conservation Commission (COGCC) has completed a review of SG Interest's December 21, 2011, submittal of the above referenced permit application, for COGCC facility ID #421065. On future submittals as it relates to this facility, please reference this Facility ID. Form 28 item numbers 1, 2, 3, 4, 5, 8, and 16 were determined to be adequate. The, following are the primary deficiencies, organized by the order in which they appear on the subject Form 28 and Form 28 Supplement, which may require revision and/or additional information:

**Form 28, Attachment Checklist.**

Local government zoning compliance, permits and notice will be required to be submitted to the COGCC prior to approval of the application and commencing construction of the proposed facility. Please provide any permits or notifications to and from Gunnison County, the Colorado Department of Public Health and Environment (CDPHE), the Colorado Division of Water Resources (DWR), and any other agencies, if required. If a variance to COGCC Rule 908.h. will be requested, the variance must be submitted and approved by the COGCC prior to commencing construction of the proposed facility.

**Form 28, Question 6. Has a site plan showing drainage patterns, diversion or containment structures, roads, fencing, tanks, pits, buildings and any other pertinent construction details been attached? Answer: Yes.**

Diversion structures on the Construction Layout conflict with those shown on the Site Plan contained in the Storm Water Management Plan (SWMP). Please resolve the discrepancy. Access roads and ditches are not presented in the plan. Please show pipelines on the plans.

**Form 28, Question 7. If site is not owned by the operator, is written authorization of the surface owner attached? Answer: No.**

Provide basis by which permission to construct the facility is granted by the surface owner.

**Form 28, Question 9. What measures have been implemented to limit access to the facility by wildlife, domestic animals or by members of the public? Answer: Narrative.**

Describe in diagrams or narrative how the proposed perimeter fence meets the requirements of Rule 908.b.(5)C. Specifically, describe site security measures for both during and after operating hours and how illegal access and illegal activities will be prevented. Provide details of fence and gate (e.g. type, materials, construction specifications, locks, and cattle guard).

**Form 28, Question 10. Is there a planned fire lane of at least 10 feet in width around the active treatment areas and within the perimeter fence? Answer: Yes.**

The Construction Layout drawing included in the Engineering Data supplement shows an inadequate fire lane at the northeast corner of proposed Flowback Pit #2. Additionally, it is unclear whether an adequate fire lane is provided around the south and east sides of the same pit due to the planned cut.

**Form 28, Question 11. Is there an additional buffer zone of at least 10 feet within the perimeter fire lane? Answer: Yes.**

The Construction Layout drawing included in the Engineering Data supplement shows an inadequate buffer zone at the northeast corner of proposed Flowback Pit #2. Additionally, it is unclear whether an adequate buffer zone is provided around the south and east sides of the same pit due to the planned cut.

**Form 28, Question 12. Have surface water diversion structures been constructed to accommodate a 100-year, 24-hour event? Answer: Yes.**

Show design calculations for sedimentation ponds. Describe erosion protection for roads, ditches, inlets and outlets of culverts, and cut and fill slopes.

**Form 28, Question 13. Has a waste profile been calculated according to Rule 908.b.6? Answer: Yes.**

Waste acceptance criteria have not been established. Laboratory data is provided, but there is no discussion or evaluation of the laboratory data. Please provide a summary and discussion of the laboratory data. Please define the waste acceptance criteria for the facility.

**Form 28, Question 14. Has facility design and engineering been provided as required by Rule 908.b.7? Answer: Yes.**

Design and engineering has been provided, but there are deficiencies. Please see comments below.

**Form 28, Question 15. Has an operating plan been completed as required by Rule 908.b.8? Answer: Yes.**

An operating plan has been provided, but some clarifications are required. Please see comments below.

**Form 28, Question 17. Has financial assurance been provided as required by Rule 704? Answer: Yes.**

The amount indicated (\$166,089) does not appear adequate to ensure proper reclamation, closure, and abandonment as set forth in Rule 908.g. Please see response to: Form 28 Supplement, Rule 908.g.(1). A. and B. below.

**Form 28, Question 18. Has a closure plan been provided? Answer: Yes.**

As specified in Rule 908.g.(1)A., please discuss post-closure monitoring, and address the potential for further remediation, if impacts from the facility are found during closure. Further, soil from the staging

area should be evaluated during the closure process. Please see response to: Form 28 Supplement, Rule 908.g.(1). A. and B. below.

**Form 28, Question 19. Have local government requirements for zoning and construction been complied with? Answer: Not Checked.**

Please check the appropriate box "Yes" or "No." Documentation showing that local government requirements for zoning and construction have been complied with will need to be provided to the COGCC prior to approval of the application and construction of the proposed facility. Please provide any permits or notifications from Gunnison County, the CDPHE, DWR, and any other agency, if required.

**Form 28, Question 20. Have permits and notifications required by local governments and other agencies been provided? Answer: No.**

Please provide verification of notifications submitted to Gunnison County. Permits from Gunnison County, the CDPHE, DWR, and any other agency, if required, or a variance from the requirements of Rule 908.h. shall be provided to the COGCC prior to approval of this application and construction of the proposed facility.

**Form 28 Supplement, Rule 908.b.(2).**

Please provide written authorization from the surface owner for the construction and operation of the proposed facility.

**Form 28 Supplement, Rule 908.b.(5).A.**

Details of access road, from point of departure from existing roads should be included. Access road ditches are not shown. Please present the access roads and associated ditches using contours on the plan view or otherwise ensure that the road and ditch can be constructed as planned. Although generalized pumps are shown on the construction layout diagrams, no details of pumps or buildings are provided.

**Form 28 Supplement, Rule 908.b.(5).C.**

Describe in diagrams or narrative how the proposed perimeter fence meets the requirements of Rule 908.b.(5)C. Specifically, describe site security measures for both during and after operating hours and how unauthorized access and activities will be prevented. Provide details of fence and gate (e.g. type, materials, construction specifications, locks, and cattle guard).

**Form 28 Supplement, Rule 908.b.(5).D.**

Please address the requirement for a 10-foot fire lane and an additional 10-foot buffer zone as discussed in Form 28 questions 10 and 11, above.

**Form 28 Supplement, Rule 908.b.(5).E.**

Show design calculations for sedimentation ponds. Describe erosion protection for roads, ditches, inlets and outlets of culverts, and cut and fill slopes.

**Form 28 Supplement, Rule 908.b.(6).**

Please provide a summary table of analytical data and discussion of data. Are these wells considered one waste stream, or multiple waste streams? Please provide a characteristic waste profile for each waste stream. Provide the expected rates per waste stream on a **monthly** average basis. Describe the acceptance criteria for the site. Describe whether all samples meet these criteria. Specify that sheen or free product is NOT allowed.

**Form 28 Supplement, Rule 908.b(7).B.i.**

The black and white figure found in Attachment H titled "McIntyre Flowback Pit 1- Water Bodies" and the 2009 aerial photo from the COGCC web site indicate several small ponds along unnamed drainages

throughout the two-mile radius of the proposed flowback pits, in addition to Aspen Leaf and Ault Reservoirs, Spring Creek, Roberts Creek, Ault Creek, Lee Creek, and East Muddy Creek. These features should clearly be identified on the attachment.

**Form 28 Supplement, Rule 908.b.(7).B.iii.**

Please provide a list of all water wells within a one-mile radius, including such details as total depth, screened intervals, and water level, and yield, as available. Although the application indicates that the water well with Permit #263115 could not be located in the field, please verify if this well was the source of the water sample labeled WQ 11-90-13 #2. If not, additional attempts should be made to locate and sample this well, or verify that it has been abandoned. Additionally, please discuss the water wells in the vicinity that are registered to SG Interests, and have been converted from oil and gas development (e.g. Permit #69958-F).

**Form 28 Supplement, Rule 908.b.(7).B.v.**

Discuss the site location in relation to the floodplain of nearby surface water, including East Muddy Creek and its tributaries.

**Form 28 Supplement, Rule 908.b.(7).B.vi.**

Two nearby groundwater sources were sampled for baseline conditions. According to data available on COGIS, there may be more groundwater wells within 1 mile of the boundaries of the facility. Please discuss all registered groundwater wells within 1 mile. Discuss the basis for not including the installation of shallow groundwater monitoring wells.

**Form 28 Supplement, Rule 908.b.(7).C.i.**

There is no statement of what quantity of liner, drain mat, or synthetic foundation material. Please provide the "*Type and quantity of material required for use as a liner*" as required by Rule 908.b.(7).C.i. Provide design details to be employed for the anchor trenches, including verification that the liner anchoring is adequate and/or that slippage will not occur between the soil and liner. Provide supporting calculations and information on the method of stabilization of the slopes. Please clarify the statement provided on the Construction Layout: "Extend synthetic liner 12" above finished pad grade around perimeter of all pits (typ.)" with respect to the construction of adequate anchor trenches.

Please clarify whether the pit capacities shown on the Construction Layout figure are total capacities or working capacities, accounting for free-board.

**Form 28 Supplement, Rule 908.b.(7).C.ii.**

Include the entire disturbed area in the provided cross-sections, such that the sedimentation basin(s), berms, staging areas, topsoil stockpiles, and access roads are included.

**Form 28 Supplement, Rule 908.b.(7).C.iii.**

It is preferable to present the ditches by actually grading into contour lines on the site plan. However, presenting the ditches as a line only is acceptable if care is taken with the layout to ensure that the ditches will drain properly, that there is adequate room to fit the ditches in as planned, and if the slopes of the ditch bottoms are noted on the plan view. Storm water best management practices (BMPs) indicated in the attached SWMP are inconsistent with the drainage plan provided. No indication of specific BMPs for the diversion ditches and culverts are provided. A 10% grade is indicated for the 24-inch corrugated metal pipe (CMP), with a design flow of 29 cubic feet per second (CFS). Please detail what protection measures (i.e. size, quantity and layout of rip-rap) will be taken at the outlet of the CMP to prevent erosional damage to the natural drainage.

Describe how the applicant will stabilize cut banks and fill slopes.

The attached SWMP indicates that topsoil will be stockpiled outside the boundaries of the perimeter fencing. Include topsoil stockpile area in the total disturbance area for the location, and provide details on the Construction Layout. Describe how the topsoil stockpile(s) will be stabilized. The topsoil volumes are based on 8" soil depth, per the Construction Layout, however, the Trautner Geotech LLC geotechnical report indicates that the unconsolidated soil depth at the location is 12 to 18 inches; please clarify the design basis with respect to this discrepancy.

Describe the construction of the proposed staging area including stabilization for the 8-foot high berm. Provide information that the construction of the 8-foot high berm is in compliance with requirements of the DWR, U.S. Army Corps of Engineers requirements, as applicable and provide copies of permits, if required.

**Form 28 Supplement, Rule 908.b.(7).C.iv.**

Provide details of the drainage system and sedimentation basin(s) including design, capacity, discharge, stabilization, and maintenance.

**Form 28 Supplement, Rule 908.b.(7).C.v.**

Details of access road, from point of departure from existing roads should be included. Access road ditches are not shown, nor are design details of diversion ditches. Please present the access road and ditches using contours on the plan view or otherwise ensure that the road and ditch can be constructed as planned.

Define record keeping for inspections of pipeline as described in the details of the Sensitive Area Pipeline Crossing. The Record Keeping section of the SWMP is inadequate to address daily monitoring, and no example was attached to the SWMP.

**Form 28 Supplement, Rule 908.b.(8).**

An operating plan is presented, and includes reference to all elements as required. However, the following clarifications to the operating plan should be provided:

1. Project Introduction:

- a. Please address the minimization of surface disturbance associated with the movement of temporary poly pipelines. Include a description of draining or purging fluids from the pipelines to prevent spills during movement.
- b. Describe the interface between the trailer mounted pumps and the pits. Include specifications of manifolds, discharge hoses and/or pipes, transfer of fluids between pits. Describe spill control measures including inspection, operations and maintenance of ecology rails. Describe spill control measures for truck loading/unloading, and provide manifold design description.
- c. The plan details for winterization of the facility are based on average annual precipitation. At a minimum the design standard should be based on a 25-year historical high annual precipitation, or other measures should be taken to address potentially higher precipitations than average.
- d. Due to potential inaccessibility during winter months, the COGCC recommends implementing a remote means of pit level monitoring, such as a pressure transducer with a telemetry system. The applicant should indicate a contingency plan for pit, pipeline and net monitoring if the location is inaccessible.
- e. Please specify that updates to the plan as recorded with the Facility Modification Checklist (FMC) will be provided to the COGCC with a Form 4, Sundry Notice.

2. A. Method of Treatment and Loading Rates:
  - a. Location and schematic of treatment units should be provided.
3. B. Dust and Moisture Control:
  - a. Disturbance area may not include topsoil stockpile areas. Disturbance area on each Form 2A is listed as 2.00 acres. Please confirm total area of disturbance and ensure consistency on all documents.
4. C. Sampling:
  - a. Confirmation of leaks in the primary liner system should be reported to COGCC immediately.
5. D. Inspection and Maintenance:
  - a. If water found in the leak detection system is confirmed to be from the pit contents, the primary liner breach must be reported immediately to the COGCC, and an action plan should be presented including what measures will be taken for mitigation.
6. F. Record Keeping:
  - a. Please state that all records will be made available to COGCC upon request.
7. E. Emergency Response:
  - a. Include a description of management of change for emergency response personnel and responsibilities.
  - b. Table 1:
    - i. Included in the contact list should be a management or ownership level position whose specific duties should include a statement of commitment of resources.
  - c. Chemicals Stored and/or Used on Site:
    - i. By law(40 CFR Part 112), a Spill Prevention Control and Countermeasure (SPCC) plan is only required to address oil storage and oil spills, other chemicals are not included in the provisions of the law. Therefore, the applicant should include specific plans to address the chemical storage onsite and spill prevention measures taken.
    - ii. Please address fuel storage for trailer mounted pumps or generators, if necessary.
8. G. Site Security:
  - a. Provide additional details regarding the gate, including materials, construction, and operation.
9. H. Hours of Operation:
  - a. Due to potential inaccessibility of the facility in the winter, a provision should be included for pit monitoring when personnel cannot reach the site.
10. I. Noise and Odor Mitigation:
  - a. Have the pumps and any generators been considered in the noise evaluation?
11. J. Final Disposition of Waste:
  - a. If additional disposal wells are to be used, they should be submitted for pre-approved use by this proposed facility on a Form 4, Sundry Notice and should be included on the FMC.
  - b. Final disposition of waste should also include a discussion of the management of pit bottom sediments and liner material, plus any other ancillary waste generated during the construction, operation and closure of the proposed facility.

The SWMP is considered to be part of the operating plan. The SWMP included is for the operating field, but is not specific to this location, with the exception of the figures appended. The Colorado Discharge Permit System (CDPS) General Permit for the proposed facility should be provided, and the SWMP should include all the elements required by the permit. Details of sedimentation basins should be provided. Details of culvert outfall protection should be provided; if no outfall protection is proposed, discuss why not and describe the consequences. Additionally, culverts should have inlet protection until vegetation is re-established. Please provide design details for the release of water from the sediment ponds (i.e. stand pipes, spillways).

**Form 28 Supplement, Rule 908.b.(9).A.**

According to data available on COGIS, there may be more groundwater wells within 1 mile of the boundaries of the facility. Please discuss all registered groundwater wells within 1 mile. The following analytical parameters were not included in the summary tables, nor in the laboratory data for the baseline water sampling events:

- Total dissolved solids (TDS)
- Manganese
- Nutrients (nitrates & nitrites)
- Specific conductance.

**Form 28 Supplement, Rule 908.b.(9).B.i.**

Please provide the basis for not employing groundwater monitoring wells in accordance with Rule 908.b.(9)B.i. The Rule requires “an alternative method offering equivalent protection...” and a “dual liner system with a leak detection system that provides for *immediate* leak detection from the uppermost liner” [emphasis added].

**Form 28 Supplement, Rule 908.b.(10)**

The proposed surface water monitoring locations are insufficient to meet the requirements of the Rules. Surface water monitoring locations should be selected downstream of the proposed facility, unless the applicant can demonstrate why other locations are hydrologically significant. At least one surface water monitoring location should be identified on the tributary drainage between the proposed facility and the East Muddy Creek; if the tributary drainage only has ephemeral or intermittent flow then timing of sample collection should be addressed in the plan. Two small ponds are visible on the attached Surface Water Test Locations map in the tributary drainage below the proposed facility; one or both of these should be included as surface water monitoring locations, if present. At least one surface water monitoring location should be identified on East Muddy Creek below the confluence of the tributary drainage below the proposed facility.

The monitoring schedule should include sampling associated with facility closure.

**Form 28 Supplement, Rule 908.d**

The Preliminary Closure Plan does not appear to include an adequate estimate of the reclamation costs for the proposed facility to meet the requirements of Rule 704. Please see response to: Form 28 Supplement, Rule 908.g.(1).A. and B. below.

**Form 28 Supplement, Rule 908.g.(1).A & B**

Indicate the expected life of the facility.

Please provide additional detail regarding the “Preliminary Closure Plan.” In general, final closure will include the removal of all mechanical and electrical equipment, removal and disposal of synthetic liners, fill and grading of the pits and final reclamation.

For Example:

- Mobilization/Demobilization
- Remove and Dispose of Pond Fluids
  - Pump, and dispose of pit fluid
  - Remove pit sediment, dry, test, characterize and determine disposal options
- Remove and Dispose of Operating Equipment

- (Included are labor and equipment for the fence removal; no mention of other pieces of equipments such as pumps, piping, electrical, general labor, etc. is made.)
- Remove and Dispose of Liners
  - (Does this take into consideration removing pond bottom sediments, cleaning liners prior to transporting offsite, management of waste generated during the process, and all layers of liner? Please include a plan for the final disposition of liner material. )
- Soil Sampling
  - (How many borings and samples per pit are being proposed and what are the constituents to be sampled and analyzed? Please provide more specific details and breakdown).
  - (Soil testing should also be conducted on the staging area, and in the vicinity of truck unloading areas, pumps, manifolds, etc.)
- Backfill and Compact Pits
  - (Please provide more specific details and breakdown).
- Site Restoration (Grading and Seeding)
  - (The reclamation of 2000' feet (assumed lineal) of access road is addressed. What about the pits themselves and total acreage to be reclaimed? Please provide more specific details and breakdown).
  - (Please include a discussion and cost range of potential contamination requiring additional remediation, assuming worst case scenario.)
- Post Closure Groundwater Monitoring
  - (How many water quality samples will be collected from site monitoring wells, if applicable, groundwater monitoring locations, and surface water monitoring locations? Please provide more specific details and breakdown).

Please revise the cost estimate to take into account all the various activities associated in the closure and reclamation of the facility and the basis (i.e. R.S. Means, Equipment Watch Cost Reference Guide, etc.) for the cost estimates (i.e. General approach, assuming costs are based on 2010 calendar year with applicable escalation rates, labor and equipment rates, etc.)

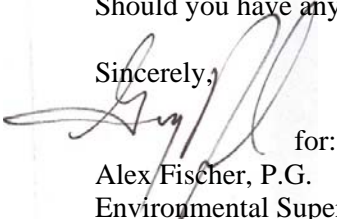
**Form 28 Supplement, Rule 908.h.**

Local government zoning compliance, permits and notice will be required to be submitted to the COGCC prior to approval of this application and commencing construction of the proposed facility. Please provide any permits or notifications to and from Gunnison County, the CDPHE, DWR, and any other agency, if required. If a variance to this Rule will be requested, the variance must be submitted and approved by the COGCC prior to commencing construction of the proposed facility.

Please provide any relevant permits from other state or Federal agencies, including, but not limited to, Colorado Discharge Permit System (CDPS) General Storm Water Permit, Colorado Division of Water Resources Erosion Control Dam Permit, and/or U.S. Army Corps of Engineers permits as applicable.

Should you have any questions, please contact me at 303-894-2100 extension 5138.

Sincerely,



for:  
Alex Fischer, P.G.  
Environmental Supervisor-Western Colorado