Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Program

STATEMENT OF BASIS

NEW

APPLICANT NAME: Cedar Ridge, LLC

MAILING ADDRESS: 484 Turner Drive, Building B, Siute 3
Durango, CO 81303

FACILITY LOCATION: Spotted Horse CBM facility, which is located in the NWSW of Section 28, the Township 55 North, Range 75 West, and in the SENW of Section 14, the NESW of Section 11, Township 54 North, Range 75 West, in Campbell County. The produced water will be discharged to three on-channel reservoirs (class 3B) located in ephemeral tributaries (class 3B) to Spotted Horse Creek (class 3B), tributary to the Powder River (class 2ABWW). The permit requires that the produced water being discharged from this facility originate in the Canyon, Anderson, Cook and Wall coal seams.

NUMBER: **WY0094056**

General Facility Description

This facility is a typical coal bed methane production facility in which groundwater is pumped from a coal bearing formation resulting in the release of methane from the coal bed. The permit authorizes the discharge to the surface of groundwater produced in this way provided the effluent quality is in compliance with effluent limits that are established by this permit. In developing effluent limits, all federal and state regulations and standards have been considered and the most stringent requirements incorporated into the permit. The effluent limits established in this permit are based upon Chapters 1 and 2 of the Wyoming Water Quality Rules and Regulations and other evaluations conducted by WDEQ related to this industry. This permit does not cover activities associated with discharges of drilling fluids, acids, stimulation waters or other fluids derived from the drilling or completion of the wells.

Facility Description

The permittee has chosen option 2 of the coal bed methane permitting options for discharges from this facility. Under this permitting option, the produced water is immediately discharged to a class 2 or 3 receiving stream which is eventually tributary to a class 2AB perennial water of the state. The permit establishes effluent limits for the end of pipe, which are protective of all the designated uses defined in Chapter 1 of Wyoming Water Quality Rules and Regulations. This may include drinking water, game and non-game fish, fish consumption, aquatic life other than fish, recreation, agriculture, wildlife, industry and scenic value. In addition, the permit establishes an irrigation monitoring points (IMP1, IMP2 listed in table 1 of the permit below). The irrigation monitoring point(s) is a designated monitoring location prior to the first downstream point of irrigation diversion below the facility. An IMP differs from an irrigation compliance point (ICP) in that the IMP does not establish effluent limits. IMP sampling is for data-gathering purposes only.

The permittee is required to contain all effluent from the outfalls in the on-channel reservoir(s) at this facility, unless prior written authorization is granted by the WYPDES program for a reservoir release, in association with use of assimilative capacity credits for the Powder River Basin. In the event that such an authorization

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for release is granted for this facility, the authorization letter will specify the release volume, duration and individual reservoir(s) covered. In the absence of such written authorization for release, the following containment requirements will apply at the reservoir(s): The permittee will be required to contain all produced water within the reservoir(s) during "dry" operating conditions, and discharge of effluent from the reservoir(s), except during periods of time in which natural precipitation causes the reservoir(s) to overtop and spill, is prohibited. Intentional or draw-down type releases from the reservoir(s) will constitute a violation of this permit. Discharge from the reservoir(s) is limited by the permit to natural overtopping and shall not extend beyond a 48 hour period following commencement of natural overtopping. It is the responsibility of the permittee to adequately demonstrate the circumstances in which reservoir discharges occurred, if requested to do so by the WYPDES Program.

Effluent Limits

Permit effluent limits are based on federal and state regulations and are effective as of the date of issuance. The permit requires that the pH must remain within 6.5 and 9.0 standard units based upon *Wyoming Water Quality Rules and Regulations,* Chapter 2 for protection of stock and wildlife consumption. In addition, the permit establishes a chloride limit of 150 mg/l which is based on chronic aquatic life standards for class 2AB waters which are intended to protect for the above listed designated uses and reflect the application of the antidegradation provision for the protection of tier 2 water required under *Chapter 1 of the Wyoming Water Quality Rules and Regulations*. The permit establishes a total barium limit of 1800 µg/l and a total arsenic limit of 8.4 µg/l, both of which are based on Water Quality Criteria as established in *Wyoming Water Quality Rules and Regulations, Chapter 1,* for Human Health values. The permit also establishes a dissolved iron effluent limit of 1000 µg/l to be met at the end of pipe. The dissolved iron effluent limit is based upon chronic aquatic life protection for class 3B waters.

Irrigation Use Protection Effluent Limits—Option 2 outfalls discharging to Spotted Horse Creek drainage: In order to monitor and regulate coal bed methane discharge for compliance with Chapter 1, Section 20 of the Wyoming Water Quality Rules and Regulations (protection of agricultural water supply), an end-of-pipe effluent limit for specific conductance (EC) is included in this permit. In addition, this permit requires monitoring for EC and SAR at the established irrigation monitoring points (IMP1-IMP2).

The Wyoming DEQ has determined that an end-of-pipe specific conductance effluent limit of 2,680 micromhos/cm is appropriate for protection of agricultural uses in the Spotted Horse Creek drainage. This effluent limit was derived using soil salinity data submitted with the original application for WY0038377 (*Section 20 Tributary Evaluation Spotted Horse Creek, North of Highway 14/16, Campbell County, Wyoming, Devon Production Company, L.P*; Applied Hydrology Associates, Inc., September 20, 2000) as well as other information obtained in the application for the renewed WY0038377 permit (*2006 Evaluation for Irrigation/Soil Suitability to be Included in the Section 20 Analysis for the Robert Creswell Property, Spotted Horse Creek, Wyoming;* prepared for Norwest Applied Hydrology Associates, Inc. by BKS Environmental Associates, Inc., October 12, 2006). The 2000 soil data cited above was collected within six irrigated fields owned by various landowners (Carson, Odegard, West, Creswell, Peegee, and Bulkley) along the length of Spotted Horse Creek. The permittee submitted additional soil data collected in 2006 for a portion of the West and Creswell fields. However, upon review of the data, the WDEQ determined that the 2006 West data was not representative of historical background irrigation water quality due to recent soil re-contouring work performed by the landowner and past potential sub-irrigation of this field with CBM water. In addition, the 2006 Creswell soil data was found to be geographically redundant with the 2000 Bulkley data (same land counted twice). Therefore, the WDEQ did not include the 2006 soil data in calculation of the above limits. The WDEQ's re-evaluation of the 2000 soils data determined that it represented the best sources of soil data available to the WDEQ to calculate historical background irrigation water quality in the Spotted Horse Creek drainage.

The end-of-pipe specific conductance limit of 2,680 micromhos/cm was derived through evaluation of the average soil electrical conductivity in the sampled irrigated fields (Carson 2000, Odegard 2000, West 2000,

Creswell 2000, Peegee 2000, and Bulkley 2000). Because the 2000 soil samples were not analyzed at regular intervals, the EC values for each interval were weighted by volume (depth of interval). The average soil EC within the irrigated areas was measured at 4,690 micromhos c/m, with a 95 % confidence interval of +/- 666 micromhos/cm (based on the 70 samples analyzed). This means that while the sampled population indicates a mean soil EC of 4,690 micromhos/cm, the actual mean soil EC for all fields likely falls within the range of 4,024 to 5,356 micromhos/cm. For the purpose of introducing a margin of conservatism into the irrigation effluent limit calculations for this permit, the lower value (4,024 micromhos/cm) was assumed to be the actual mean soil EC for the downstream irrigated fields. In calculating an end-of-pipe effluent limit for EC that will maintain a mean soil EC of 4,024 micromhos/cm in the downstream irrigated fields, USDA recommends dividing the soil EC by 1.5 to estimate allowable salinity in the applied water (*Agricultural Salinity and Drainage, Hanson et al., 1999 revision*). This results in an end-of-pipe specific conductance effluent limit of 2,680 micromhos/cm, which is established at each option 2 Spotted Horse Creek outfall authorized under this permit, and is effective year-round.

Irrigation Use Protection Monitoring Requirements—Option 2 Outfalls Discharging to Spotted Horse Creek Drainage: The permit requires daily monitoring on Spotted Horse Creek below the outfalls in order to determine whether effluent discharged from the outfalls reaches an established irrigation monitoring point (IMP1 or IMP2 listed in Table 1 of the permit below). Daily monitoring is necessary because the permit establishes different sampling and analysis requirements based on whether the effluent reaches the irrigation monitoring point(s). Once effluent flow at the irrigation monitoring point(s) has been documented within a sampling month, then weekly measurement of flow at the IMP is required for the remainder of that calendar month. At the beginning of each calendar month, the monitoring frequency will revert to daily until such time as effluent flow occurs at the irrigation monitoring point(s) and a sample is collected to represent effluent quality for irrigation monitoring point constituents. Results are to be reported twice-yearly and if no effluent from this facility reaches the irrigation monitoring point(s) during an entire sampling month, then "no discharge" is to be reported for the IMP(s) that month. The IMP is not a compliance point. It is intended only as a location to gather downstream water quality data.

Data collected at locations IMP1-IMP2 will be evaluated by WDEQ on an ongoing basis in order to determine if effluent from this facility conforms to the following chemical characteristics at the IMP location:

$$SAR < 6.67 \times EC - 3.33$$

(where "SAR" represents sodium adsorption ratio, and "EC" represents specific conductance of the IMP sample in dS/m).

In the event that overtopping or a release from a reservoir that receives discharges from the permittee's outfall(s) is contributing to flow at station IMP1 or IMP2, and the IMP sample exceeds the SAR threshold listed above, then WDEQ may re-open the permit and add an effluent limit for SAR at the outfall(s) discharging to such reservoir. In any case, where the IMP samples (minimum of 5 samples) exceed the above SAR threshold in 50% or more of the sampled flow events during any continuous 12-month period, then, upon written notification to the permittee, the above SAR threshold (SAR < 6.67 x EC – 3.33) will automatically become an effluent limit at each outfall discharging to such reservoir.

Other Permit Requirements

Documentation submitted in support of this permit by the permittee was based upon water quality representative of water quality from the coal seams in the surrounding geographical area. Therefore, the permit requires that the produced water being discharged by this facility originate in one or more of the following formations: Canyon, Anderson, Cook and Wall.

There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of visible deposits of iron, hydrocarbons or any other constituent on the bottom or shoreline of the receiving water. In addition, erosion control measures will be implemented to prevent significant damage to or erosion of the receiving water channel at the point of discharge.

The discharge of wastewater and the effluent limits that are established in this permit have been reviewed to ensure that the levels of water quality necessary to protect the designated uses of the receiving waters are maintained and protected. An antidegradation review has been conducted and verifies that the permit conditions, including the effluent limitations established, provide a level of protection to the receiving water consistent with the antidegradation provisions of Wyoming surface water quality standards.

Self monitoring of effluent quality and quantity is required on a regular basis with reporting of results semiannually. The permit is scheduled to expire on February 28, 2014.

Becky Peters
Water Quality Division
Department of Environmental Quality
Drafted: February 12, 2009

)) WY0094056 NEW 1-15-2009
CBM

AUTHORIZATION TO DISCHARGE UNDER THE WYOMING POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, (hereinafter referred to as "the Act"), and the Wyoming Environmental Quality Act,

Cedar Ridge, LLC

is authorized to discharge from the wastewater treatment facilities serving the

Spotted Horse CBM Facility

which is located in the

NWSW of Section 28, the Township 55 North, Range 75 West, and in the SENW of Section 14, the NESW of Section 11, Township 54 North, Range 75 West, in Campbell County

to receiving waters named

three on-channel reservoirs (class 3B) located in ephemeral tributaries (class 3B) to Spotted Horse Creek (class 3B), tributary to the Powder River (class 2ABWW)located in ephemeral tributaries (class 3B) to Spotted Horse Creek (class 3B), tributary to the Powder River (class 2ABWW)

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

This permit shall become effective on the date of signature by the Director of the Department of Environmental Quality.

This permit and the authorization to discharge shall expire February 28, 2014, at midnight.

John F. Wagner
Administrator - Water Quality

5/6/09
Date

John V. Corra
Director - Department of Environmental Quality

5/6/09
Date

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Effective **immediately** and lasting through February 28, 2014, the quality of effluent discharged by the permittee shall, at a minimum, meet the limitations set forth below. The permittee is authorized to discharge from outfall(s) serial number(s) 001, 002, 003.

1. Such discharges shall be limited as specified below:

Effluent Limits

Effluent Constituent	Daily Maximum, Each Outfall
Chlorides, mg/l	150
Dissolved Iron, µg/l	1000
pH, standard units	6.5 – 9.0
Specific Conductance, micromhos/cm	2,680
Total Recoverable Arsenic, µg/l	8.4
Total Recoverable Barium, µg/l	1800

Note: 1) 'Dissolved' value for metals refers to the amount that will pass through a 0.45 µm membrane filter prior to acidification to 1.5-2.0 with Nitric Acid.

2) 'Total' value for metals refers to the total recoverable amount of that metal in the water column.

The permittee is required to contain all effluent from the outfalls in the on-channel reservoir(s) at this facility, unless prior written authorization is granted by the WYPDES program for a reservoir release, in association with use of assimilative capacity credits for the Powder River Basin. In the event that such an authorization for release is granted for this facility, the authorization letter will specify the release volume, duration and individual reservoir(s) covered. In the absence of such written authorization for release, the following containment requirements will apply at the reservoir(s): The permittee will be required to contain all produced water within the reservoir(s) during "dry" operating conditions, and discharge of effluent from the reservoir(s), except during periods of time in which natural precipitation causes the reservoir(s) to overtop and spill, is prohibited. Intentional or draw-down type releases from the reservoir(s) will constitute a violation of this permit. Discharge from the reservoir(s) is limited by the permit to natural overtopping and shall not extend beyond a 48 hour period following commencement of natural overtopping. It is the responsibility of the permittee to adequately demonstrate the circumstances in which reservoir discharges occurred, if requested to do so by the WYPDES Program.

The pH shall not be less than 6.5 standard units nor greater than 9.0 standard units in any single grab sample.

Information gathered from the water quality monitoring stations may result in modification of the permit, in accordance with Part III.A.3 of the permit below, to protect existing uses on the

tributary and the mainstem. In addition, WQD may re-open and modify this permit, in accordance with Part III.A.3, in the event that additional or more stringent conditions are determined by WQD to be necessary for control of erosion downstream of the discharges within the Spotted Horse Creek drainage.

There shall be no discharge of floating solids or visible foam in other than trace amounts, nor shall the discharge cause formation of a visible sheen or visible hydrocarbon deposits on the bottom or shoreline of the receiving water.

The produced water being discharged at this facility will originate from the Anderson, Canyon, Cook and Wall coal seams.

The permittee may, if so desired, discharge produced water from any authorized well to any permitted outfall, as long as all permit limits and requirements can be met.

All waters shall be discharged in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, ditches, or other waters of the state at the point of discharge. In addition, there shall be no deposition of substances in quantities which could result in significant aesthetic degradation, or degradation of habitat for aquatic life, plant life or wildlife; or which could adversely affect public water supplies or those intended for agricultural or industrial use.

3. Discharges shall be monitored by the permittee as specified below:

a. <u>Monitoring of the initial discharge:</u>

If outfalls have already been sampled and analyzed for initial monitoring constituents, the permittee is not required to re-sample and re-analyze the outfalls if results have been obtained for all the constituents listed below and reported to the WDEQ.

Within 60 days of commencement of discharge, a sample shall be collected from each outfall and analyzed for all constituents specified below, at the required detection limits. Within 120 days of commencement of discharge, a summary report, including copies of the laboratory analysis reports, on the produced water must be submitted to the Wyoming Department of Environmental Quality and the U.S. EPA Region 8 at the addresses listed below. This summary report must include the results and detection limits for each of the constituents specified below. In addition, the report must include written notification of the established location of the discharge point (refer to Part I.B.11). This notification must include a confirmation that the location of the established discharge point(s) is within 1,510 feet of the location of the identified discharge point(s), is within the same drainage, and discharges to the same landowner's property as identified on the original application form. The legal description and location in decimal degrees of the established discharge point(s) must also be provided. After receiving the monitoring results for the initial discharge, the effluent limits and monitoring requirements established in this permit may be modified.

Parameter* **(See notes following the table on chemical states)**	**Required Detection Limits and Required Units**
Alkalinity, Total	1 mg/l as $CaCO_3$
Aluminum, Dissolved	50 µg/l
Arsenic, Total Recoverable	1 µg/l
Barium, Total Recoverable	100 µg/l
Bicarbonate	10 mg/l
Cadmium, Dissolved	5 µg/l
Calcium, Dissolved	50 µg/l, report as mg/l
Chloride	5 mg/l
Copper, Dissolved	10 µg/l
Dissolved Solids, Total	5 mg/l
Fluoride, Dissolved	100 µg/l
Hardness, Total	10 mg/l as $CaCO_3$
Iron, Dissolved	50 µg/l
Lead, Dissolved	2 µg/l
Magnesium, Dissolved	100 µg/l, report as mg/l
Mercury, Dissolved	1 µg/l
pH	to 0.1 pH unit
Radium 226, Total Recoverable	0.2 pCi/l
Selenium, Total Recoverable	5 µg/l
Sodium Adsorption Ratio	Calculated as unadjusted ratio
Sodium, Dissolved	100 µg/l, report as mg/l
Specific Conductance	5 micromhos/cm
Sulfates	10 mg/l
Total Dissolved Solids	5 mg/l
Zinc, Dissolved	50 µg/l

TOTAL: Value is expressed in terms of total recoverable metal in the water column.
NOTE: Except for aquatic life values for metals and where otherwise indicated, the values given refer to the total recoverable (dissolved plus suspended) amount for each substance. For the aquatic life values for metals, the values refer to the dissolved amount.

DISSOLVED: Volume is based on the dissolved amount which is the amount that will pass through a 0.45 µm membrane filter prior to acidification to pH 1.5 - 2.0 with nitric acid.

Initial monitoring reports are to be sent to the following addresses:

Planning and Targeting Program, 8ENF-PT
Office of Enforcement, Compliance, and Environmental Justice
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

and

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002

b. Routine monitoring End of Pipe –001, 002 and 003

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. The first routine monitoring for the time frame during which the monitoring of initial discharge occurs will, at a minimum, consist of flow measurements for the duration of the six-month monitoring time frame. Monitoring will be based on semi-annual time frames, from January through June, and from July through December.

Parameter	Measurement Frequency	Sample Type
Bicarbonate (mg/l)	Annually	Grab
Dissolved Calcium (mg/l)	Monthly	Grab
Chloride (mg/l)	Annually	Grab
Dissolved Iron (µg/l)	Annually	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
pH (standard units)	Once Every Six Months	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Sodium Adsorption Ratio (unadjusted)	Monthly	Calculated
Specific Conductance (micromhos/cm)	Monthly	Grab
Total Alkalinity (mg/l)	Annually	Grab
Total Recoverable Arsenic (µg/l)	Annually	Grab
Total Recoverable Barium (µg/l)	Annually	Grab
Total Flow - (MGD)	Monthly	Continuous
Total Dissolved Solids – (mg/l)	Monthly	Grab

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the outfall of the final treatment unit which is located out of the natural drainage and prior to admixture with diluent waters.

c. **Irrigation Monitoring Points –IMP1-IMP2**

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies when water discharged from the outfalls reaches the irrigation monitoring point. Monitoring will be based on monthly time frames and reported semi-annually.

Parameter	Measurement Frequency	Sample Type
Dissolved Calcium, mg/l	Monthly	Grab
Dissolved Magnesium, mg/l	Monthly	Grab
Dissolved Sodium, mg/l	Monthly	Grab
Sodium Adsorption Ratio, unadjusted	Monthly	Calculated
Sodium Adsorption Ratio, calculated threshold	Monthly	Calculated
Specific Conductance, µmhos/cm	Monthly	Grab
Flow, MGD	Monthly	Instantaneous

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at the irrigation monitoring points which are located as described in Table 1 of the permit below.

The permit requires daily monitoring on Spotted Horse Creek below the outfalls in order to determine whether effluent discharged from the outfalls reaches an established irrigation monitoring point (IMP1 or IMP2 listed in Table 1 of the permit below). Daily monitoring is necessary because the permit establishes different sampling and analysis requirements based on whether the effluent reaches the irrigation monitoring point(s). Once effluent flow at the irrigation monitoring point(s) has been documented within a sampling month, then weekly measurement of flow at the IMP is required for the remainder of that calendar month. At the beginning of each calendar month, the monitoring frequency will revert to daily until such time as effluent flow occurs at the irrigation monitoring point(s) and a sample is collected to represent effluent quality for irrigation monitoring point constituents. Results are to be reported twice-yearly and if no effluent from this facility reaches the irrigation monitoring point(s) during an entire sampling month, then "no discharge" is to be reported for the IMP(s) that month. The IMP is not a compliance point. It is intended only as a location to gather downstream water quality data.

Data collected at locations IMP1-IMP2 will be evaluated by WDEQ on an ongoing basis in order to determine if effluent from this facility conforms to the following chemical characteristics at the IMP location:

$$SAR < 6.67 \times EC - 3.33$$

(where "SAR" represents sodium adsorption ratio, and "EC" represents specific conductance of the IMP sample in dS/m).

In the event that overtopping or a release from a reservoir that receives discharges from the permittee's outfall(s) is contributing to flow at station IMP1 or IMP2, and the IMP sample exceeds the SAR threshold listed above, then WDEQ may re-open the permit and add an effluent limit for SAR at the outfall(s) discharging to such reservoir. In any case, where the IMP samples (minimum of 5 samples) exceed the above SAR threshold in 50% or more of the sampled flow events during any continuous 12-month period, then, upon written notification to the permittee, the above SAR threshold (SAR < 6.67 x EC – 3.33) will automatically become an effluent limit at each outfall discharging to such reservoir.

d. Water Quality Monitoring Stations (TRIB1, UPR and DPR)

For the duration of the permit, at a minimum, samples for the constituents described below shall be collected at the indicated frequencies. Monitoring will be based on monthly time frames, and reported semiannually.

Parameter	Measurement Frequency	Sample Type
Dissolved Calcium (mg/l)	Monthly	Grab
Dissolved Magnesium (mg/l)	Monthly	Grab
Dissolved Sodium (mg/l)	Monthly	Grab
Sodium Adsorption Ratio (calculated as unadjusted ratio)	Monthly	Calculated
Specific Conductance (micromhos/cm)	Monthly	Grab
Flow* (MGD)	Monthly	Instantaneous

*The permittee is only required to monitor and report flow at the tributary monitoring station on Spotted Horse Creek (TRIB1). The permittee is not required to monitor or report flow data at the mainstem water quality monitoring stations (UPR and DPR), see Table 1, Part I.B.13 of the permit below for water quality monitoring station location descriptions.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations: designated water quality monitoring stations identified as TRIB1, UPR, and DPR in Table 1, Part I.B.13. Established water quality monitoring stations on the mainstem are to be located outside the mixing zone with the tributary and the mainstem. Monthly water quality samples are to be collected at all three water quality monitoring stations when effluent from this CBM facility reaches the TRIB1 station on Spotted Horse Creek. If flow occurs at the TRIB1 station during a given monthly monitoring period, but this CBM facility did not contribute to that flow, the permittee will report "did not contribute" in the discharge monitoring reports for that monthly monitoring period. Under such circumstances, sampling is not required at the three water quality monitoring stations, and it will be the responsibility of the permittee to demonstrate that the effluent from this facility did not contribute to the flow occurring at the TRIB1 station. If no flow at all occurs at the TRIB1 station for an entire monthly

monitoring period, then "no flow" is to be reported and samples need not be collected at the three water quality monitoring stations for that monthly monitoring period.

At the designated water quality monitoring stations, monitoring will be required for calcium, magnesium, sodium, sodium adsorption ratio and specific conductance. Information gathered from the water quality monitoring stations may result in modification of the permit to protect existing uses on the tributary and mainstem.

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and approval by, the permit issuing authority.

2. Reporting

Results of initial monitoring, including the date the discharge began, shall be summarized and submitted with a copy of the laboratory analysis report for each outfall, clearly marked with permit and outfall numbers, to the state water pollution control agency at the address below postmarked no later than 120 days after the commencement of discharge.

Results of routine end of pipe and containment unit monitoring during the previous six (6) months shall be summarized and reported semiannually on a Discharge Monitoring Report Form (DMR). If the discharge is intermittent, the date the discharge began and ended must be included. The information submitted on the first semiannual DMR shall contain a summary of flow measurements and any additional monitoring conducted subsequent to the submittal of the initial monitoring report. When required, whole effluent toxicity (biomonitoring) results must be reported on the most recent version of *EPA Region VIII's Guidance for Whole Effluent Reporting*. Monitoring reports must be submitted to the state water pollution control agency at the following address postmarked no later than the 15th day of the second month following the completed reporting period. The first report following the issuance of this permit is due on August 15, 2009. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the Signatory Requirements contained in Part II.A.11.

Wyoming Department of Environmental Quality
Water Quality Division
Herschler Building, 4 West
122 West 25th Street
Cheyenne, WY 82002
Telephone: (307) 777-7781
If no discharge occurs during the reporting period, "no discharge" shall be reported. If discharge is intermittent during the reporting period, sampling shall be done while the facility is discharging.

3. **Definitions**

a. The "monthly average" shall be determined by calculating the arithmetic mean (geometric mean in the case of fecal coliform) of all composite and/or grab samples collected during a calendar month.

b. The "weekly average" shall be determined by calculating the arithmetic mean (geometric mean in the case of fecal coliform) of all composite and/or grab samples collected during any week.

c. The "daily maximum" shall be determined by the analysis of a single grab or composite sample.

d. "MGD", for monitoring requirements, is defined as million gallons per day.

e. "Net" value, if noted under Effluent Characteristics, is calculated on the basis of the net increase of the individual parameter over the quantity of that same parameter present in the intake water measured prior to any contamination or use in the process of this facility. Any contaminants contained in any intake water obtained from underground wells shall not be adjusted for as described above and, therefore, shall be considered as process input to the final effluent. Limitations in which "net" is not noted are calculated on the basis of gross measurements of each parameter in the discharge, irrespective of the quantity of those parameters in the intake waters.

f. A "composite" sample, for monitoring requirements, is defined as a minimum of four grab samples collected at equally spaced two hour intervals and proportioned according to flow.

g. An "instantaneous" measurement for monitoring requirements is defined as a single reading, measurement, or observation.

h. A "pollutant" is any substance or substances which, if allowed to enter surface waters of the state, causes or threatens to cause pollution as defined in the Wyoming Environmental Quality Act, Section 35-11-103.

i. "Total Flow" is the total volume of water discharged, measured on a continuous basis and reported as a total volume for each month during a reporting period. The accuracy of flow measurement must comply with Part III.A.1.

4. **Test Procedures**

Test procedures for the analysis of pollutants, collection of samples, sample containers, sample preservation, and holding times, shall conform to regulations published pursuant to 40 CFR, Part 136, unless other test procedures have been specified in this permit.

5. **Recording of Results**

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date and time of sampling;

b. The dates and times the analyses were performed;

c. The person(s) who performed the analyses and collected the samples;

d. The analytical techniques or methods used; and

e. The results of all required analyses including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine the results.

6. **Additional Monitoring by Permittee**

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form. Such increased frequency shall also be indicated.

7. **Records Retention**

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the administrator at any time. Data collected on site, copies of Discharge Monitoring Reports and a copy of this WYPDES permit must be maintained on site during the duration of activity at the permitted location.

8. **Penalties for Tampering**

The Act provides that any person who falsifies, tampers with or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than two years per violation, or both.

9. **Compliance Schedules**

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

10. Facility Identification

All facilities discharging produced water shall be clearly identified with an all-weather sign posted at each outfall, and at the outlet of each receiving reservoir listed in Table 1 below. This sign shall, at a minimum, convey the following information:

a. The name of the company, corporation, person(s) who holds the discharge permit, and the WYPDES permit number;

b. The contact name and phone number of the person responsible for the records associated with the permit;

c. The name of the facility (as identified in this WYPDES permit). In addition, all outfall signs will include the outfall number. Reservoir signs are separate from the outfall signs, and are to be located at the outlet of the reservoir. Reservoir signs must include the information listed in items a and b above, in addition to the reservoir name, as identified in Table 1 below.

11. Identification and Establishment of Discharge Points

According to 40 CFR 122.21(k)(1), the permittee shall identify the expected location of each discharge point on the appropriate WYPDES permit application form. The location of the discharge point must be identified to within an accuracy of 15 seconds. This equates to a distance of 1,510 feet.

In order for the permit not to be subjected to additional public notice, the location of the established discharge point must be within 1,510 feet of the location of the discharge point originally identified on the permit application. In addition, the discharge must be within the same drainage and must discharge to the same landowner's property as identified on the original application form. If the three previously stated requirements are not satisfied, modification of the discharge point location(s) constitutes a major modification of the permit as defined in Part I.B.12. The permittee shall provide written notification of the establishment of each discharge point in accordance with Part I.A.2.a above.

12. Location of Discharge Points and Containment Unit Monitoring Locations

As of the date of permit issuance, authorized points of discharge were as follows:

Table 1: WY0094056 Spotted Horse

Out-fall	Qtr/Qtr	SEC-TION	TWP (N)	RNG (W)	LATITUDE	LONGITUDE	Drainage / Description	Groundwater approval required prior to Discharge?	Reservoir Bond to WDEQ Required prior to Discharge?
001	NWSW	28	55	75	44.712052	-105.892083	Powder River (2ABWW) via Spotted Horse Creek (3B) via Rucker Draw (3B) via an on-channel reservoir "004-SHS" (3B)	NO	YES
002	SENW	14	54	75	44.662344	-105.851730	Powder River (2ABWW) via Spotted Horse Creek (3B) via Linn Draw (3B) via an on-channel reservoir "Spellman 54-75-6-11" (3B)	NO	NO
003	NESW	11	54	75	44.673471	-105.850037	Powder River (2ABWW) via Spotted Horse Creek (3B) via Linn Draw (3B) via an on-channel reservoir "Spellman 54-75-11-11" (3B)	NO	NO
UPR	SENW	31	57	76	44.87964	-106.05983	upstream Powder River monitoring station	NA	NA
DPR	NWSW	7	56	76	44.83951	-106.06188	downstream Powder River monitoring station	NA	NA
TRIB1	SWNE	7	56	76	44.84652	-106.04959	tributary monitoring station for Spotted Horse Creek	NA	NA
IMP1	SENE	28	54	75	44.718228	-105.888467	irrigation monitoring point	NA	NA
IMP2	NWNW	11	55	75	44.679653	-105.855281	irrigation monitoring point	NA	NA

Requests for modification of the list below will be processed as follows. If the requested modification satisfies the definition of a minor permit modification as defined in 40 CFR 122.63 modifications will not be required to be advertised in a public notice. A minor modification constitutes a correction of a typographical error, increase in monitoring and/or reporting, revision to an interim compliance schedule date, change in ownership, revision of a construction schedule for a new source discharger, deletion of permitted outfalls, and/or the incorporation of an approved local pretreatment program.
A request for a minor modification must be initiated by the permittee by completing the form titled Wyoming Pollutant Discharge Elimination System Permit Modification Application For Coal Bed Methane. Incomplete application forms will be returned to the applicant.

The outfalls listed in the above table may be moved from the established location without submittal of a permit modification application provided all of the following conditions are satisfied:

1. The new outfall location is within 2640 feet of the established outfall location.
2. The new outfall location is within the same drainage or immediate permitted receiving waterbody.
3. There is no change in the affected landowners.
4. Notification of the change in outfall location must be provided to the WYPDES Permits Section on a form provided by the WQD Administrator within 10 days of the outfall

location change. The form must be provided in duplicate and legible maps showing the previous and new outfall location must be attached to the form.

Moving an outfall location without satisfying the four above listed conditions will be considered a violation of this permit and subject to full enforcement authority of the WDQ.

An outfall relocation as described above will not be allowed if the new outfall location is less than one mile from the confluence of a Class 2 waterbody and the dissolved iron limits established in the permit for the outfall are based upon Class 3 standards.

C. RESERVOIR / IMPOUNDMENT REQUIREMENTS

1. Groundwater Monitoring Beneath Impoundments:

Table 1 of the permit above identifies which outfalls (if any) are designed to discharge into impoundments that are subject to groundwater monitoring requirements established in the latest version of the Water Quality Division guideline *"Compliance Monitoring for Groundwater Protection Beneath Unlined Coalbed Methane Produced Water Impoundments."* These specified outfalls are not authorized to discharge until a written groundwater compliance approval has been granted by the Groundwater Pollution Control Program of the Water Quality Division. Once an impoundment has been granted a written groundwater compliance approval, the contributing outfall(s) to that reservoir may commence discharge.

2. Reclamation Performance Bonds for On-Channel Reservoirs:

Table 1 of the permit above also identifies which outfalls (if any) are designed to discharge into impoundments that are subject to WDEQ bonding requirements, as set forth in the latest version of the Water Quality Division guideline *"Implementation Guidance for Reclamation and Bonding of On-Channel Reservoirs That Store Coalbed Natural Gas Produced Water."* These specified outfalls are not authorized to discharge until the associated reservoir reclamation bond is approved by WDEQ. Once the reservoir reclamation bond is approved by WDEQ, the contributing outfall(s) to that reservoir may commence discharge.

Any discharge into an above-listed impoundment which has not been secured by the required WDEQ-approved bond, or which has not been granted the required groundwater compliance approval, will constitute a violation of this permit, and may result in enforcement action from the Water Quality Division.

PART II

A. MANAGEMENT REQUIREMENTS

1. Changes

The permittee shall give notice to the administrator of the Water Quality Division as soon as possible of any physical alterations or additions to the permitted facility. Notice is required when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29 (b); or

b. The alteration or addition could change the nature or increase the quantity of pollutants discharged.

2. Noncompliance Notification

a. The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

b. The permittee shall report any noncompliance which may endanger health or the environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances. The report shall be made to the Water Quality Division, Wyoming Department of Environmental Quality at (307) 777-7781.

c. For any incidence of noncompliance, including noncompliance related to non-toxic pollutants or non-hazardous substances, a written submission shall be provided within five (5) days of the time that the permittee becomes aware of the noncompliance circumstance.

The written submission shall contain:

(1) A description of the noncompliance and its cause;

(2) The period of noncompliance, including exact dates and times;

(3) The estimated time noncompliance is expected to continue if it has not been corrected; and

(4) Steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance.

d. The following occurrences of unanticipated noncompliance shall be reported by telephone to the Water Quality Division, Watershed Management Section, NPDES Program (307) 777-7781 as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances.

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit;

(2) Any upset which exceeds any effluent limitation in the permit; or

(3) Violation of a maximum daily discharge limitation for any toxic pollutants or hazardous substances, or any pollutants specifically identified as the method to control a toxic pollutant or hazardous substance listed in the permit.

e. The administrator of the Water Quality Division may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Quality Division, NPDES Program (307) 777-7781.

f. Reports shall be submitted to the Wyoming Department of Environmental Quality at the address in Part I under Reporting and to the Planning and Targeting Program, 8ENF-PT, Office of Enforcement, Compliance, and Environmental Justice, U.S. EPA Region 8, 1595 Wynkoop Street, Denver, CO 80202-1129.

g. The permittee shall report all instances of noncompliance that have not been specifically addressed in any part of this permit at the time the monitoring reports are due.

3. Facilities Operation

The permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of the permit. However, the permittee shall operate, as a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve permit effluent compliance.

4. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to waters of the state resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. Bypass of Treatment Facilities

a. Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

b. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c. and d. of this section. Return of removed substances to the discharge stream shall not be considered a bypass under the provisions of this paragraph.

c. Notice:

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice at least 60 days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.A.2.

d. Prohibition of bypass.

(1) Bypass is prohibited and the administrator of the Water Quality Division may take enforcement action against a permittee for a bypass, unless:

(a) The bypass was unavoidable to prevent loss of life, personal injury or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under paragraph c. of this section.

e. The administrator of the Water Quality Division may approve an anticipated bypass, after considering its adverse effects, if the administrator determines that it will meet the three conditions listed above in paragraph d. (1) of this section.

6. Upset Conditions

a. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improper designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph c. of this section are met.

c. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated;

(3) The permittee submitted notice of the upset as required under Part II.A.2; and

(4) The permittee complied with any remedial measures required under Part II.A.4.

d. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

7. Removed Substances

Solids, sludges, filter backwash or other pollutants removed in the course of treatment or control of wastewaters or intake waters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering waters of the state.

8. Power Failures

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

a. In accordance with a schedule of compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities; or

b. If such alternative power source as described in paragraph a. above is not in existence and no date for its implementation appears in Part I, take such precautions as are necessary to maintain and operate the facility under its control in a manner that will minimize upsets and insure stable operation until power is restored.

9. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the federal act and the Wyoming Environmental Quality Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give the administrator of the Water Quality Division advance notice of any planned

changes at the permitted facility or of any activity which may result in permit noncompliance.

10. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

11. Signatory Requirements

All applications, reports or information submitted to the administrator of the Water Quality Division shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively;

(3) For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the administrator of the Water Quality Division shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above and submitted to the administrator of the Water Quality Division; and

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

c. If an authorization under paragraph II.A.11.b. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph II.A.11.b must be submitted to the administrator of the Water Quality Division prior to or together with any reports, information or applications to be signed by an authorized representative.

d. Any person signing a document under this section shall make the following certification:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

B. RESPONSIBILITIES

1. Inspection and Entry

If requested, the permittee shall provide written certification from the surface landowner(s), if different than the permittee, that the administrator or the administrator's authorized agent has access to all physical locations associated with this permit including well heads, discharge points, reservoirs, monitoring locations, and any waters of the state.

The permittee shall allow the administrator of the Water Quality Division or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the federal act, any substances or parameters at any location.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the regional administrator of the Environmental Protection Agency and the administrator of the Water Quality Division. The administrator of the Water Quality Division shall then provide written notification to the new owner or controller of the date in which they assume legal

responsibility of the permit. The permit may be modified or revoked and reissued to change the name of the permittee and incorporate such other requirements as described in the federal act.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the federal act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Wyoming Department of Environmental Quality and the regional administrator of the Environmental Protection Agency. As required by the federal act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the federal act.

4. Toxic Pollutants

The permittee shall comply with effluent standards or prohibitions established under Section 307 (a) of the federal act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Changes in Discharge of Toxic Substances

Notification shall be provided to the administrator of the Water Quality Division as soon as the permittee knows of, or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 µg/l);

(2) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21 (g) (7); or

(4) The level established by the director of the Environmental Protection Agency in accordance with 40 CFR 122.44 (f).

b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 µg/l);

(2) One milligram per liter (1 mg/1) for antimony;

(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21 (g) (7); or

(4) The level established by the director of the Environmental Protection Agency in accordance with 40 CFR 122.44 (f).

6. Civil and Criminal Liability

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance. As long as the conditions related to the provisions of "Bypass of Treatment Facilities" (Part II.A.5), "Upset Conditions" (Part II.A.6), and "Power Failures" (Part II.A.8) are satisfied then they shall not be considered as noncompliance.

7. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

8. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the federal act.

9. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties established pursuant to any applicable state or federal law or regulation. In addition, issuance of this permit does not substitute for any other permits required under the Clean Water Act or any other federal, state, or local law.

10. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights nor any infringement of federal, state or local laws or regulations.

11. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

12. Duty to Provide Information

The permittee shall furnish to the administrator of the Water Quality Division, within a reasonable time, any information which the administrator may request to determine whether cause exists for modifying, revoking and reissuing or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the administrator, upon request, copies of records required by this permit to be kept.

13. Other Information

When the permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the administrator of the Water Quality Division, it shall promptly submit such facts or information.

14. Permit Action

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

15. Permit Fees

Once this permit has been issued, the permittee will be assessed a $100.00 per-year permit fee by the Water Quality Division. The fee year runs from January 1st through December 31st. This permit fee will continue to be assessed for as long as the permit is active, regardless of whether discharge actually occurs. This fee is not pro-rated. If the permit is active during any portion of the fee year, the full fee will be billed to the permittee for that fee year. In the event that this permit is transferred from one permittee to another, each party will be billed the full permit fee for the fee year in which the permit transfer was finalized.

PART III

A. OTHER REQUIREMENTS

1. Flow Measurement

At the request of the administrator of the Water Quality Division, the permittee must be able to show proof of the accuracy of any flow measuring device used in obtaining data submitted in the monitoring report. The flow measuring device must indicate values of within plus or minus ten (10) percent of the actual flow being measured.

2. 208(b) Plans

This permit may be modified, suspended or revoked to comply with the provisions of any 208(b) plan certified by the Governor of the State of Wyoming.

3. Reopener Provision

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary) or other appropriate requirements if one or more of the following events occurs:

a. The state water quality standards of the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit;

b. A total maximum daily load (TMDL) and/or watershed management plan is developed and approved by the state and/or the Environmental Protection Agency which specifies a wasteload allocation for incorporation in this permit;

c. A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit;

d. Downstream impairment is observed and the permitted facility is contributing to the impairment;

e. The limits established by the permit no longer attain and/or maintain applicable water quality standards;

f. The permit does not control or limit a pollutant that has the potential to cause or contribute to a violation of a state water quality standard.

g. If new applicable effluent guidelines and/or standards have been promulgated and the standards are more stringent than the effluent limits established by the permit.

h. In order to protect water quality standards in neighboring states, effluent limits may be incorporated into this permit or existing limits may be modified to ensure

that the appropriate criteria, water quality standards and assimilative capacity are attained.

i. If new, additional or more stringent permit conditions are necessary for control of erosion downstream of the discharges to ensure protection of water quality standards.

4. Permit Modification

After notice and opportunity for a hearing, this permit may be modified, suspended or revoked in whole or in part during its term for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; or

d. If necessary to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b) (2) (C) and (D), 304 (b) (2) and 307 (a) (2) of the federal act, if the effluent standard or limitation so issued or approved:

(1) Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or

(2) Controls any pollutant not limited in the permit.

5. Toxicity Limitation - Reopener Provision

This permit may be reopened and modified (following proper administrative procedures) to include a new compliance date, additional or modified numerical limitations, a new or different compliance schedule, a change in the whole effluent protocol or any other conditions related to the control of toxicants if one or more of the following events occur:

a. Toxicity was detected late in the life of the permit near or past the deadline for compliance;

b. The TRE results indicate that compliance with the toxic limits will require an implementation schedule past the date for compliance and the permit issuing authority agrees with the conclusion;

c. The TRE results indicate that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits and the permit issuing authority agrees that numerical controls are the most appropriate course of action;

d. Following the implementation of numerical controls on toxicants, the permit issuing authority agrees that a modified whole effluent protocol is necessary to compensate for those toxicants that are controlled numerically;

e. The TRE reveals other unique conditions or characteristics which, in the opinion of the permit issuing authority, justify the incorporation of unanticipated special conditions in the permit.

6. Severability

The provisions of this permit are severable and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit, shall not be affected thereby.

7. Penalties for Falsification of Reports

The federal act provides that any person who knowingly makes any false statement, representation or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation or by imprisonment for not more than two years per violation or both.

G. Couch

05-13-09 RCVD 0931

Form S.W. 4
Rev. 11.7.2008

$25.00

NOTE: Do not fold this form. Use typewriter or print neatly with black pen.

SE040324
25.00
5/13/09

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

SCANNED SEP 3 2009

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING, STATE ENGINEER'S OFFICE } SS.

This instrument was received and filed for record on the 13th day of May, A.D. 2009 at 9:31 o'clock A.M.

John R. Barnes for STATE ENGINEER

Recorded in Book 120 of Stock Reservoirs, on Page 13

Fee Paid $ 25.00 Map Filed

WATER DIVISION NO. 2 DISTRICT NO. 9 Temp. Filing No. 34 6/342

PERMIT NO. 19243 STOCK RESERVOIR

NAME OF FACILITY

THE 004-SHS ENLARGEMENT (P14342S) STOCK RESERVOIR

1. Name(s), mailing address and phone no. of applicant(s) is/are Cedar Ridge LLC
484 Turner Drive, Bldg. B, Suite 3
Durango, CO 81303
E-mail address:
(If more than one applicant, designate one to act as Agent for the other)

2. Name & address of agent to receive correspondence and notices Terry L. Logan, P.E. - Cedar Ridge LLC Manager
484 Turner Drive, Bldg. B, Suite 3 Durango, CO 81303 970-382-5990
E-mail address: tlogan@cedarridgellc.com

3. The use to which the water is to be applied is in-place stock watering purposes. (If a pipeline to additional points of storage will be used include form SW4-A.)

4. (a) The area of the high water line of the reservoir is 3.32 acres.

(b) The capacity of the reservoir is 19.35 acre-feet. = 15.45 ac-ft (this app.) + 3.9 ac-ft (P14342S)

(c) Body of Reservoir: Length 650' Width 405' Average Depth 7.5'

5. The source of the proposed appropriation is CBNG ground water wells. See list in Remarks. Reservoir is located in the drainage of Rucker Creek, tributary Spotted Horse Creek, tributary Powder River, tributary Yellowstone River. cic

6. The outlet of the proposed reservoir is located in the NW¼-SE¼ of Section 28, T. 55 N., R. 75 W. Dep. Res. survey corner tie, if available. ~~Bearing distance from Section T. N., R. W.~~ cic

Lot Block Subdivision Name

Latitude (Decimal Degrees) 44.712883° N Longitude (Decimal Degrees) 105.891470° W

7. Are any of the lands covered by the proposed reservoir owned by the State or Federal Government? If so, describe lands and designate whether State or Federally owned.
No

8. Fill out either (a) or (b).

(a) The reservoir is located in the drainage of Rucker Creek ~~watershed~~

(b) The reservoir is to be filled through the by CBNG ground water wells, ~~natural run-off is diverted away from res.~~ See list in Remarks. cic
Canal, which has a carrying capacity of --- cubic feet per second.

9. (a) The berm is to be constructed as follows Compacted earth fill, total containment berm, natural runn-off is diverted
contents= 9,000 Cubic Yards.

(b) The water face of the berm is to be protected from wave action in the following manner: Natural vegetation

(c) Berm Height 20 feet.

10. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application.

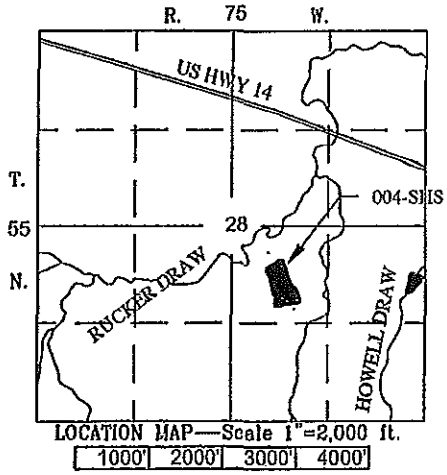
11. The estimated time required for completion of Construction is Already constructed

Permit No. 19243 Stk. Res.

EXHIBIT 1 tabbies

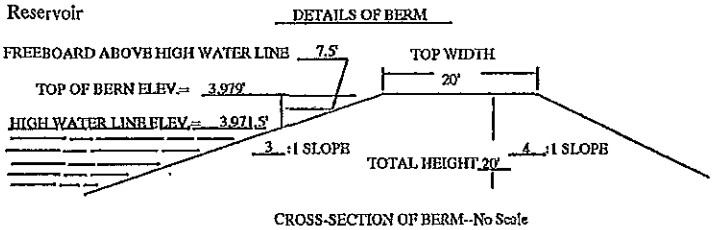
Page No. 13 (Leave Blank)

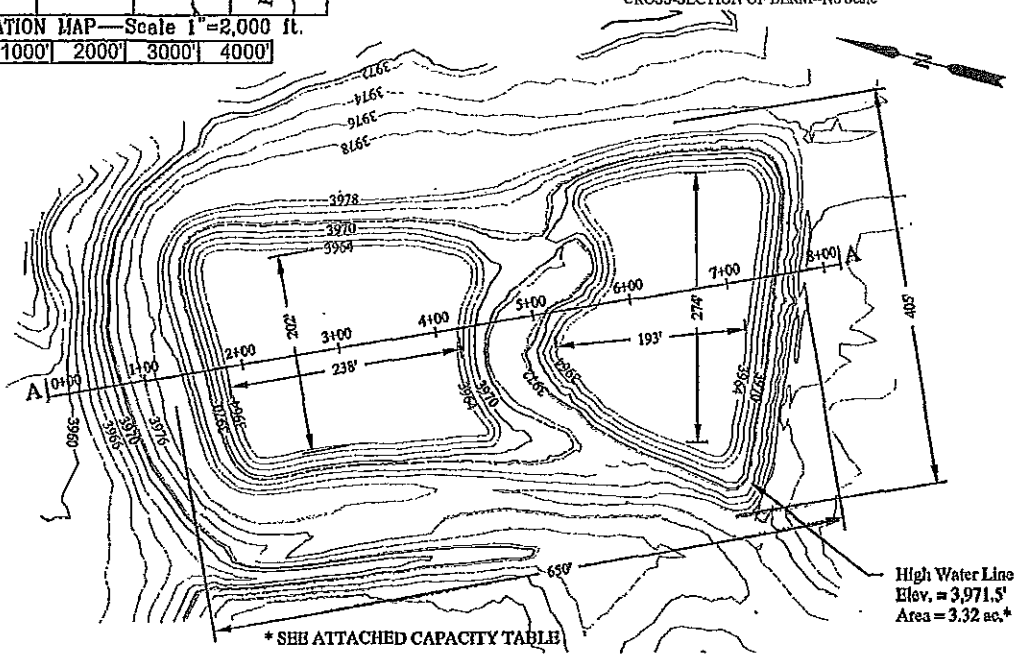
MAP AND PLANS OF PROPOSED 004-SHS ENLARGEMENT (P14342S) STOCK RESERVOIR



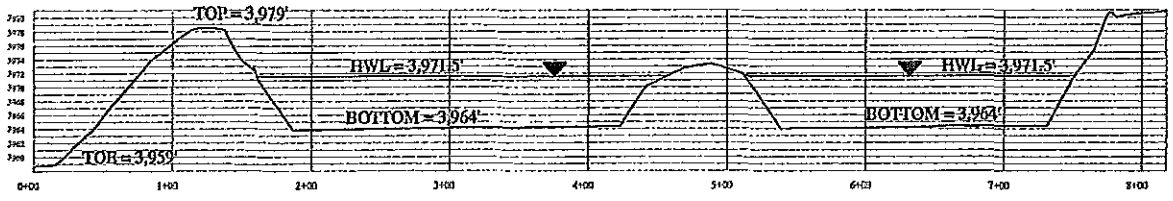
CAPACITY TABLE FOR THE 004-SHS STOCK RESERVOIR

3.9 AF - Permit No. 14342 SR
15.45 AF - This Enlargement
19.35 AF - Total Available Capacity





AREA MAP—SCALE:—1"= 100' (Use as large a scale as possible)



SECTION A–A - Scale: Ver. 1"=20'; Hor. 1"= 100'

Capacity=[Area x Depth ÷ 3] = * SEE ~~ATTACHED~~ CAPACITY TABLE Acre-Feet

FILED IN MISCELLANEOUS NOTICES UNDER THIS PERMIT.

NOTE: The location map shown above is not required if the application is accompanied by an aerial photograph or a U.S.G.S. quadrangle map, prepared in accordance with the State Engineer's Instructions and Guidelines. However, the area map, cross-section of dam, profile of damsite and capacity computation must be completed in all applications.

CONSENT TO ENLARGE (if applicable): Consent to enlarge must be requested from all owners of reservoirs described in existing water rights, permits or applications for permits for the facility to be enlarged before the State Engineer will consider approval of the application. Where the reservoir operator is an incorporated company or irrigation district, consent may be made on behalf of the individual owners by the entity where the consent is an excerpt of meeting minutes showing approval and authority for the individual signing for the company or district to act in such capacity. Forms are available on the State Engineer's web site or may be obtained from the State Engineer's Office.

DECLARATION

I declare that I have examined this application/map and to the best of my knowledge and belief it is true, correct and complete.

Terry L. Logan
Printed Name and Signature of Applicant or Agent

May 11, 2009
Date

Item 5: This reservoir is to be filled from the following ground water wells:

Well Name	Permit No.	Capacity
Smith 1-32-A	U.W. 134934	45 gpm
Smith 1-32-C	U.W. 134935	45 gpm
Smith 1-32-W	U.W. 134936	45 gpm
Smith 3-33-A	U.W. 134937	45 gpm
Smith 3-33-C	U.W. 134938	45 gpm
Smith 3-33-W	U.W. 134939	45 gpm
Smith 5-33-A	U.W. 134940	45 gpm
Smith 5-33-C	U.W. 134941	45 gpm
Smith 5-33-W	U.W. 134942	45 gpm
Smith 7-33-A	U.W. 134943	45 gpm
Smith 7-33-C	U.W. 134944	45 gpm
Smith 7-33-W	U.W. 134945	45 gpm
Smith 11-28-A	U.W. 134946	45 gpm
Smith 11-28-C	U.W. 134947	45 gpm
Smith 11-28-W	U.W. 134948	45 gpm

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } ss.

TEMPORARY FILING NO. 34 6/342

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

If the plans show that no outlet works are contemplated, the State Engineer may, upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works as will permit proper regulation.

This permit is granted for the storage of 15.45 acre-feet of water from all sources in any one year for stock purposes only. This is an enlargement of Permit No. 14342 SR, which has a capacity of 3.9 acre-feet. The total capacity of the facility, as enlarged, will be 19.35 acre-feet.

Water stored in this facility is surface water runoff and water provided under the following ground water permits:

SEE LIST IN REMARKS

IF at some future time it becomes necessary, the State Engineer may upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works or construction of a by-pass ditch or other means which will permit proper regulation.

This permit is conditioned on the holder of this permit securing and/or providing free and unencumbered access to this reservoir site to allow State Engineer personnel to perform their duties as prescribed by Law. These duties include, but are not limited to, construction inspections and water administration.

This reservoir stores only water that is produced as a by-product of coal-bed methane production. When coal-bed methane production ceases, the owner of this reservoir shall breach the dam or reclaim the pit to allow for proper water administration.

This permit is issued to make an existing stock reservoir a matter of record. The notice of completion of construction is hereby waived.

This permit is granted subject to the terms of the Yellowstone River Compact.

~~The time for completing the construction of the reservoir shall terminate on December 31, 20~~

Witness my hand this 2ND day of SEPTEMBER, A.D. 20 02.

PATRICK T. TYRRELL, State Engineer

Permit No. 19243 Stk. Res.

Page No. 13
(Leave Blank)

PERMIT NO. 19243 STK. RES.

PERMIT STATUS

Priority Date May 13, 2009 Approval Date September 2, 2009

NOTICE

This permit, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within the time allowed in the permit.

Notice of completion of the work described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

Once the Notice of Completion has been filed, Proof of Appropriation will be prepared and sent to your Water Division Superintendent. The Superintendent will arrange with you for an inspection of the facility. Should you desire adjudication, the Proof will be considered by the Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Construction which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

10/18 9:45a

Form S.W. 4
Rev. 10-1999
C. Couch

NOTE: Do not fold this form. Use typewriter or print neatly with ballpoint pen.

STATE OF WYOMING

OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

MICRO FILMED FEB 01 2002

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS
The original of
/ This instrument was received and filed for record on the 15th day of August, A.D. 2001, at 9:30 o'clock A.M.

John R. Barnes

JOHN R. BARNES, for State Engineer

Recorded in Book 87 of Stock Reservoirs, on Page 20.
Fee Paid $ 25.00. Map Filed

WATER DIVISION NO. 2 DISTRICT NO. 9 Temp.
SUBSTITUTE APPLICATION RECEIVED OCTOBER 18, 2001 AT 9:45 A.M. PERMIT NO. 14425 STOCK RESERVOIR Filing No. 30 4/345

NAME OF FACILITY

THE Spellman #54-75-6-11 STOCK RESERVOIR cic

1. Name(s), mailing address and phone no. of applicant(s) is/are ~~Federated Oil and Gas Properties, Inc.~~ Cedar Ridge, LLC
Office of State Lands and Investments AND ~~123 East Front Street~~
Herschler Building, 3W ~~Traverse, MI 49684-8481~~
Cheyenne, Wyoming 82002
484 Turner Drive
Building B, Suite 3
Durango, CO 81303
970-382-5990 cic

(If more than one applicant, designate one to act as Agent for the others)

2. Name & address of agent to receive correspondence and notices Same as Above Mr. Terry L. Logan, Manager

3. The use to which the water is to be applied is in-place stock watering purposes. (If a pipeline to additional points of storage will be used, include form SW4-A.)

4. (a) The area of the high water line of the reservoir is 1.82 acres.

(b) The capacity of the reservoir is 19.9 acre-feet.

(c) Body of Reservoir: Length 281.4' Width 281.4' Average Depth 15'

5. The source of the proposed appropriation is Coal Bed Methane Wells 13-11-A, 13-11-W, 15-11-A, 15-11-W, 1-14-A, 1-14-W, 3-14-A, 3-14-W, 5-14-A, 5-14-W 7-14-A, 7-14-W. SEE LIST IN REMARKS. Reservoir is located in the drainage of Spotted Horse Creek, tributary Powder River, tributary Yellowstone River. cic

6. The outlet of the proposed reservoir is located in the SE ¼ NW ¼ of Section 14

T. 54 N., R. 75 W. ~~Survey corner tie, if available. Bearing distance from Section T. N.R. W.~~

7. Are any of the lands covered by the proposed reservoir owned by the State or Federal Government? If so, describe lands and designate whether State or Federally owned.

The proposed stock reservoir will inundate approximately 0.7 acres of state land. The land is dry land pasture with grass and sage brush vegetation.

8. Fill out either (a) or (b).

(a) The reservoir is located in the ~~channel~~ drainage of Spotted Horse Creek cic

(b) The reservoir is to be filled ~~through the~~ by ground water wells. See Remarks. cic

Canal, which has a carrying capacity of cubic feet per second.

9.(a) The dam is to be constructed as follows: Earth Embankment, moisture density controlled and compacted.
Contents= 6155 Cubic Yards.

(b) The water face of the dam is to be protected from wave action in the following manner: After completion of the dam, the water face will be reseeded and vegetation restored.

(c) Dam Height ~~20~~ feet. cic

10. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application.

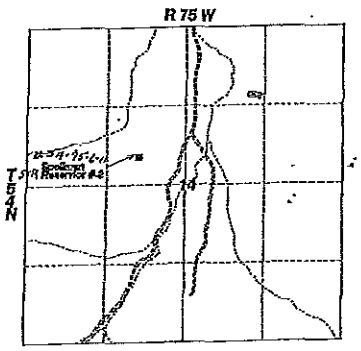
11. The estimated time required for completion of Construction is 1 year.

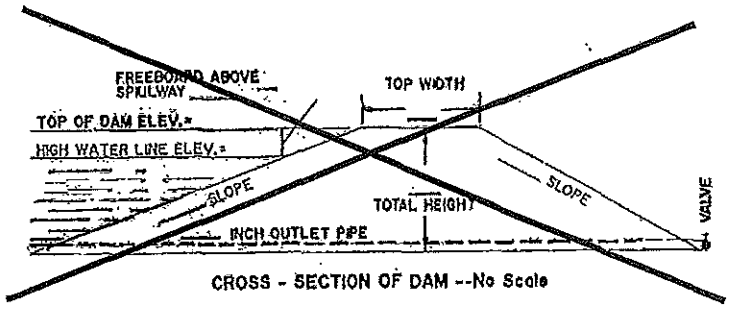
Permit No. 14425 Stk. Res. Page No. 20 (Leave Blank)

tabbies

EXHIBIT 3

MAP AND PLANS OF PROPOSED Spellman #54-75-6-11 STOCK RESERVOIR

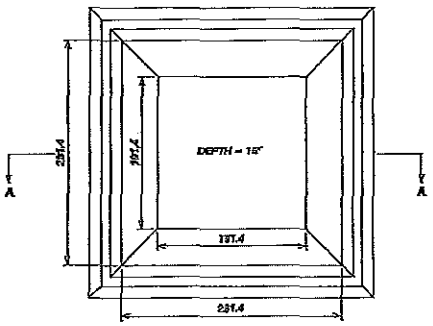




CROSS - SECTION OF DAM --No Scale

LOCATION MAP – Scale 1" = 2,000 ft.

See NOTE



CAPACITY COMPUTATIONS

$$V = \frac{D}{6}\left[(TOP\ AREA) + (BOTTOM\ AREA) + 4(AV.\ AREA)\right]$$

$$V = \frac{15}{6}\left[(281.4 \times 281.4) + (191.4 \times 191.4) + 4(236.4 \times 236.4)\right]$$

$$V = 858,642.4 \text{ cu. ft.}$$

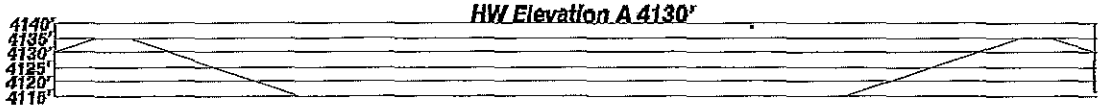
$$V = \frac{858,642.4 \text{ cu. ft.}}{43,560} = 19.8 \text{ Acre Feet}$$

SURFACE AREA

$$\frac{79,156}{43,560} = 1.818 \text{Acres}$$

AREA MAP – SCALE: - 1" = _____ (Use as large a scale as possible)

SEE NOTE



PROFILE OF DAMSITE (Looking Upstream) – Scale: Ver. 1" = 20': Hor. 1" = _____.

~~Capacity = Area X Depth = _____ / 3 = _____ Acre-Feet~~

NOTE

The location map and area map shown above are not required if the application is accompanied by an arial photograph or a U.S.G.S. quadrangle map, in accordance with Chapter VI of the Manual. However, the cross-section of dam and profile of damsite and capacity computation must be completed in all applications.

DECLARATION

Under penalties of perjury, I declare that I have examined this application and the information contained herein, and to the best of my knowledge and belief it is true, correct and complete, and that the location of the proposed facility is accurately shown either as shown above or on the arial photograph or U.S.G.S. quadrangle map accompanying this application.

Signature of Applicant or Agent

10/17/01
Date

REMARKS

TF 30 4/345

Item 6: This reservoir is to be filled from the following ground water wells:

Well Name	Permit No.
13-11-A Well	U.W. 138716
13-11-W Well	U.W. 138715
15-11-A Well	U.W. 138714
15-11-W Well	U.W. 138713
1-14-A Well	U.W. 138718
1-14-W Well	U.W. 138717
3-14-A Well	U.W. 138710
3-14-W Well	U.W. 138709
5-14-A Well	U.W. 138706
5-14-W Well	U.W. 138705
7-14-A Well	U.W. 138702
7-14-W well	U.W. 138701

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } ss.

TEMPORARY FILING NO. 30 4/345

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

If the plans show that no outlet works are contemplated, the State Engineer may, upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works as will permit proper regulation.

This permit is granted for the storage of 19.9 acre-feet of water from all sources in any one year for stock purposes only.

Water stored in this facility is surface water runoff and water provided under the following ground water permits:

Well Name	Permit No.
13-11-A Well	U.W. 138716
13-11-W Well	U.W. 138715
15-11-A Well	U.W. 138714
15-11-W Well	U.W. 138713
1-14-A Well	U.W. 138718
1-14-W Well	U.W. 138717
3-14-A Well	U.W. 138710
3-14-W Well	U.W. 138709
5-14-A Well	U.W. 138706
5-14-W Well	U.W. 138705
7-14-A Well	U.W. 138702
7-14-W Well	U.W. 138701

If at some future time it becomes necessary, the State Engineer may upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works or construction of a by-pass ditch or other means which will permit proper regulation.

This permit is granted subject to the terms of the Yellowstone River Compact.

The time for completing the construction of the reservoir shall terminate on December 31, 20 03.

Witness my hand this 29TH day of OCTOBER, A.D. 20 01.

FOR PATRICK T. TYRRELL, State Engineer

Permit No. 14425 Stk. Res.

Page No. 20 (Leave Blank)

PERMIT NO. 14425 STK. RES.

PERMIT STATUS

Priority Date August 15, 2001 Approval Date October 30, 2001

January 29, 2002 Notice of Completion of Construction on December 21, 2001, received from Jack L. Morey Jr., Agent JLM Engineering.

PROOF PREPARED, ADJUDICATION IN PROCESS

MICRO FILMED MAY 10 2002

SCANNED SEP 12 2006

February 10, 2009 This permit assigned to Cedar Ridge, LLC, 484 Turner Drive, Building B. Suite 3, Durango, CO 81303, on the basis of letter of request from Federated Oil & Gas Properties, Inc. received February 5, 2009 and verification from Cedar Ridge, LLC received February 6, 2009. See letters filed in Miscellaneous Notices under Permit No. 14342S.

SCANNED FEB 11 2009

NOTICE

This permit, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within the time allowed in the permit.

Notice of completion of the work described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

Once the Notice of Completion has been filed, Proof of Appropriation will be prepared and sent to your Water Division Superintendent. The Superintendent will arrange with you for an inspection of the facility. Should you desire adjudication, the Proof will be considered by the Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Construction which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

Form S.W. 4
Rev. 10-1999
S. Couch

NOTE: Do not fold this form. Use typewriter or print neatly with pen.

STATE OF WYOMING

MICRO FILMED FEB 01 2002

OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO APPROPRIATE SURFACE WATER

THIS SECTION IS NOT TO BE FILLED IN BY APPLICANT

Filing/Priority Date

THE STATE OF WYOMING,
STATE ENGINEER'S OFFICE } SS

The original of
This instrument was received and filed for record on the 15th day of August, A.D. 2001, at 9:30 o'clock A.M.

John R. Barnes
JOHN R. BARNES, for State Engineer

Recorded in Book 87 of Stock Reservoirs, on Page 21
Fee Paid $ 25.00 . Map Filed

WATER DIVISION NO. 2 DISTRICT NO. 9 Temp. Filing No. 30 5/345
SUBSTITUTE APPLICATION
RECEIVED OCTOBER 18, 2001 at 9:45 A.M. PERMIT NO. 14426 STOCK RESERVOIR

NAME OF FACILITY

THE Spellman #54-75-11-11 STOCK RESERVOIR

1. Name(s), mailing address and phone no. of applicant(s) is/are ~~Federated Oil and Gas Properties, Inc. 123 East Front Street Traverse, MI 49684-8401~~ Cedar Ridge, LLC 484 Turner Drive Building B, Suite 3 Durango, CO 81303 970-382-5990

(If more than one applicant, designate one to act as Agent for the others)

2. Name & address of agent to receive correspondence and notices ~~JLM Engineering~~ Mr. Terry L. Logan, Manager ~~213 East Brock, Buffalo, WY, 82834~~

3. The use to which the water is to be applied is in-place stock watering purposes. (If a pipeline to additional points of storage will be used, include form SW4-A.)

4. (a) The area of the high water line of the reservoir is 1.82 acres.

(b) The capacity of the reservoir is 19.9 acre-feet.

(c) Body of Reservoir: Length 281.4' Width 281.4' Average Depth 15'

5. The source of the proposed appropriation is Coal Bed Methane Wells 1-11-A, 1-11-W, 3-11-A, 3-11-W, 5-11-A, 5-11-W, 7-11-A, 7-11-W, 9-11-A, 9-11-W, 11-11-A, 11-11-W. SEE LIST IN REMARKS. Reservoir is located in the drainage of Spotted Horse Creek, tributary Powder River, tributary Yellowstone River. cic

6. The outlet of the proposed reservoir is located in the NE ¼ SW ¼ of Section 11

T. 54 N., R. 75 W. ~~Survey corner tie, if available. Bearing distance from Section , T. N., R. W.~~

7. Are any of the lands covered by the proposed reservoir owned by the State or Federal Government? If so, describe lands and designate whether State or Federally owned.

No. cic

8. Fill out either (a) or (b).

(a) The reservoir is located in the ~~channel~~ drainage of Spotted Horse Creek cic

(b) The reservoir is to be filled ~~through the~~ by ground water wells. See list in Remarks. cic

Canal, which has a carrying capacity of cubic feet per second.

9. (a) The dam is to be constructed as follows: Earth Embankment, moisture density controlled and compacted Contents= 6155 Cubic Yards.

(b) The water face of the dam is to be protected from wave action in the following manner: After completion of the dam, the water face will be reseeded and vegetation restored.

(c) Dam Height ~~20~~ feet. cic

10. The accompanying map is prepared in accordance with the State Engineer's Manual of Regulations and Instructions for filing applications and is hereby declared a part of this application.

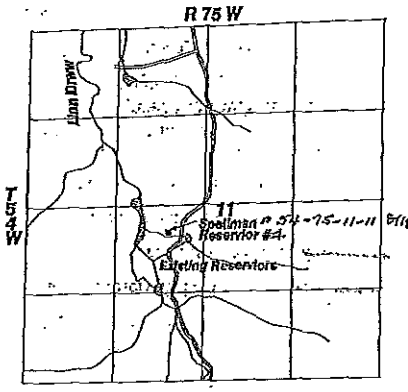
11. The estimated time required for completion of Construction is 1 year.

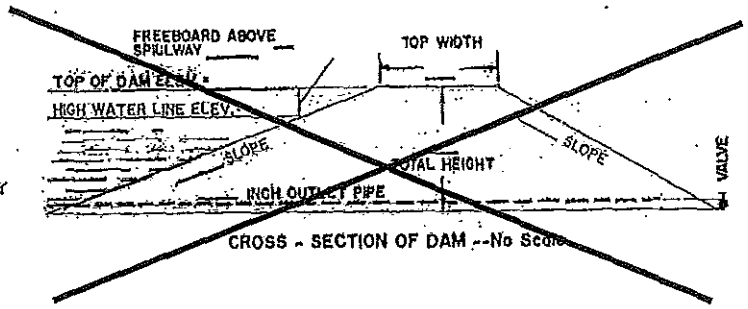
Permit No. 14426 Stk. Res. Page No. 21 (Leave Blank)

tabbies

EXHIBIT 4

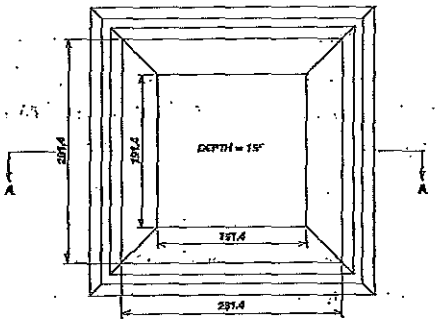
MAP AND PLANS OF PROPOSED Spellman #54-75-11-11 STOCK RESERVOIR





LOCATION MAP – Scale 1" = 2,000 ft.

See NOTE



CAPACITY COMPUTATIONS

$$V = \frac{D}{6}\left[(\text{TOP AREA}) + (\text{BOTTOM AREA}) + 4(\text{AV. AREA})\right]$$

$$V = \frac{15}{6}\left[(231.4 \times 231.4) + (191.4 \times 191.4) + 4(236.4 \times 236.4)\right]$$

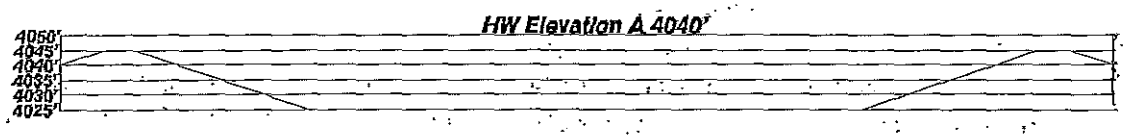
$$V = 858{,}649.4 \text{ cu. ft.}$$

$$V = \frac{858{,}649.4 \text{ cu. ft.}}{43{,}560} = 19.9 \text{ Acre Feet}$$

SURFACE AREA

$$\frac{79{,}128}{43{,}560} = 1.818 \text{ Acres}$$

AREA MAP – SCALE: - 1" = _____ (Use as large a scale as possible)



SEE NOTE

PROFILE OF DAMSITE (Looking Upstream) – Scale: Ver. 1" = 20'; Hor. 1" = _____.

~~Capacity = Area X Depth = _____ / 3 = _____ Acre-Feet~~

NOTE

The location map and area map shown above are not required if the application is accompanied by an arial photograph or a U.S.G.S. quadrangle map, in accordance with Chapter VI of the Manual. However, the cross-section of dam and profile of damsite and capacity computation must be completed in all applications.

DECLARATION

Under penalties of perjury, I declare that I have examined this application and the information contained herein, and to the best of my knowledge and belief it is true, correct and complete, and that the location of the proposed facility is accurately shown either as shown above or on the arial photograph or U.S.G.S. quadrangle map accompanying this application.

_____ 10/17/01

ure of Applicant or Agent — Date

REMARKS

TF 30 5/345

Item 5: This reservoir is to be filled from the following ground water wells:

Well Name	Permit No.
1-11-A Well	U.W. 138720
1-11-W Well	U.W. 138719
3-11-A Well	U.W. 138712
3-11-W Well	U.W. 138711
5-11-A Well	U.W. 138708
5-11-W Well	U.W. 138707
7-11-A Well	U.W. 138704
7-11-W Well	U.W. 138703
9-11-A Well	U.W. 138700
9-11-W Well	U.W. 138699
11-11-A Well	U.W. 138722
11-11-W Well	U.W. 138721

THE STATE OF WYOMING }
STATE ENGINEER'S OFFICE } ss.

TEMPORARY FILING NO. 30 5/345

THIS IS TO CERTIFY that I have examined the foregoing application and do hereby grant the same subject to the following limitations and conditions:

This permit grants only the right to use the water available in the stream after all prior rights are satisfied.

If the plans show that no outlet works are contemplated, the State Engineer may, upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works as will permit proper regulation.

This permit is granted for the storage of 19.9 acre-feet of water from all sources in any one year for stock purposes only.

Water stored in this facility is surface water runoff and water provided under the following ground water permits:

Well Name	Permit No.
1-11-A Well	U.W. 138720
1-11-W Well	U.W. 138719
3-11-A Well	U.W. 138712
3-11-W Well	U.W. 138711
5-11-A Well	U.W. 138708
5-11-W Well	U.W. 138707
7-11-A Well	U.W. 138704
7-11-W Well	U.W. 138703
9-11-A Well	U.W. 138700
9-11-W Well	U.W. 138699
11-11-A Well	U.W. 138722
11-11-W Well	U.W. 138721

If at some future time it becomes necessary, the State Engineer may upon proper complaint by other interested water appropriators or appropriator, or when in his judgment it is necessary, require the later installation of such necessary outlet works or construction of a by-pass ditch or other means which will permit proper regulation.

This permit is granted subject to the terms of the Yellowstone River Compact.

The time for completing the construction of the reservoir shall terminate on December 31, 20 03.

Witness my hand this 29TH day of OCTOBER, A.D. 20 01.

FOR PATRICK T. TYRRELL, State Engineer

Permit No. 14426. Stk. Res.

Page No. 21
(Leave Blank)

PERMIT NO. 14426 STK. RES.

PERMIT STATUS

Priority Date August 15, 2001 Approval Date October 29, 2001

January 29, 2002 Notice of Completion of Construction on January 19, 2002, received from Jack L. Morey Jr., Agent for Engineering.

PROOF PREPARED, ADJUDICATION IN PROCESS

MICRO FILMED MAY 10 2002

SCANNED SEP 12 2008

February 10, 2009 This permit assigned to Cedar Ridge, LLC, 484 Turner Drive, Building B. Suite 3, Durango, CO 81303, on the basis of letter of request from Federated Oil & Gas Properties, Inc. received February 5, 2009 and verification from Cedar Ridge, LLC received February 6, 2009. See letters filed in Miscellaneous Notices under Permit No. 14342S.

SCANNED FEB 11 2009

NOTICE

This permit, does not constitute a complete water right. It is your authority to begin construction work, which must be commenced within the time allowed in the permit.

Notice of completion of the work described in the permit, must be filed in the State Engineer's Office before the expiration of the time allowed in the permit.

If extensions of time beyond the time limits set forth in the permit are required, requests for same must be in writing, stating why the additional time is required, and must be received in the State Engineer's Office before the expiration of the time allowed in the permit.

Once the Notice of Completion has been filed, Proof of Appropriation will be prepared and sent to your Water Division Superintendent. The Superintendent will arrange with you for an inspection of the facility. Should you desire adjudication, the Proof will be considered by the Board of Control, and, if found to be satisfactory, the Board will issue to you a Certificate of Construction which will constitute a completed water right.

The granting of a permit does not constitute the granting of right-of-way. If any right-of-way is necessary in connection with the application it should be understood that this responsibility is the applicant's.

AGRICULTURAL USE PROTECTION POLICY[1]
(Chapter 1, Section 20)

I. Purpose

All surface waters in Wyoming are protected to some extent for agricultural uses. "Agricultural uses" are described in Chapter 1, Section 3 as being either stock watering or irrigation. The standard that applies to the protection of these uses is contained in Chapter 1, Section 20 which states:

> *Section 20.* ***Agricultural Water Supply.*** *All Wyoming surface waters which have the natural water quality potential for use as an agricultural water supply shall be maintained at a quality which allows continued use of such waters for agricultural purposes.*
>
> *Degradation of such waters shall not be of such an extent to cause a measurable decrease in crop or livestock production.*
>
> *Unless otherwise demonstrated, all Wyoming surface waters have the natural water quality potential for use as an agricultural water supply.*

All water quality standards are established for two reasons. The first is to provide a benchmark against which a determination can be made as to whether a waterbody is impaired and requires some kind of corrective action. The second is to provide a basis for establishing permit limits on regulated activities (WYPDES & Section 404 permits). The purpose of this policy is to provide guidelines to be used by the Water Quality Division when translating the narrative goals expressed in the Section 20 standard into appropriate WYPDES permit limits where maintaining agricultural use of the receiving waters is an issue.

Agricultural use of surface water is an opportunistic endeavor. The varying uses as well as the different qualities of the water found in the state are many and the farming and ranching industries have always had to make do with what water is available. The goal expressed in the Section 20 standard is simply to maintain surface water quality at a level that will continue to support the local agricultural uses that have developed around it.

Though the goal is simple, achieving it is not. For the most part, managing water quality for continued agricultural support requires managing the concentration and chemical makeup of dissolved solids. Because of local differences in crop types, soil types and natural water

[1] This policy was finalized in August, 2006 in conjunction with the Triennial Review of the Chapter 1 surface water standards. A modified version of this policy is under consideration by the Wyoming Environmental Quality Council for adoption as an appendix to the Chapter 1 rules. Until a final decision is rendered on that rulemaking, the provisions of this policy remain in effect for establishing effluent limits on discharges that may affect agricultural uses. The only exception is that the formula for calculating SAR limits has been updated to be SAR < ($EC_{ds/M}$ X 6.67) – 3.33.

quality and availability, it isn't possible to establish simple numeric criteria for pollutants such as TDS and SAR that will allow an efficient use of surface water for irrigation purposes. The determination of what is acceptable water quality for irrigation must necessarily involve an evaluation of local agricultural practices and background water quality conditions. For livestock watering uses, it is somewhat less complicated because there are fewer variables to consider.

"Measurable Decrease"

The first part of translating the standard is defining what is meant by *"measurable decrease in crop or livestock production"*. The phrase implies that there is a pre-existing agricultural use of a stream or drainage prior to an application for a WYPDES discharge permit. For livestock watering purposes, a pre-existing use will always be assumed. For irrigation purposes, there needs to be either a current irrigation structure or mechanism in place for diverting water from the stream channel, or a substantial acreage of naturally sub-irrigated pasture within a stream floodplain. Where neither of these conditions exist, there can be no irrigation use, nor loss in crop production attributable to water quality.

Where there are pre-existing agricultural uses, it may often be impossible to measure a loss in crops or livestock that can be attributed to water quality because of the many other factors that will affect actual production. It is also important to be able to predict the probability of a measurable decrease in production rather than relying solely on after-the-fact measurements. Therefore, the implementation of the narrative criteria through WYPDES permits will always involve making reasonable judgments and assumptions.

Effluent limits on historic discharges of produced water will not be affected by this policy in relation to the protection of agricultural uses. Where discharges have been occurring for many years, the permitted quality of those discharges shall be considered to be "background" conditions and be fully protective of the agricultural uses that have developed around them. Therefore, it is not necessary to modify those discharges in order to achieve the goal of "no measurable decrease" in crop or livestock production. It would only be necessary to maintain the existing quality of the discharge. It is important to note, however, that effluent limits on historic discharges may be made where the quality of the discharge is shown to constitute a hazard to humans, livestock or wildlife.

II. Livestock Watering

The basic concept in protecting a livestock watering use is to ensure that water quality is not acutely toxic to livestock or does not contain pollutants in concentrations that would affect growth or reproduction. There are basic effluent limitations provided in the WYPDES permit regulations *(Chapter 2 of the Water Quality Rules and Regulations)* that are intended to ensure that the water is safe for livestock to drink. These limits are:

5000 mg/L TDS;
3000 mg/L Sulfate;
2000 mg/L Chloride;

and each must be achieved at the end-of-pipe prior to mixing with the receiving stream. In addition to the basic effluent limitations the following limits for livestock protection may be incorporated into WYPDES permits when there is reason to believe they may be associated with a discharge:

Selenium	50 µg/L	Total Recoverable
Fluoride	4000 µg/L	Dissolved
Arsenic	20 µg/L	Total Recoverable
Copper	500 µg/L	Dissolved
Cadmium	50 µg/L	Dissolved
Boron	5000 µg/L	Dissolved
Chromium	1000 µg/L	Dissolved
Lead	100 µg/L	Dissolved
Mercury	10 µg/L	Dissolved
Zinc	2500 µg/L	Dissolved

Livestock watering waver

An exception to the limits above may be made whenever the background water quality of the receiving water is worse than the value listed for the associated pollutant or when the livestock producer requests use of the water and thereby accepts any potential risk to his livestock.

III. Irrigation

The interpretation of the Section 20 standard for irrigation is more complex than for livestock watering because there are more variables than just the quality of the water to consider. However, after considering the local circumstances relative to irrigation and crop production, effluent limits can be established on WYPDES permits that will be protective of the pre-existing irrigation uses. The goal is to ensure that pre-existing irrigated crop production will not be diminished as a result of the lowering of water quality.

The basic water quality parameters of concern in regard to irrigation are electrical conductivity (EC) and sodium adsorption ratio (SAR). Protection of irrigation uses where WYPDES permits are involved amounts to deriving appropriate effluent limits for EC and SAR in each instance.

A. Identification and Protection of Irrigation Uses.

Implementation of the Section 20 standard through the WYPDES permitting program involves a sequence of decisions based upon the amount and quality of data that is available to the permit writer. The most basic question is whether a proposed discharge will reach irrigated lands. If the discharge will not reach an irrigated field, either because of natural conditions or water management techniques, it could not affect crop production on that field. For the purposes of this policy, irrigated lands include the following:

1. Artificially Irrigated Lands: Artificially irrigated lands are those where water is intentionally applied for agricultural purposes. Artificially irrigated lands will be identified by the presence of canals, ditches, spreader dikes, spray irrigation systems or any other constructed mechanism intended to divert water from a stream channel for application on adjacent lands.

2. Naturally Irrigated Lands: Naturally irrigated lands are areas of land along stream channels that have enhanced vegetative production due to periodic natural flooding or sub-irrigation. Naturally irrigated lands are those lands where a stream channel is underlain by unconsolidated material and on which the combination of stream flow and channel geometry provides for enhanced productivity of agriculturally significant plants. Naturally irrigated lands may be identified by an evaluation of infra-red aerial photography, surficial geologic maps, wetland mapping, landowner testimony or any combination of that information.

Appropriate effluent limits for EC and SAR will be calculated and applied to WYPDES discharge permits in all instances where the produced water discharge may reach any artificially irrigated lands.

EC and SAR limits will also be applied to WYPDES permits where the produced water discharge may reach stream segments containing sufficient acreage of naturally irrigated land to be considered agriculturally significant. In general, stream segments containing single parcels of naturally irrigated land greater than 20 acres in size or multiple parcels in near proximity that total more than 20 acres shall be considered agriculturally significant. In making this estimation, small drainage bottoms may be excluded from consideration. Two specific criteria which may be used to exclude lands include lack of a persistent active channel and unconsolidated floodplain deposits which are generally less than 50 feet in width.

If there are no pre–existing diversions within reach of a discharge or if the water will be impounded or managed so as not to reach a diversion during the irrigation season, there would be no potential to adversely affect crop production. Likewise, if there are no agriculturally significant, naturally irrigated lands within reach of a discharge there would be no potential to adversely affect crop production. In these circumstances, permit limits would be established to protect other relevant water uses (e.g. livestock watering, wildlife, aquatic life etc.).

B. Data and Information

There is a minimum amount of data that must be collected in every circumstance in order to identify existing irrigation uses and to appropriately set effluent limits on discharges that may affect those uses. Additional information that is beyond the minimum requirements can also be considered to fine tune the permitting decisions in a way that best addresses the various interests for the water.

At a minimum the following information must be obtained:

- Location(s) of irrigation diversions and/or naturally irrigated acreage;
- Crops grown under irrigation;
- Published tolerance values for the most sensitive crop;
- Season of use
- Description of Irrigation Practices

C. Establishing Effluent Limits

A 3-tiered decision making process will be used to establish appropriate effluent limits for EC and SAR whenever a proposed discharge will likely reach irrigated lands. Tier 1 refers to a procedure for setting default EC and SAR limits and is useful in situations where the irrigated crops are salt-tolerant and/or the discharge water quality is relatively good. Tier 2 refers to a process whereby the default limits may be refined to equal background water quality conditions and is intended to be used in situations where the background EC and SAR is worse than the effluent quality. As a final measure, Tier 3 applies where background EC and SAR is better than the effluent quality. The purpose of a Tier 3 analysis is to provide sufficient justification to establish effluent limits that are of a lower quality than the pre-discharge background conditions. Under Tier 3, effluent limits may be established based upon local site conditions and irrigation practices to a level that can be demonstrated to cause no harm to the existing irrigation uses.

1. Tier 1 -Default EC and SAR limits

Default limits for EC and SAR may be used where the quality of the discharge water is relatively good or the irrigated crops are salt-tolerant. The default values shall be based upon the published soil EC tolerance values for the most sensitive crop and shall be calculated as follows:

a. Default EC limits will be based upon 100 percent yield threshold values for soil EC reported by the USDA Agricultural Research Service (ARS) Salt Tolerance Database. In the event that the species of interest is not included in the ARS Salt Tolerance Database, then the following alternative references can be consulted:

(1) Hanson et al. 2006[2]. Agricultural Salinity and Drainage. DANR Pub. 3375, Univ. of Calif. Davis;

(2) Ayers and Westcot. 1985. Water Quality for Agriculture. UN FAO Irrigation and Drainage Pager 29 (revised); and

(3) CPHA. 2002. Western Fertilizer Handbook. 9th Edition. Interstate Pub., Inc., Danville, IL.

The relationship between soil EC values and irrigation water EC values will be: EC (soil) = 1.5 EC (water), i.e., the published soil EC threshold obtained from the appropriate reference will be divided by the soil concentration factor of 1.5 to establish the discharge EC limit.

However, in circumstances where the background water quality of the receiving water(s) is known to be significantly better than would otherwise be required based on a theoretical 100% yield, effluent limits may be set to maintain that higher quality.

b. Default SAR values will be extrapolated from the Hanson et al. (2006)[2] Chart *(see Figure 1 attached)* based upon the default EC value in each circumstance up to a maximum default value of 10. The effluent limit for SAR will be determined in conjunction with EC so that the relationship of SAR to EC remains within the "no reduction in rate of infiltration" zone of Figure 1. The maximum SAR limit is, therefore, set below the line separating the "no reduction in rate of infiltration" zone from the "slight to moderate reduction in infiltration" zone in the Hanson et al. diagram, which is represented by the following equation: SAR < (6.67 x EC) – 3.33[3]. It must be noted that SAR values are tied to the EC concentration and might need to be adjusted to correlate to the actual EC concentration rather than the theoretical maximum.

Use of the Hanson diagram to extrapolate default effluent limits for SAR is capped at a maximum SAR of 10 to minimize the potential for sodium build-up in poorly drained soils. This 10 SAR cap is only intended to apply when utilizing the default procedure and may be modified according to the provisions of section C.2 "Refining EC and SAR Limits", described below.

[2] This reference has been updated to the 2006 version of the Agricultural Salinity and Drainage Manual from the previously cited 1999 version

[3] This Formula has been updated from the previously used SAR < ($EC_{ds/M}$ X 7.10) – 2.48 in accordance with the 2006 Salinity and Drainage Manual.

c. At a minimum, the EC and SAR limits will apply during the irrigation season and when flows are sufficient to support the use. On sub-irrigated lands and passively irrigated lands such as those under spreader dike systems, the irrigation season shall generally be considered to be year-round.

2. Refining EC and SAR limits (Tiers 2&3)

Establishing EC and SAR limits based simply on the most sensitive crop is the most stringent approach and would be protective of the irrigation use in all circumstances. It may be possible to refine those values if additional information is available showing that less stringent effluent limits would be adequately protective. This type of showing can be made by demonstrating that background water quality conditions are of a lower quality than the default values or by demonstrating that because of local soil conditions and irrigation practices there would be no harm to crop production from less stringent EC and SAR limits.

a. Tier 2 - Background Water Quality

If sufficient data is available to demonstrate or calculate that the pre-existing background water quality at the point(s) of diversion is worse than the effluent quality, EC and SAR effluent limits may be based upon those background conditions rather than tolerance values for the most sensitive crop.

(1). Measured Data: Background water quality may be established based upon published pre-discharge historic data. Generally, this data only exists on larger, perennial, mainstem stream channels where historic gauging has taken place. Actual measured data is the most reliable means of establishing background and must be considered on those waters where it is available.

(2). Calculated Background: On intermittent and ephemeral stream channels, pre-discharge water quality data is usually scarce or non-existent and very difficult to collect. In these circumstances, background water quality can be estimated by conducting soil surveys on land that has been historically irrigated from the subject stream.

In the event that soil studies are used as a means to estimate baseline water quality for a given drainage, the following requirements apply:

(i) Sample Site Selection: Soil samples shall be taken at semi-random sites within each contiguous irrigated segment downstream of the proposed discharge. "Semi-random" in this case is intended to mean that the applicant will identify the various major distinguishing terrain zones within each

irrigated segment and select sample sites randomly within each terrain zone. For example, the channel bottom may constitute one terrain zone, the first small terrace above the channel bottom may be another terrain zone, and the adjacent meadow or field may be a single remaining terrain zone, or that meadow / field may actually be comprised of several other known zones such as discharge-affected soils vs. non-affected soils, sub-irrigated reaches vs. non-sub-irrigated reaches, etc..

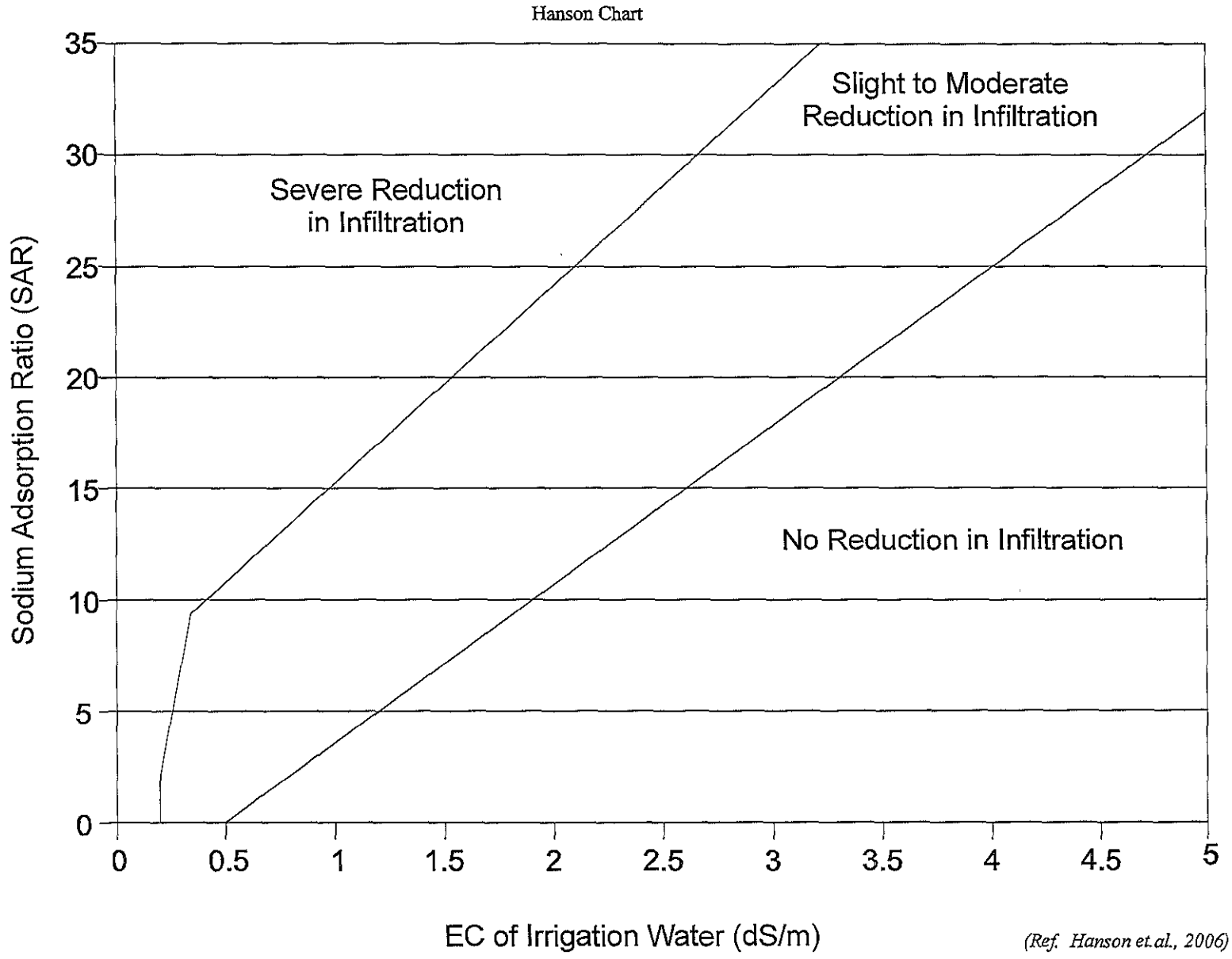
(ii) Number of Sample Sites: Listed below are the minimum number of soil sample sites required for each of the identified terrain zones (based on zone area) within a contiguous irrigated segment:

Zone Area	**Minimum Number of Sample Sites**
0 – 5 acres	3
5 - 10	5
10 + acres	7

(iii) Sample Collection: Sample sites must be located a minimum of 50 feet apart from one another. Each sample site shall be sampled at a minimum of four depths (0-12", 13-24", 25-36", 37-48"). If alfalfa is present within the terrain zone, each sample site within that terrain zone must be sampled at a total of 6 depths (at the above-noted depths, plus 49-60" and 61-72"). Each 12-inch depth sample must be analyzed either individually or combined (composited) with other corresponding depth samples from the other sample sites within the same terrain zone (i.e., all 0-12" samples from a given terrain zone bulked together and analyzed as a single composite sample).

(iv) Sample Analysis: At a minimum, a saturated paste extract for each sample shall be analyzed for EC. Though not necessary for the estimation of background water conductivity, it is advisable to also analyze the soil samples for pH, SAR, soil texture and exchangeable sodium percentage (ESP) to avoid having to duplicate the sampling if the results indicate that a "no harm analysis" *(item b. below)* needs to be completed. Percent organic matter shall be analyzed in the surface 0-12 inch samples only. In addition, analyses to identify the clay mineralogy types present in the soils may also be warranted.

Figure 1



(Ref. Hanson et.al., 2006)

(v) Soil Report Preparation: At a minimum the applicant shall submit:

i. A map or diagram identifying where each of the soil sample sites were located. At a minimum, the map or diagram must show the basic topography and stream course, irrigation structures *(if present - such as spreader dams or head gates)*, estimated boundaries of the irrigated acreage, surface ownership of the irrigated acreage *(including downstream irrigated areas)* and section / township / range identification. This map must also show any delineated terrain zones, plus elevations of the terrain zones;

ii. An accompanying location table which includes the quarter / quarter, section, township, range, and latitude / longitude for each sample site;

iii. Summary data table showing the analytical results for each of the soil parameters listed above, for each depth, at each sample site.

iv. All associated lab sheets.

b. Tier 3 - No Harm Analysis

The actual effects of EC and SAR on crop production are variable based upon soil type and chemistry and may be mitigated to some extent by managing irrigation practices. EC and SAR effluent limits may also be established based upon a scientifically defensible site specific study that examines local soil characteristics, natural water quality, expected crop yield, irrigation practices and/or any other relevant factor related to crop production.

Because of the very site-specific nature of this approach and the number and complexity of variables that may need to be considered, it is not very useful to specify any particular type of analysis in this policy. When taking this approach, however, there is a burden of proof placed upon the applicant to demonstrate through a comprehensive study that levels of EC and/or SAR higher than either the default values or estimated background water quality would most likely not measurably harm an existing irrigation use. This approach will allow a degree of creativity regarding landowner preferences and management. Refined limits for EC and SAR resulting from a "no harm" analysis should incorporate a reasonable margin of safety to account for variables that cannot be precisely measured or modeled.

c. Irrigation Waiver

An exception to EC or SAR limits established under the Tier 1, 2 or 3 procedures may be made when affected landowners request use of the water and thereby accept any potential risk to crop production on their lands. Irrigation waivers will only be granted in association with an irrigation management plan that provides reasonable assurance that the lower quality water will be confined to the targeted lands.

d. Reasonable Access Requirement

The procedure for establishing default EC and SAR limits is intended to provide the ability to permit the discharge of high quality water without an obligation to conduct site specific studies. In practice, the use of the default procedure will only apply where permitted discharges are of exceptionally high quality. In many applications, appropriate limits for EC and SAR will have to be based on refined procedures rather than default. Because the refined procedures require the acquisition of site-specific data, it is necessary that permit applicants and/or the DEQ have reasonable access to obtain the required information. In circumstances where a landowner chooses to deny access for the purpose of developing a Section 20 analysis, EC and SAR limits will be based upon the best information that can be reasonably obtained and may be less stringent than Tier 1 default limits.

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SECTION 20 DECISION PROCESS