LA PLATA COUNTY
PLANNING DEPARTMENT
970.382.6263 • FAX 970.382.6298• TDD 970.382.6218

August 29, 2006

Mr. Tom Kaldenbach, Environmental Protection Specialist
Colorado Division of Reclamation, Mining, and Safety
1313 Sherman Street, Room 215
Denver, Colorado 80203

Dear Mr. Kaldenbach:

Mike Savage has requested that I respond regarding La Plata County Code requirements for the King Coal operation as described below. I understand that the project involves the mining of coal by underground methods (room and pillar) from a State of Colorado coal lease and a federal Bureau of Land Management coal lease. The operation is an extension of the existing King Coal Mine that has been in operation adjacent to the extension area since 1947. All surface disturbance (approximately 22 acres) associated with the mining operation is located within State of Colorado lands for which a Colorado Division of Reclamation, Mining and Safety permit has been obtained. The federal Office of Surface Mining Reclamation and Enforcement has concurred with the issuance of this permit and is currently reviewing the permit for coal extraction under tribal lands. National King Coal LLC also holds additional permits with the federal Mine Safety and Health Administration (safety), Colorado Department of Public Health and Environment (air emissions, stormwater discharge, and construction), and the Colorado Division of Water Resources (water rights and augmentation).

Because the operations are located on State of Colorado lands, and beneath Bureau of Land Management and Ute Mountain Tribal lands and do not involve any private lands, the County does not have jurisdiction to review the proposal.

Sincerely,

Nancy D. Lauro
Community Development Director
Cc: via email: tbird@NKCmine.com
savageandsavage@earthlink.net

1060 E. 2ND AVE. • DURANGO, CO • 81301

LA PLATA COUNTY
1060 EAST SECOND AVENUE, DURANGO, COLORADO 81301 • PHONE 303-259-4000 • FAX 259-4000, EXT. 299

September 9, 1994

Harry Ranney
Colorado Division of Minerals & Geology
1313 Sherman Street, Rm 215
Denver, Colorado 80203

RE: King Coal

Dear Mr. Ranney:

This letter is to confirm that the King Coal operation in La Plata County conforms to county land use regulations. The extension of underground mining as proposed has been determined to have no surface impacts at present.

If you have further questions, please feel free to contact me at (303) 382-6263.

Sincerely,

Robert L. Bright
Director of Planning

cc: Tom Bird, King Coal
King Coal file

La Plata County

BUILDING DEPARTMENT

COUNTY ENGINEER

P. O. BOX 1711
DURANGO, COLORADO 81301
PHONE: 259-1086

January 22, 1979

To Whom It May Concern:

This is to verify that the coal extraction operation known as the KING COAL MINE is in an unzoned area of La Plata County and has been in existence for some time in compliance with all County land use requirements. This in no way relieves the operators from compliance with the requirements of the Colorado Land Reclamation Act.

Craig Roser

Craig Roser
La Plata County Land Use Administrator

CR/aer

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
AIR POLLUTION CONTROL DIVISION
TELEPHONE: (303) 692-3150

CONSTRUCTION PERMIT

PERMIT NO: **09LP0202F**

Final Approval
Modification 1

DATE ISSUED: September 3, 2013

ISSUED TO: **GCC Energy, LLC**

THE SOURCE TO WHICH THIS PERMIT APPLIES IS DESCRIBED AND LOCATED AS FOLLOWS:

Underground mining of coal and supporting surface facilities at King II Mine located at 6473 County Road 120 and supporting surface facilities at King I Mine located at 4424 County Road 120, Hesperus, La Plata County, Colorado.

THE SPECIFIC EQUIPMENT OR ACTIVITY SUBJECT TO THIS PERMIT INCLUDES THE FOLLOWING:

Underground Mine Ventilation, mining, coal handling, stockpiling, processing, hauling, reclamation and supporting rock dust silo storage and handling as described in Attachment A.

THIS PERMIT IS GRANTED SUBJECT TO ALL RULES AND REGULATIONS OF THE COLORADO AIR QUALITY CONTROL COMMISSION AND THE COLORADO AIR POLLUTION PREVENTION AND CONTROL ACT C.R.S. (25-7-101 et seq), TO THOSE GENERAL TERMS AND CONDITIONS INCLUDED IN THIS DOCUMENT AND THE FOLLOWING SPECIFIC TERMS AND CONDITIONS:

EMISSION LIMITATIONS AND RECORDS

1. Emissions of air pollutants shall not exceed the following limitations (as calculated using the emission factors included in the Notes to Permit Holder section of this permit). Annual records of the actual emission rates shall be maintained by the applicant and made available to the Division for inspection upon request. (Reference: Regulation No. 3, Part B, Section II.A.4)

Annual Limits:

AIRS Point	Tons per Year			Emission Type
	PM	PM_{10}	$PM_{2.5}$	
001	42.9	16.0	2.1	Fugitive
002	0.8	0.4	0.1	Point
003	0.5	0.2	0.0	Point
004	21.7	10.3	1.6	Point
005	1.5	0.7	0.1	Point
010	1.4	0.5	0.0	Point
011	2.3	1.0	0.1	Fugitive
Point	25.9	12.1	1.8	**TOTAL**
Fugitive	45.2	17.0	2.2	

Note: Compliance with the fugitive emission limits shall be demonstrated by not exceeding the production limits in condition number 2 and by following the attached fugitive dust emissions control plan.

See "Attachment A" for information on emission factors and methods used to calculate limits for Point Source emissions.

PROCESS LIMITATIONS AND RECORDS

2. This source shall be limited to the following maximum consumption, processing and/or operational rates as listed below. Annual records of the actual process rate shall be maintained by the applicant and made available to the Division for inspection upon request. (Reference: Regulation 3, Part B, II.A.4)

Process/Consumption Limits

Process Parameter	Annual Limit
Mined coal production	1,300,000 tons per year
Crushing and screening of coal	
Finished product stockpiles	

STATE AND FEDERAL REGULATORY REQUIREMENTS

3. Visible emissions shall not exceed twenty percent (20%) opacity during normal operation of the source. During periods of startup, process modification, or adjustment of control equipment visible emissions shall not exceed 30% opacity for more than six minutes in any sixty consecutive minutes. Opacity shall be determined using EPA Method 9. (Reference: Regulation No. 1, Section II.A.1. & 4.)

4. This source is subject to the New Source Performance Standards requirements of Regulation No. 6, Part A, Subpart Y , Standards of Performance for Coal Preparation Plants including, but not limited to, the following:

a. The discharge into the atmosphere shall not exhibit 20 percent opacity or greater. This applies to emissions from coal processing and conveying equipment, coal storage systems, and coal transfer and loading systems.

In addition, the following requirements of Regulation No. 6, Part A, Subpart A, General Provisions, apply.

a. At all times, including periods of start-up, shutdown, and malfunction, the facility and control equipment shall, to the extent practicable, be maintained and operated in a manner consistent with good air pollution control practices for minimizing emissions. Determination of whether or not acceptable operating and maintenance procedures are being used will be based on information available to the Division, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. (Reference: Regulation 6, Part A. General Provisions from 40CFR60.11

b. No article, machine, equipment or process shall be used to conceal an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere. (§ 60.12)

c. Written notification of construction and Final startup dates shall be submitted to the Division as required under § 60.7.

d. Records of startups, shutdowns, and malfunctions shall be maintained, as required under § 60.7.

e. Written notification of continuous monitoring system demonstrations shall be submitted to the Division as required under § 60.7.

f. Compliance with opacity standards shall be demonstrated according to § 60.11.

OPERATING & MAINTENANCE REQUIREMENTS

5. This source is not required to follow a Division-approved operating and maintenance plan. The operating and maintenance plan provided by the manufacturer of the crusher (AIRS ID: 002) and the screen (AIRS ID: 010) shall be followed for these sources.

COMPLIANCE TESTING AND SAMPLING

Periodic Testing Requirements

6. No periodic testing is required for this facility.

ADDITIONAL REQUIREMENTS

7. All previous versions of this permit are cancelled upon issuance of this permit.

8. Permit 11LP3252 is cancelled upon issuance of this permit. The screen (AIRS ID: 067/1103/010) described in that permit is incorporated into this permit.

9. The AIRS ID number shall be marked on the subject equipment for ease of identification. (Reference: Regulation No. 3, Part B, III.E.) (State only enforceable)

10. A Revised Air Pollutant Emission Notice (APEN) shall be filed: (Reference: Regulation No. 3, Part A, Section II.C.)

    a. Annually whenever a significant increase in emissions occurs as follows:

       For any criteria pollutant:

       For sources emitting **less than 100 tons per year**, a change in actual emissions of five tons per year or more, above the level reported on the last APEN submitted; or

       For volatile organic compounds (VOC) and nitrogen oxide (NOx) sources in an ozone non-attainment area emitting **less than 100 tons of VOC or nitrogen oxide per year**, a change in actual emissions of one ton per year or more or five percent, whichever is greater, above the level reported on the last APEN submitted; or

       For sources emitting **100 tons per year or more of a criteria pollutant**, a change in actual emissions of five percent or 50 tons per year or more, whichever is less, above the level reported on the last APEN submitted; or

       For sources emitting **any amount of lead**, a change in actual emissions, above the level reported on the last APEN submitted, of fifty (50) pounds of lead

       For any non-criteria reportable pollutant:

       If the emissions increase by 50% or five (5) tons per year, whichever is less, above the level reported on the last APEN submitted to the Division.

    b. Whenever there is a change in the owner or operator of any facility, process, or activity; or

    c. Whenever new control equipment is installed, or whenever a different type of control equipment replaces an existing type of control equipment; or

    d. Whenever a permit limitation must be modified; or

    e. No later than 30 days before the existing APEN expires.

GENERAL TERMS AND CONDITIONS:

11. This permit and any attachments must be retained and made available for inspection upon request. The permit may be reissued to a new owner by the Division as provided in Regulation No. 3, Part B, Section II.B upon a request for transfer of ownership and the submittal of a revised APEN and the required fee.

12. This permit is issued in reliance upon the accuracy and completeness of information supplied by the applicant and is conditioned upon conduct of the activity, or construction, installation and operation of the source, in accordance with this information and with representations made by the applicant or applicant's agents. It is valid only for the equipment and operations or activity specifically identified on the permit.

By: _____ By: _____

Charles N. Pray, P.E.-P.L.S.
Permit Engineer

R K Hancock III, P.E.
Construction Permits Unit Supervisor

Permit History:

Final Approval	November 24, 2010	Final Approval issued to GCC Energy, LLC, based on an Enforcement Action. Facility wide permit for both King I & King II.
Final Approval	August 9, 2011	
Final Approval – Modification 1	This Issuance	Increase production from 800,000 tons per year to 1,300,000 tons per year. All King I activities eliminated except for the coal refuse pile and reclamation operations.

Notes to Permit Holder (as of date of permit issuance):

1) The production or raw material processing limits and emission limits contained in this permit are based on the production/processing rates requested in the permit application. These limits may be revised upon request of the permittee providing there is no exceedence of any specific emission control regulation or any ambient air quality standard. A revised air pollutant emission notice (APEN) and application form must be submitted with a request for a permit revision.

2) This source is subject to the Common Provisions Regulation Part II, Subpart E, Affirmative Defense Provision for Excess Emissions During Malfunctions. The permittee shall notify the Division of any malfunction condition which causes a violation of any emission limit or limits stated in this permit as soon as possible, but no later than noon of the next working day, followed by written notice to the Division addressing all of the criteria set forth in Part II.E.1. of the Common Provisions Regulation. See: http://www.cdphe.state.co.us/regulations/airregs/5CCR1001-2.pdf.

3) The following equipment is currently exempt from construction permitting requirements and/or APEN reporting requirements based on information provided by the operator for the Division's analysis:

AIRS ID	Facility ID	Description	Notes	
N/A	Pulverized limestone activities (Rock Dust)	Rock Dust Bin, pneumatically conveyed, fully enclosed.	APEN Exempt, Permit Exempt	This operation is exempt from reporting requirements because the emissions are below the de minimis level
N/A	Salt activities	Emissions from delivery, storage, loading and unloading.	APEN Exempt, Permit Exempt	This operation is exempt from reporting requirements because the emissions are below the de minimis level

4) In accordance with C.R.S. 25-7-114.1, each Air Pollutant Emission Notice (APEN) associated with this permit is valid for a term of five years from the date it was received by the Division. A revised APEN shall be submitted no later than 30 days before the five-year term expires. Please

refer to the most recent annual fee invoice to determine the APEN expiration date for each emissions point associated with this permit. For any questions regarding a specific expiration date call the Division at (303)-692-3150.

5) This facility is classified as follows:

Applicable Requirement	Status
Operating Permit	Minor Source for PM, PM10 and PM2.5
PSD	Minor Source for PM, PM10 and PM2.5

6) Full text of the Title 40, Protection of Environment Electronic Code of Federal Regulations can be found at the website listed below:

http://ecfr.gpoaccess.gov/

Part 60: Standards of Performance for New Stationary Sources		
NSPS	60.250-60.258	Subpart Y
NSPS	Part 60, Appendixes	Appendix A – Appendix I

Note: For NSPS Subpart Y applicability purposes, all the affected facilities covered by this permit are considered as existing facilities, which were constructed or modified prior to April 28, 2008.

7) The permit holder is required to pay fees for the processing time for this permit. An invoice for these fees will be issued after the permit is issued. The permit holder shall pay the invoice within 30 days of receipt of the invoice. Failure to pay the invoice will result in revocation of this permit (Reference: Regulation No. 3, Part A, Section VI.B.)

8) If this permit specifically states that final approval has been granted, then the remainder of this condition is not applicable. Otherwise, the issuance of this construction permit does not provide "final" authority for this activity or operation of this source. Final approval of the permit must be secured from the Division in writing in accordance with the provisions of 25-7-114.5(12)(a) C.R.S. and Regulation No. 3, Part B, Section III.G. Final approval cannot be granted until the operation or activity commences and has been verified by the Division as conforming in all respects with the conditions of the permit. Once self-certification of all points has been reviewed and approved by the Division, it will provide written documentation of such final approval**. Details for obtaining final approval to operate are located in the Requirements to Self-Certify for Final Approval section of this permit.**

9) Unless specifically stated otherwise, the general and specific conditions contained in this permit have been determined by the Division to be necessary to assure compliance with the provisions of Section 25-7-114.5(7)(a), C.R.S.

10) Each and every condition of this permit is a material part hereof and is not severable. Any challenge to or appeal of a condition hereof shall constitute a rejection of the entire permit and upon such occurrence, this permit shall be deemed denied *ab initio*. This permit may be revoked at any time prior to self-certification and final authorization by the Division on grounds set forth in the Colorado Air Pollution Prevention and Control Act and regulations of the AQCC including failure to meet any express term or condition of the permit. If the Division denies a permit, conditions imposed upon a permit are contested by the applicant, or the Division revokes a permit, the applicant or owner or operator of a source may request a hearing before the AQCC for

review of the Division's action.

11) Section 25-7-114.7(2)(a), C.R.S. requires that all sources required to file an Air Pollutant Emission Notice (APEN) must **pay an annual fee** to cover the costs of inspections and administration. If a source or activity is to be discontinued, the owner must notify the Division in writing requesting a cancellation of the permit. Upon notification, annual fee billing will terminate.

12) Violation of the terms of a permit or of the provisions of the Colorado Air Pollution Prevention and Control Act or the regulations of the AQCC may result in administrative, civil or criminal enforcement actions under Sections 25-7-115 (enforcement), -121 (injunctions), -122 (civil penalties), -122.1 (criminal penalties), C.R.S.

PARTICULATE EMISSIONS CONTROL PLAN FOR MINING AND PROCESSING ACTIVITIES

THE FOLLOWING PARTICULATE EMISSIONS CONTROL MEASURES SHALL BE USED FOR COMPLIANCE PURPOSES ON THE ACTIVITIES COVERED BY THIS PERMIT, AS REQUIRED BY THE AIR QUALITY CONTROL COMMISSION REGULATION NO.1, SECTION III.D.1.b. THIS SOURCE IS SUBJECT TO THE FOLLOWING EMISSION GUIDELINES:

a. **Mining and Processing Activities -** Visible emissions not to exceed 20%, no off-property transport of visible emissions.

b. **Haul Roads -** No off-property transport of visible emissions shall apply to on-site haul roads, the nuisance guidelines shall apply to off-site haul roads.

c. **Haul Trucks -** There shall be no off-property transport of visible emissions from haul trucks when operating on the property of the owner or operator. There shall be no off-vehicle transport of visible emissions from the material in the haul trucks when operating off of the property of the owner or operator.

Control Measures

1. Adequate soil moisture must be maintained in topsoil to control emissions during removal. Watering shall be implemented if necessary.

2. Topsoil stockpiles shall be revegetated within one year.

3. Emissions from material handling (i.e. removal, loading, and hauling) shall be controlled by watering at all times unless natural moisture is sufficient to control emissions.

4. Unpaved haul roads shall be graveled, as per Final application, and watered as often as needed to control fugitive particulate emissions such that the above guidelines are met. Chemical Dust suppression shall be utilized if necessary.

5. Reclamation works and sequential extraction of material shall be initiated to keep the total disturbed areas at any one time to a minimum.

6. Material stockpiles shall be watered as necessary if inherent moisture is not sufficient to control fugitive particulate emissions.

7. Plant entryway and truck service roads shall be graveled or paved. Watering shall be implemented if emission guidelines above are not met.

ATTACHMENT A

DETAILS OF EQUIPMENT / ACTIVITIES COVERED UNDER THIS FACILITY-WIDE PERMIT

AIRS ID	DESCRIPTION MAKE, MODEL, S/N, DESIGN RATING, CAPACITY DIMENSIONS, CONSUMPTION, THROUGHPUT	REMARKS SPECIFIC PROVISIONS
001	**Surface Activities: King I & King II.** **Fugitive dust producing activities** <u>Topsoil Removal and Portal Development (King II only)</u> <u>Coal Extraction (King II only), Haul and Miscellaneous Road Maintenance, all stockpiles.</u> Two (2) Intermediate Coal Stockpiles, One (1) Stoker Coal Stockpile, One (1) Lump Coal Stockpile, Two (2) Crushed Coal Stockpiles. In order to avoid lumping of coal, no control is assumed for stockpiles and front end loader transfers.	Emission Control Measures for Mining Activities: Water/chemicals treatment of graveled road surfaces. Brushes / grasses, Revegetation. Restrict traffic to established roads.
002	**Crushing: King II** One (1) Make: Gundlach, Model: 7055CC and Serial Number: 7055CC1243R crusher, Coal processed: 1,300,000 tons per year. Controlled emission factors from AP-42, Chapter 11.19.2.2 Emission factor PM: 0.0012 lbs/ton Emission factor PM10: 5.40 e-04 lbs/ton Emission factor PM2.5: 1.00 e-04 lbs/ton	Subject to NSPS, Subpart Y. Compliance plan. Controlled by full enclosure. .
003	**Two (2) Bins and loadout: King II** Coal processed: 1,300,000 tons per year. Emission factors from AP-42, Chapter 13.2.4, “Drop Equation” Emission factor PM: 7.34e-04 lbs/ton Emission factor PM10: 3.47e-04 lbs/ton Emission factor PM2.5: 5.26e-05 lbs/ton	Uncontrolled drop to trucks.

AIRS ID	DESCRIPTION MAKE, MODEL, S/N, DESIGN RATING, CAPACITY DIMENSIONS, CONSUMPTION, THROUGHPUT	REMARKS SPECIFIC PROVISIONS
004	**Mine ventilation: King II only** Operation based on annual use: 8760 Hours/year Emission factor PM: 4.96 lbs/hour Emission factor PM10: 2.34 lbs/hour Emission factor PM2.5: 0.35 lbs/hour	
005	**Conveyor transfers: King II** Coal processed: 1,300,000 tons per year. Emission factors from AP-42, Chapter 13.2.4, "Drop Equation". Control efficiencies from Texas Commission on Environmental Quality (TCEQ). Emission factor PM: 7.34e-04 lbs/ton. Emission factor PM10: 3.47e-04 lbs/ton. Emission factor PM2.5: 5.26e-05 lbs/ton. Conveyor transfer control efficiencies: BC-1 onto Stockpile 1 = 50% (stackout tube); Mined coal reclaim tunnel hoppers to BC-2 = 90%; BC-2 to Screen 1 = 85%; Screen 1 drop to Crusher = 85%; BC-3 to BC-6 = 90%; Screen to BC-5, BC-5 to Lump Coal Pile = 0%; Screen to BC-4, BC-4 to Stoker Coal Pile = 0%; Crushed Coal Reclaim to BC-6; 90%.	Subject to NSPS, Y Full enclosure Partial enclosure Partial enclosure Full enclosure except for crushed coal transfer Full enclosures
006	**Screen: King I**	Point cancelled
007	**Crusher and Screen: King I**	Point cancelled
008	**Conveyor Transfers: King I**	Point cancelled
009	**Coal Loadout: King I**	Point Cancelled

AIRS ID	DESCRIPTION MAKE, MODEL, S/N, DESIGN RATING, CAPACITY DIMENSIONS, CONSUMPTION, THROUGHPUT	REMARKS SPECIFIC PROVISIONS
010	**Screening: King II** One (1) Cedar Rapid, Model: TSH 7203-38 Screen, Serial Number: TRXS7203PDUBC1056, Coal processed: 1,300,000 tons per year. Controlled emission factors from AP-42, Chapter 11.19.2.2 Emission factor PM: 0.0022 lbs/ton Emission factor PM10: 7.40e-04 lbs/ton Emission factor PM2.5: 5.00e-05 lbs/ton	Subject to NSPS, Y Compliance plan. Controlled by full enclosure.
011	**Crushed Limestone activities:** Emissions from delivery, storage, loading and unloading. Crushed limestone handled: 24,000 tons per year	Compliance Plan

STATE OF COLORADO

John W. Hickenlooper, Governor
Christopher E. Urbina, MD, MPH
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

July 1, 2013

Trent Peterson, VP
GCC Energy LLC
6473 CR 120
Hesperus, Colorado 81326

RE: Administrative Extension
King Coal Mine
Permit No.: COG850001

Dear Mr. Peterson:

The discharge permit issued to you for your facility expired on June 30, 2013. We are in the process of developing a renewal permit, but the review procedures required by law have not been completed. Accordingly, we are giving you notice by this letter that your previous permit remains in effect under Section 104(7) of the Administrative Procedures Act, C.R.S. 1973, 24-4-101, et seq (1982 repl. vol. 10).

All effluent limitations, monitoring requirements, and other permit terms and conditions in your current permit will remain in effect until your new permit is issued.

Sincerely,

Loretta Houk

Loretta Houk
Water Quality Protection Section
WATER QUALITY CONTROL DIVISION

xc: Compliance Monitoring & Data Management, WQCD
Permit File

RECEIVED JUL 0 1 2008

STATE OF COLORADO

Bill Ritter, Jr., Governor
James B. Martin, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

http://www.cdphe.state.co.us

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

June 18, 2008

Dan Redetzke
GCC Energy LLC
4424 County Road 120
Hesperus, CO 81326

RE: Certification, for the Colorado Wastewater Discharge Permit System
Permit Number: COG-850000, Facility Number: COG-850001

Dear Mr. Redetzke:

Enclosed please find a copy of the **Certification**, which was issued under the Colorado Water Quality Control Act. You are legally obligated to comply with all terms and conditions of the permit and certifications.

Please read the permit and if you have any questions, contact me at (303) 692-3531.

Sincerely,

Loretta Houk

Loretta Houk
Water Quality Protection Section
WATER QUALITY CONTROL DIVISION

Enclosure

xc: Regional Council of Government
La Plata County, Local Health Department
J. Brand, DE Technical Services
Permit File
Permit Fees

/lh

cert

RECEIVED JUL 0 1 2008

Colorado Discharge Permit System Regulations
CERTIFICATION
under
GENERAL PERMIT FOR COAL MINING FACILITIES (SIC NO: 1222)
Category 07, Sub-category 5, General Permits, Current fee $780/year (CRS 25-8-502)

This certification specifically authorizes **GCC Energy LLC**, to discharge from the **King Coal Mine, and King II Coal Mine,** as described below and in accordance with the General Permit for Coal Mining Facilities.
All correspondence relative to this facility should reference the specific facility number, **COG-850001**.

Permittee
GCC Energy, LLC
4424 County Road 120
Hesperus, CO 81326

Facility Contact
Dan Redetzke
970-385-4528 x18

Project Name, Activity and Location
This facility is an underground coal mine with surface processing consisting of crushing and screening. Current production (as of January 2008) is 475,000 tons per year will maximum production is 800,000 tons per year. Discharges consist of surface runoff only. The King Coal Mine is located in NW ¼ Section 32, T35N, R11W in La Plata County. The King II Coal Mine is located in the NW ¼ Section 36, T35N, R12W, also in La Plata County.

Outfalls

Outfalls	*Source*	*Treatment*	*Lat/Long*	*10-Yr, 24-Hr Capacity*	*Receiving Water*
001	Surface Runoff	Sedimentation	37° 15.2' N / 108° 6.04 ' W	0.32 MG	Hay Gulch
002	Surface Runoff	Sedimentation	37° 15.2' N / 108° 6.04 ' W	0.062 MG	Hay Gulch
003	Surface Runoff	Sedimentation	37° 14.78' N / 108° 7.84 ' W	0.57 MG	Hay Gulch

Effluent Parameters
Note that Hay Gulch diverts water out of the La Plata River, and eventually returns water to the La Plata River. As Hay Gulch is therefore not really a tributary to the La Plata, it will be considered as part of the main stem. The discharge is to Hay Gulch, within Segment 01 of the La Plata River, Mancos River, McElmo Creek and San Juan River Sub-basin, San Juan and Dolores River Basin, found in the Classifications and Numeric Standards for the San Juan and Dolores River Basin (Regulation No. 34; last update effective 7/1/07). Segment 01 is Undesignated, and is classified for the following beneficial uses: Aquatic Life, Class 1 Cold; Recreation Class P; Water Supply; and Agriculture.

Permit Limitations and Monitoring Requirements for Outfalls 001, 002 and 003

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	2 days / month	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	2 days / month	Visual [3]
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	35	NA	70	Federal ELG	2 days / month	Grab
Settleable Solids, ml/l	Report	NA	0.5	Federal ELG	2 days / month	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Recoverable Iron, ug/l **	1000	NA	NA	Water Quality Standards	2 days / month	Grab

1 – For a minor facility, as determined by the EPA NPDES Permit Rating Worksheet, all weekly monitoring requirements shall be changed to 2 days per month.
2 – If power is not available, flow may be measured on an instantaneous basis. Major facilities shall monitor flow weekly, minor facilities 2 days / month
3 – If a visual sheen is noticed, a grab sample must be taken and analyzed for oil and grease
4 – Quarterly monitoring shall be prescribed if the limitation is based upon discharge to the Colorado River Basin. If the limitation is based upon agricultural protection, the monitoring frequency shall be weekly.
* Applies to discharges in the Colorado River Basin
** This limitation will apply and will substitute for the 30-day average total iron limit based upon the ELG, when a total recoverable iron standard is applicable to the stream segment.

RECEIVED JUL 0 1 2008

ALTERNATE LIMITATIONS FOR ALKALINE MINE DRAINAGE AND COAL PREPARATION AREAS

Any discharge or increase in the volume of a discharge from an above ground alkaline mine (or an underground alkaline mine where the effluent is commingled with other categorical wastewater prior to discharge), caused by precipitation within any 24-hour period less than or equal to the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may substitute the following limitations for these specific parameters only, subject to burden of proof requirements described in Part I.B.6.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency[1]	Sample Type
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	Report	NA	Report	Federal ELG	Weekly	Grab

Any discharge or increase in the volume of a discharge from an above ground alkaline mine (or an underground alkaline mine where the effluent is commingled with other categorical wastewater prior to discharge), caused by precipitation within any 24-hour period greater than the 10-year, 24-hour precipitation event (or snowmelt of equivalent volume) may substitute the following limitations for these specific parameters only, subject to burden of proof requirements described in Part I.B.6.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency[1]	Sample Type
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	Report	NA	Report	Federal ELG	Weekly	Grab
Settleable Solids, ml/l	Report	NA	Report	Federal ELG	Weekly	Grab

Other Conditions

Antidegradation

An antidegradation review applies to this discharge as the receiving stream is classified as Undesignated. As outlined in the permit and rationale to this general permit, the antidegradation based limitations are calculated as 15% of the applicable water quality standard. The only parameter subject to an antidegradation review is total recoverable iron. As this limit based on the WQS is more stringent than that contained in the previous permit, there is no new or increased impact to the receiving water and therefore the WQS will be applied in the permit.

Groundwater Contamination

If groundwater contamination is encountered, then the permittee is to contact the Division, cease all discharges, and if appropriate, contact the owner of the collection system receiving the discharge. **Since the discharge of contaminated groundwater is not covered under this permit**, the permittee shall immediately apply for a groundwater remediation certification, which will include appropriate requirements for additional discharge monitoring and on-site environmental response capabilities.

Sampling

Sampling shall occur at a point after treatment, or after the implementation of any Best Management Practices (BMPs). If BMPs or treatment are not implemented, sampling shall occur where the discharge leaves control of the permittee, and prior to entering the receiving stream or prior to discharge to land. Samples must be representative of what is entering the receiving stream.

Monitoring and Reporting

Discharge Monitoring Reports (DMR) must be submitted monthly as long as the certification is in effect. The permittee shall provide the Division with any additional monitoring data on the permitted discharge collected for entities other than the Division. This will be supplied to the Division within 48 hours of the receipt of the data by the permittee.

Best Management Practices

The permittee shall implement and maintain the Best Management Practices (BMP) for the prevention of erosion and the control of solid and liquid pollutants due to the discharge. BMPs include various options, such as: modification of the pipe discharge structure to disperse flows; containment of water by hay bales or other comparable structures; the use of geocloth, filter fabric, or plastic sheeting for protection of containment structures; rip-rap; and/or any other approved methods.

The General Permit for Coal Mining is attached and the permittee should review this permit for familiarity with all of the permit requirements. If the permittee has questions related to this certification that cannot be answered by a review of the permit, the permit writer should be contacted.

Permit Writer
Andrew J. Neuhart
303-692-3655
June 25, 2008

RECEIVED JUL 0 1 2008

CDPS GENERAL PERMIT

FOR SAND AND GRAVEL MINING AND PROCESSING

(AND OTHER NONMETALLIC MINERALS EXCEPT FUEL)

COLORADO DISCHARGE PERMIT SYSTEM

In compliance with the provisions of the Colorado Water Quality Control Act (25-8-101 et seq., CRS, 1973 as amended), facilities engaged in mining and processing of sand and gravel and other nonmetallic minerals (except fuel) are authorized to discharge surface runoff and process water from authorized locations throughout the State of Colorado to specified surface waters of the State. Such discharges shall be in accordance with conditions of this permit.

The applicant may demand an adjudicatory hearing within thirty (30) days of the issuance of the final permit determination, per the Colorado Discharge Permit System Regulations, Regulation No. 61 (5 CCR 1002-61). Should the applicant choose to contest any of the effluent limitations, monitoring requirements or other conditions contained herein, the applicant must comply with Section 24-4-104 CRS and the Colorado Discharge Permit System Regulations. Failure to contest any such effluent limitation, monitoring requirement, or other condition, constitutes consent to the condition by the Applicant.

This permit specifically authorizes the facility listed on page 1 of this permit to discharge process generated wastewaters and/or stormwater, as of the date stated below, in accordance with the permit requirements and conditions set forth in Parts I and II hereof. All discharges authorized herein shall be consistent with the terms and conditions of this permit.

This permit and the authorization to discharge shall expire at midnight, **June 30, 2013**

Issued and Signed this 30th day of **May, 2008**

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Janet Kieler

Janet Kieler, Permits Section Manager
Water Quality Control Division

ISSUED AND SIGNED: MAY 30, 2008

EFFECTIVE DATE OF PERMIT: JULY 1, 2008

RECEIVED JUL 0 1 2009

TABLE OF CONTENTS

PART I....3
A. COVERAGE UNDER THIS PERMIT....3
B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS....4
1. Effluent Limitations and Monitoring Requirements – Crushed Stone, Construction Gravel, etc....4
2. Effluent Limitations and Monitoring Requirements – Phosphate Rock Mining....5
3. Effluent Limitations and Monitoring Requirements – Industrial Sand....5
4. Effluent Limitations and Monitoring Requirements- Industrial Sand-HF....6
5. Effluent Limitations and Monitoring Requirements- Graphite....6
6. Effluent Limitations and Monitoring Requirements- Batch Plants....7
7. Compliance Schedules....7
8. WET Testing....7
C. STORMWATER DISCHARGES....9
D. DEFINITIONS OF TERMS....14
E. GENERAL MONITORING, SAMPLING AND REPORTING REQUIREMENTS....15
1. Routine Reporting of Data....15
2. Reporting - Stormwater Annual Report....15
3. Representative Sampling....16
4. Analytical and Sampling Methods for Monitoring....16
5. Records....17
6. Flow Measuring Device....17
7. Signatory and Certification Requirements....17
PART II....18
A. NOTIFICATION REQUIREMENTS....18
1. Notification to Parties....18
2. Change in Discharge....18
3. Special Notifications - Definitions....19
4. Noncompliance Notification....19
5. Other Notification Requirements....19
6. Bypass Notification....20
7. Upsets....20
8. Discharge Point....20
9. Proper Operation and Maintenance....20
10. Minimization of Adverse Impact....21
11. Removed Substances....21
12. Submission of Incorrect or Incomplete Information....21
13. Bypass....21
14. Reduction, Loss, or Failure of Treatment Facility....21
B. RESPONSIBILITIES....21
1. Inspections and Right to Entry....21
2. Duty to Provide Information....22
3. Transfer of Ownership or Control....22
4. Availability of Reports....22
5. Modification, Suspension, Revocation, or Termination of Permits By the Division....22
6. Oil and Hazardous Substance Liability....24
7. State Laws....24
8. Permit Violations....24
9. Property Rights....24
10. Severability....25
11. Renewal Application....25
12. Confidentiality....25
13. Fees....25
14. Duration of Permit....25
15 Section 307 Toxics....25
16. Antibacksliding....25
17. Effect of Permit Issuance....26
18. Requiring an Individual CDPS Permit....26
19. Requesting an Individual CDPS Permit....26
20. Requesting Coverage Under the General Permit....27

A. COVERAGE UNDER THIS PERMIT

1. This general permit authorizes stormwater and process water discharges from sand and gravel operations and other non-metallic mineral mining (except fuel), including asphalt and concrete batch plants into surface waters of the State of Colorado. Discharges to groundwater are not authorized under this general permit, and would be subject to the jurisdiction of the Division of Reclamation, Mining and Safety.

   This permit may cover the stormwater and process water discharges from crushed stone, construction sand and gravel, phosphate rock, industrial sand, graphite, and concrete or hot asphalt batch plants as defined in 40 CFR Part 436. This general permit does not cover the discharge from any domestic type wastewaters, or operations mining or processing from gypsum, asphaltic mineral, asbestos and wollastonite, barite, fluorspar, salines from brine lakes, borax, potash, sodium sulfate, frasch sulfur, bentonite, magnesite, diatomite, jade, novaculite, or tripoli facilities. An individual permit may be necessary for the coverage of domestic wastewater in combination with any other allowable discharge due to the incorporation of baseline conditions into the federal limitations. Due to the nature of general permits, determinations of the assimilative capacity of the receiving stream(s) are not available. All limitations set in this permit are based upon the most stringent water quality standards, the Regulations for Effluent Limitations, and/or the federal effluent limitation guidelines.

   Discharges may be covered under this permit at the Division's discretion, providing that such wastewater would not require effluent limitations and/or monitoring requirements other than those contained in this permit. Such determinations will be made on a case-by-case basis upon review of the permit application and any additional relevant information. If discharge from one or more of the above listed sources require additional limitations and/or monitoring requirements, an individual permit may be required. Multiple discharge points from one facility may be authorized through this permit providing all meet these criteria.

2. This permit does not constitute authorization under 33 U.S.C. 1344 (Section 404 of the Clean Water Act) of any stream dredging or filling operations.

3. In order to apply for certification under this general permit, the owner, operator, and/or authorized agent of the subject facility shall submit by certified mail or hand delivery, the completed General Permit for Nonmetallic Mineral Mining and Processing (Sand and Gravel) Application.

   If the discharge is to a storm sewer system, ditch, or other manmade conveyance, approval from the owner of the system must be obtained before discharge.

   At least 30 days before the anticipated date of discharge, the application in its entirety, shall be submitted to:

   Colorado Department of Public Health and Environment
   Water Quality Control Division
   Permits Section
   4300 Cherry Creek Drive South
   Denver, CO 80246

   The Division shall have up to thirty days after receipt of the above information to request additional data or deny the authorization to discharge under this general permit. Upon receipt of additional information, the Division shall have an additional 30 days to issue or deny authorization to discharge. If the Division determines that a new facility does not fall under the authority of the general permit, then the information received will be processed for an individual permit, and the applicant shall be notified of such a determination. If during the renewal process, the Division determines that a facility no longer qualifies for the general permit, the facility will be allowed to discharge under the general permit until an individual permit is issued.

4. The final limitations to be applied under this permit shall take into consideration the application of the appropriate discharge categories, applicable water quality standards, control regulations, total maximum daily loads, and other regulatory requirements. Potential limitations may include but are not limited to the general limitations as provided in Part I.B below.

5. Authorization to discharge under this general permit shall expire on June 30, 2013. The Division must evaluate this general permit once every five years and must recertify all applicants' authority to discharge under the general permit at such time. Therefore, a permittee desiring continued coverage under the general permit must reapply by November 30, 2012. The Division will determine if the applicant continues to operate under terms of the general permit.

6. No chemicals shall be added to the discharge unless the Division grants specific approval in a certification, letter, or other

form of communication. To approve a chemical (including release agents), the Division must have the chemical's MSDS sheet. All chemicals must be used and stored in accordance with the manufacturers recommendations and in accordance with any applicable state or federal regulation.

7. There shall be no discharge of solid animal or food waste, vegetative wastes (grass, leaves, manure, garbage, etc), or any floating solids or visible foam, in other than trace amounts.

8. All discharges must comply with the lawful requirements of federal agencies, municipalities, counties, drainage districts and other local agencies regarding any discharges to storm drains systems, conveyances, or other water courses under their jurisdiction. In addition, prior to the discharge the permittee must notify the owner of the system of the date, approximate time, location, and duration of the discharge(s).

9. Bulk storage structures for petroleum products and other chemicals shall have secondary containment or equivalent adequate protection so as to contain all spills and prevent any spilled material from entering discharged waters or waters of the State.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Effluent Limitations and Monitoring Requirements – **Crushed Stone, Construction Gravel and all other industrial facilities covered under SIC Code l4 (not covered below)**

   a. Crushed Stone -means process wastewater generated during the mining or quarrying and processing of crushed and broken stone and rip rap. This includes all types of rock and stone, except rock and stone that is crushed or broken prior to the extraction of mineral, which is covered elsewhere. The processing of calcite, however, in conjunction with the processing of crushed and broken limestone or dolomite is included.

   b. Construction Sand and Gravel– means process wastewater generated during the mining and processing of sand and gravel for construction or fill uses.

The above categories are subject to 40 CFR Part 436 Subparts B (Crushed Stone), and C (Construction Sand and Gravel). These limitations also apply to all other industrial facilities covered under SIC Code 14 (that are not covered below). The following limitations apply as outlined in these subparts.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Total Suspended Solids, mg/l	30	45	NA	State Effluent Regulations	Weekly	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET)				State Permit Limitations	Quarterly	3 Grab/Test
Chronic	Stat Diff and IC25 ≥ IWC				Quarterly	Grab
Acute	LC50 > 100%					

1 – For a minor facility, as determined by the EPA NPDES Permit Rating Worksheet, all weekly monitoring requirements shall be changed to 2 days per month.
2 – If power is not available, flow may be measured on an instantaneous basis. Major facilities shall monitor flow weekly, minor facilities 2 days / month
3 – If a visual sheen is noticed, a grab sample must be taken and analyzed for oil and grease
4 – Quarterly monitoring shall be prescribed if the limitation is based upon discharge to the Colorado River Basin. If the limitation is based upon agricultural protection, the monitoring frequency shall be weekly.

* The TDS limitation will normally apply to discharges in the Colorado River Basin.
** The phosphorus limitations apply to discharges to the Dillon Reservoir Watershed, Cherry Creek Reservoir Watershed, Chatfield Reservoir Watershed, and the Bear Creek Watershed, as defined in Regulation 71, 72, 73 or 74 respectively. The permittee may be required to obtain a phosphorus allocation from the applicable control regulation authority prior to certification under this general permit.

2. Effluent Limitations and Monitoring Requirements– **Phosphate Rock Mining**-means process wastewater generated by the mining or quarrying of phosphate bearing rock, ore, or earth, for the phosphate content.

The above category is subject to 40 CFR Part 436 Subpart R (Phosphate Rock). The following limitations apply as outlined in this subpart.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	30	NA	60	Federal ELG	Weekly	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET)				State Permit Limitations	Quarterly	3 Grab/Test
Chronic	Stat Diff and IC25 ≥ IWC				Quarterly	Grab
Acute	LC50 > 100%					

Footnotes 1-4, * and ** can be found under Part I.B.1.

3. Effluent Limitations and Monitoring Requirements – **Industrial Sand**-means process wastewater generated during the mining and processing of sand and gravel for uses other than construction and fill. These uses include, but are not limited to, glassmaking, molding, abrasives, filtration, refractories, and refractory bonding. This does **not** include HF flotation facilities, which are covered in a different table.

The above category is subject to 40 CFR Part 436 Subpart D (Industrial Sand). The following limitations apply as outlined in this subpart.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	25	NA	45	Federal ELG	Weekly	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET)				State Permit Limitations	Quarterly	3 Grab/Test
Chronic	Stat Diff and IC25 ≥ IWC				Quarterly	Grab
Acute	LC50 > 100%					

Footnotes 1-4, * and ** can be found under Part I.B.1.

4. Effluent Limitations and Monitoring Requirements-**Industrial Sand, HF Flotation**- means process wastewater generated during the mining and processing of sand and gravel using HF Flotation for uses other than construction and fill.

The above category is subject to 40 CFR Part 436 Subpart D (Industrial Sand, HF Flotation). The following limitations apply as outlined in this subpart.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Federal Effluent Limitation Guidelines						
Total Suspended Solids, lbs/day	0.023 lbs per 1,000 lbs total production***	NA	0.046 lbs per 1,000 lbs total production***	Federal ELG	Weekly	Grab
Total Fluoride, lbs/day	0.003 lbs per 1,000 lbs total production***	NA	0.006 lbs per 1,000 lbs total production***	Federal ELG	Weekly	Grab
Site Specific Limitations						
Total Production, lbs/day	Report	NA	Report	Discharge Evaluation	Weekly	Actual
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET)				State Permit Limitations	Quarterly	3 Grab/Test
Chronic	Stat Diff and IC25 ≥ IWC				Quarterly	Grab
Acute	LC50 > 100%					

Footnotes 1-4, * and ** can be found under Part I.B.1.

5. Effluent Limitations and Monitoring Requirements-**Graphite Mining**-means process wastewater generated during the mining and processing of naturally occurring graphite.

The above category is subject to 40 CFR Part 436 Subpart AL (Graphite). The following limitations apply as outlined in this subpart.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Federal Effluent Limitation Guidelines						
Total Suspended Solids, mg/l	10	NA	20	Federal ELG	Weekly	Grab
Total Iron, mg/l	1	NA	2	Federal ELG	Weekly	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET)				State Permit Limitations	Quarterly	3 Grab/Test
Chronic	Stat Diff and IC25 ≥ IWC				Quarterly	Grab
Acute	LC50 > 100%					

Footnotes 1-4, * and ** can be found under Part I.B.1.

6. Effluent Limitations and Monitoring Requirements-**Concrete and Hot Asphalt Batch Plants**-means process wastewater generated during the mixing process. This also includes the associated truck and drum wash area for concrete facilities, and the wet scrubber discharge from hot asphalt plants.

Parameter	Limitations 30-Day Avg.	7-Day Avg.	Daily Max.	Rationale	Monitoring Frequency [1]	Sample Type
General Permit Requirements						
Flow, MGD	Report	NA	Report	Discharge Evaluation	Continuous / Instantaneous[2]	Recorder / In-situ [2]
pH, s.u.	N/A	NA	6.5-9.0	Water Quality Standards	Weekly	Grab
Oil and Grease, mg/l	N/A	NA	10	State Effluent Regulations	Weekly	Visual [3]
Total Suspended Solids, mg/l	30	NA	45	State Effluent Regulations	Weekly	Grab
Federal Effluent Limitation Guidelines						
Total Iron, mg/l	1	NA	2	Federal ELG	Weekly	Grab
Site Specific Limitations						
Total Dissolved Solids, mg/l *	Report	NA	Report	Salinity Regulations	Quarterly [4]	Grab
Total Phosphorus (as P), mg/l **	Report	NA	Various	Control Regulations	Monthly	Grab
Other Pollutants of Concern	Various	NA	Various	Water Quality Standards	Weekly	Grab
Whole Effluent Toxicity (WET) Chronic	Stat Diff and IC25 ≥ IWC LC50 > 100%			State Permit Limitations	Quarterly	3 Grab/Test

Footnotes 1-4, * and ** can be found under Part I.B.1.

7. Compliance Schedules- If necessary, any compliance schedule items will be noted in the certification to discharge.

8. WET Testing

a. Acute WET Testing (See also Part I.B.7.c for WET requirements applicable to both chronic and acute WET testing)

1. Testing and Reporting Requirements

Tests shall be done at the frequency listed in Parts I.B.1 through I.B.6. Test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the reporting period when the sample was taken. (i.e., WET testing results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, etc.) The results shall be submitted on the Acute Toxicity Test report form, available from the Division. Copies of these reports are to be submitted to the Division along with the DMR.

The permittee shall conduct each acute WET test in general accordance with methods described in Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms EPA/600/4-90/027 or its most current edition, except as modified by the most current Division guidance document entitled Guidelines for Conducting Whole Effluent Toxicity Tests. The permittee shall conduct an acute 48-hour WET test using Ceriodaphnia sp., and an acute 96-hour WET test using fathead minnows. Acute tests will be replacement static tests of a single effluent grab sample.

2. Failure of Test and Division Notification

An acute WET test is failed whenever the LC_{50}, which represents an estimate of the effluent concentration which is lethal to 50% of the test organisms in the time period prescribed by the test, is found to be less than or equal to 100% effluent. The permittee must provide written notification of the failure of a WET test to the Division, along with a statement as to whether the Preliminary Toxicity Incident (PTI)/Toxicity Identification Evaluation (TIE) investigation or accelerated testing is being performed. **Notification must be received by the Division within 14 calendar days of the demonstration of acute WET in the routine required test.** Demonstration means no later than the last day of the laboratory test.

b. Chronic WET Testing (See also Part I.B.7.c for WET requirements applicable to both chronic and acute WET testing)

1. Testing and Reporting Requirements

Tests shall be done at the frequency listed in Parts I.B.1 through I.B.6. Test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the reporting period during which the sample was taken. (i.e., WET

testing results for the first calendar quarter ending March 31 shall be reported with the DMR due April 28.) The results shall be submitted on the Chronic Toxicity Test report form, available from the Division. Copies of these reports are to be submitted to the Division along with the DMR.

The permittee shall conduct each chronic WET test in general accordance with methods described in Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-89/001 or the most current edition, except as modified by the most current Division guidance document entitled Guidelines for Conducting Whole Effluent Toxicity Tests. The permittee shall conduct such tests using Ceriodaphnia dubia and fathead minnows.

2. Failure of Test and Division Notification

A chronic WET test is failed whenever 1) there is a statistically significant difference in lethality between the control and any effluent concentration less than or equal to the instream waste concentration (IWC) and, 2) the IC_{25}, which represents an estimate of the effluent concentration at which 25% of the test organisms demonstrate inhibition as reflected by lethality, is at any effluent concentration less than or equal to the IWC. The permittee must provide written notification of the failure of a WET test to the Division, along with a statement as to whether a Preliminary Toxicity Investigation (PTI)/Toxicity Identification Evaluation (TIE) or accelerated testing is being performed (see Part I.B.7.c.). **Notification must be received by the Division within 21 calendar days of the demonstration of chronic WET in the routine required test.** Demonstration means no later than the last day of the laboratory test.

c. Other WET Testing Requirements Applicable to both Chronic and Acute WET Testing

1. Automatic Compliance Schedule Upon Failure of Test

If a routine chronic WET test is failed, regardless of whether the limit is in effect, the following automatic compliance schedule shall apply. As part of this, the permittee shall either:

i. Proceed to conduct the PTI/TIE investigation as described in Part I.B.7.c., or
ii. Conduct accelerated testing using the single species found to be more sensitive.

If accelerated testing is being performed, the permittee shall provide written notification of the results within 14 calendar days of completion of the Pattern of Toxicity/No Toxicity demonstration. Testing will be at least once every two weeks for up to five tests until; 1) two consecutive tests fail or three of five tests fail, in which case a pattern of toxicity has been demonstrated or 2) two consecutive tests pass or three of five tests pass, in which case no pattern of toxicity has been found. If no pattern of toxicity is found the toxicity episode is considered to be ended and routine testing is to resume. If a pattern of toxicity is found, a PTI/TIE investigation is to be performed. If a pattern of toxicity is not demonstrated but a significant level of erratic toxicity is found, the Division may require an increased frequency of routine monitoring or some other modified approach.

2. PTI/TIE

The results of the PTI/TIE investigation are to be received by the Division within 120 days of the demonstration of chronic WET in the routine test, as defined above, or if accelerated testing is performed, the date the pattern of toxicity is demonstrated. A status report is to be provided to the Division at the 30, 60 and 90 day points of the PTI/TIE investigation. The Division may extend the time frame for investigation where reasonable justification exists. A request for an extension must be made in writing and received prior to the 120 day deadline. Such request must include a justification and supporting data for such an extension.

The permittee may use the time for investigation to conduct a PTI or move directly into the TIE. A PTI consists of a brief search for possible sources of WET, which might reveal causes of such toxicity and appropriate corrective actions more simply and cost effectively than a formal TIE. If the PTI allows resolution of the WET incident, the TIE need not necessarily be conducted. If, however, WET is not identified or resolved during the PTI, the TIE must be conducted within the allowed 120 day time frame.

Any permittee that is required to conduct a PTI/TIE investigation shall do so in conformance with procedures identified in the following documents, or as subsequently updated: 1) Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F May 92, 2) Methods for Aquatic Toxicity Identification Evaluations, Phase I Toxicity Characterization Procedures, EPA/600/6-91/003 Feb. 91 and 3) Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures, EPA/600/3-88/035 Feb. 1989.

A fourth document in this series is Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures, EPA/600/3-88/036 Feb. 1989. As indicated by the title, this procedure is intended to confirm that the suspected

Within 90 days of the determination of the toxicant or no later than 210 days after demonstration of toxicity, whichever is sooner, a control program is to be developed and received by the Division. The program shall set down a method and procedure for elimination of the toxicity to acceptable levels.

3. Request For Relief

The permittee may request relief from further investigation and testing where the toxicant has not been determined and suitable treatment does not appear possible. In requesting such relief, the permittee shall submit material sufficient to establish the following:

i. It has complied with terms and conditions of the permit compliance schedule for the PTI/TIE investigation and other appropriate conditions as may have been required by the WQCD;

ii. During the period of the toxicity incident it has been in compliance with all other permit conditions, including, in the case of a POTW, pretreatment requirements;

iii. During the period of the toxicity incident it has properly maintained and operated all facilities and systems of treatment and control; and

iv. Despite the circumstances described in paragraphs (i) and (iii) above, the source and/or cause of toxicity could not be located or resolved.

If deemed appropriate by the Division, the permit or the compliance schedule may be modified to revise the ongoing monitoring and toxicity investigation requirements to avoid an unproductive expenditure of the permittee's resources, provided that the underlying obligation to eliminate any continuing exceedance of the toxicity limit shall remain.

4. Spontaneous Disappearance

If toxicity spontaneously disappears at any time after a test failure, the permittee shall notify the Division in writing within 14 days of a demonstration of disappearance of the toxicity. The Division may require the permittee to develop and submit additional information, which may include, but is not limited to, the results of additional testing. If no pattern of toxicity is identified or recurring toxicity is not identified, the toxicity incident response is considered closed and normal WET testing shall resume.

5. Toxicity Reopener

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

i. Toxicity has been demonstrated in the effluent and the permit does not contain a toxicity limitation.

ii. The PTI/TIE results indicate that the identified toxicant(s) represent pollutant(s) that may be controlled with specific numerical limits and the permit issuing authority agrees that the control of such toxicants through numerical limits is the most appropriate course of action.

iii. The PTI/TIE 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.

C. STORMWATER DISCHARGES

(This section (I.C) applies to all facilities with a potential discharge of stormwater.)

1. **Stormwater Management Plan (SWMP)**

A Stormwater Management Plan (SWMP) shall be developed for each facility covered by this section (Part I.C). The SWMP shall be prepared in accordance with good engineering, hydrologic and pollution control practices. (The SWMP need not be prepared by a registered engineer.)

The plan shall identify potential sources of pollution (including sediment), which may reasonably be expected to affect the quality of stormwater discharges associated with the mining activity. In addition, the plan shall describe the practices to be used to reduce the pollutants in stormwater discharges associated with mining activity at the facility; and ensure the practices are selected and described in accordance with good engineering practices, including the installation, implementation and maintenance requirements. Also, the plan shall be properly prepared, and updated in accordance with Part I.D.5.c, to ensure compliance with the terms and conditions of this permit.

Facilities must implement the provisions of the SWMP as written and updated, from commencement of site activity until final reclamation is complete, as a condition of this permit. The Division reserves the right to review the SWMP, and to require the permittee to develop and implement additional measures to prevent and control pollution as needed.

The permittee must implement the provisions of SWMP required under this part as a condition of this permit.

For any sites under this permit that had permit coverage before September 30, 2007, the permittee's SMWP must meet the new SWMP requirements as summarized in Section II.I of the rationale. Any needed changes must be made within 5 months of the effective date of the certification.

The SWMP shall include the following items, at a minimum:

a. **Site Map:** The plan shall provide a site map or maps, which indicate at a minimum:

- Mining site boundaries;
- Access and haul roads;
- Stormwater outfalls and an outline of the drainage area of each stormwater outfall;
- An estimate of the direction of flow;
- Each existing structural control measure to reduce pollutants in stormwater runoff;
- Non-structural BMPs, as applicable;
- Springs, streams, wetlands and other surface waters;
- Mine drainage or any other process water;
- Dedicated asphalt or concrete batch plants;
- Areas used for recycling of asphalt or concrete
- All areas of soil disturbance;
- The location and description of all potential stormwater pollution sources, including, but not limited to, the following:
  - Materials handling areas;
  - Vehicle fueling areas;
  - Fertilizer or chemical storage areas;
  - Areas used for storage or disposal of overburden, materials, soils or wastes; and
  - Areas used for mineral milling and processing.
- Boundary of tributary area that is subject to effluent limitations; and
- Date the map was prepared.

b. **Description of Potential Pollutant Sources/Material Inventory:** The SWMP shall identify potential sources of pollutants (activities and materials) at the site, and assess the potential of these sources to contribute pollutants to stormwater discharges associated with mining activities. The SWMP must also describe appropriate Best Management Practices (BMPs) to reduce the potential of these identified sources to contribute pollutants to stormwater discharges. At a minimum, each of the following shall be evaluated for the reasonable potential for contributing pollutants to runoff:

- Loading and unloading operations;
- Outdoor storage of chemicals or equipment;
- Crushing facilities or significant dust and particulate generating activities;
- On site waste disposal practices;
- Stockpiles of overburden, raw material, intermediate products, byproducts, finished products or waste products;
- Dedicated asphalt or concrete batch plants;
- Areas used for recycling of asphalt or concrete
- Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc.;
- Haul roads; and
- Disturbed areas.

In each case where stormwater pollution potential exists, appropriate preventive measures must be taken and documented.

c. **Stormwater Quality Controls:** Each site covered by this permit shall develop a description of stormwater quality controls appropriate for that site, and implement such controls. The appropriateness and priorities of controls in the plan shall reflect identified potential sources of pollutants at the site. The SWMP shall clearly describe the installation and implementation specifications for each BMP identified in the SWMP to ensure proper implementation, operation and maintenance of the BMP. The description of stormwater quality controls shall address the following minimum components, including a schedule for implementing such controls:

1) SWMP Administrator: The SWMP shall identify a specific individual(s), position or title within the mining organization who is responsible for developing, implementing, maintaining, and revising the SWMP. The activities and responsibilities of the administrator shall address all aspects of the facility's SWMP.

2) Materials Handling and Spill Prevention: Areas or procedures where potential spills can occur must have spill prevention and response procedures identified in the SWMP. The SWMP shall clearly describe and locate all practices implemented at the site to minimize impacts from procedures or significant materials that could contribute pollutants to runoff. Such procedures or significant materials could include exposed storage of fuels, other chemicals, or waste material; and equipment maintenance areas.

3) Erosion and Sediment Controls: Describe the BMPs that will be used to reduce erosion and prevent sediment delivery to State waters. These should include structural (such as silt fences, sediment ponds, drop structures, check dams) and non-structural (such as mulching and revegetation) practices.

4) Other Pollution Prevention Measures: The plan shall identify any other structural and non-structural measures for stormwater quality control on-site.

5) Preventive Maintenance: A preventive maintenance program is required, and shall involve inspection and maintenance of stormwater management devices (maintenance of dikes separating mine drainage from stormwater, cleaning oil/water separators and catch basins, etc.) as well as inspecting and testing of equipment and systems to prevent conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters. These periodic inspections are different from the comprehensive site evaluation (see Part I.D.5), although the former may be incorporated into the latter. Equipment, area, or other inspections are typically visual and are normally conducted on a regular basis (e.g., daily inspections of loading areas).

6) Good Housekeeping: The SWMP shall identify good housekeeping procedures that will be followed by the mining operation. Good housekeeping requires the maintenance of a clean, orderly facility. This part of the SWMP shall address cleaning and maintenance schedules, trash collection and disposal and collection practices, grounds maintenance, etc.

7) Identification of Discharges other than Stormwater: The stormwater conveyance system on the site shall be evaluated for the presence of discharges other than stormwater, such as mine drainage, spoil springs, sanitary waste, or process water of any kind. The SWMP shall include a description of the results of any evaluation for the presence of discharges other than stormwater, the method used, the date of the evaluation, and the on-site drainage points that were directly observed during the evaluation.

A number of discharges other than stormwater may not require a CDPS Industrial Wastewater Discharge permit and are considered Allowable Non-Stormwater Discharges. Any of these discharges that exist at the site must be identified in the SWMP. See Part ___ of the permit for the list of such allowable discharges.

2. **BMP Implementation and Design Standards**

Facilities must select, install, implement, and maintain appropriate BMPs, following good engineering, hydrologic and pollution control practices. BMPs implemented at the site must be adequately designed to provide control for all potential pollutant sources associated with construction activity to prevent pollution or degradation of State waters.

3. **Consistency with Other Plans**

SWMPs may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the CWA, or Best Management Practices (BMPs) Programs otherwise required by a CDPS permit, and may incorporate any part of such plans into the SWMP by reference. The SWMP may rely upon information developed for other similar pollution control programs, including the Mined Land Reclamation Plan. Appropriate portions of these other plans may be incorporated in the SWMP by reference, as long as the reference materials are maintained on site, and a complete SWMP can be reproduced and submitted to the requesting agency. The SWMP must also be readily available to an on-site inspector.

4. **Facility Inspections**

In addition to the inspections necessary to comply with the preventive maintenance program requirements in Part I.B.4.c, qualified personnel identified by the permittee shall make a comprehensive inspection of their stormwater management system, at least twice per year, except as provided in paragraphs d, e and f, below. The inspections must be conducted in approximately the spring and fall; if this is not possible, the inspections must be conducted at least 120 days apart. These comprehensive inspections must be documented and summarized in the Annual Report (see Part I.D.4 of the permit).

a. Material handling areas, disturbed areas, areas used for material storage that are exposed to precipitation, and other potential sources of pollution identified in the SWMP in accordance with Part I.C.2 of this permit shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Structural stormwater management measures, sediment and control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

b. Any repairs or maintenance needs identified by the inspection shall be completed immediately. Based on the results of the inspection, if revisions to the description of the potential pollutant sources and the pollution prevention and control measures identified in the SWMP are needed, the plan shall be revised as appropriate as soon as practicable after such inspection. Revised control measures shall be implemented in a timely manner, but in no case more than 60 calendar days after the inspection, unless otherwise provided by the Division, and in compliance with the requirements of Part I.D.2.c.2.

c. A report summarizing the scope of the inspection, personnel making the inspection, the date(s) of the inspection, significant observations relating to the implementation of the SWMP, and actions taken in accordance with paragraph (b), above, shall be made and retained as part of the SWMP for at least three years after the date of inspection. Significant observations include such things as the locations of discharges of pollutants from the site; locations of previously unidentified sources of pollutants; locations of BMPs needing maintenance or repair; locations of failed BMPs that need replacement; and locations where additional BMPs are needed. The report must also document any incidents of noncompliance observed. This record shall be made available to the Division upon request and summarized in the Annual Report.

d. Where semi-annual site inspections are shown in the plan to be impractical for sites where an employee is not stationed or does not routinely visit the site, inspections as required in this part shall be conducted at appropriate intervals specified in the plan, but never less than once in two years.

e. **Inactive Sites:** Where semi-annual site inspections are shown in the plan to be impractical for inactive sites (sites where industrial activity is no longer conducted), site inspections required by this part shall be conducted at appropriate intervals specified in the plan, but, in no case less than once in three years. At lease one site inspection required under this part shall be conducted before October 1, 2011 or the date two years after such site becomes inactive, whichever is earlier.

f. **Reclamation Operations:** For sites undergoing reclamation and where all mining activity has ceased, qualified personnel identified by the operator permittee shall make a thorough inspection of their stormwater management system, at least once per year (in the field season). Where annual site inspections are shown in the plan to be impracticable, because an employee is not stationed at or does not routinely visit the site, inspections as required in this part shall be conducted at appropriate intervals specified in the plan, but never less than once in two years.

5. **SWMP Availability**

Upon request, the permittee shall submit a copy of the SWMP to the Division, the Colorado Division of Reclamation, Mining, And Safety, or CDRMS (formerly the Division of Minerals and Geology, or DMG) and/or EPA, and any local agency approving sediment and erosion plans or stormwater management plans, within the time frames specified in the request. If the SWMP is required to be submitted to any of these entities, it must include a signed certification in accordance with Part I.E.5 of the permit, certifying that the SWMP is complete and meets all permit requirements.

All SWMPs required under this permit are considered reports that shall be available to the public under Section 308(b) of the CWA. The owner or operator of a facility with stormwater discharges covered by this permit shall make plans available to members of the public upon request. However, the permittee may claim any portion of a SWMP as confidential in accordance with 40 CFR part 2.

6. **SWMP Administrative Requirements**

a. **SWMP Preparation and Implementation:** The SWMP shall be prepared prior to applying for coverage under the general permit, and certification of completion submitted with the application. The SWMP shall be implemented when the facility begins operation, or when the general permit certification is issued, whichever is later, and updated as appropriate (see paragraph c., below).

b. **SWMP Retention:** For active mining operations and sites undergoing reclamation, the plan shall be retained on site unless another location, specified by the permittee, is approved by the Division. For inactive mining operations, the plan shall be retained by the permittee.

c. **SWMP Review/Changes:**

1) Division Review: The Division reserves the right to request and review the SWMP, and to require additional measures to prevent and control pollution, as needed. Upon review of the SWMP, the Division may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this permit. After such notification, the permittee shall make changes to the plan and shall submit to the Division an update to the plan.including the requested changes. Unless otherwise provided by the Division, the permittee shall have 30 days after such notification to both make the necessary changes to the plan and to implement them.

2) Permittee Review/Change: The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the potential for the discharge of pollutants to the waters of the State, or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with mining activity. If existing BMPs need to be modified or if additional BMPs are necessary, the plan changes and implementation should be completed before the next anticipated storm, but in no case more than 60 days after: the change in design, construction, operation, or maintenance, or; when the SWMP has been determined to be ineffective. Amendments to the plan shall be summarized in the Annual Report.

It is the permittee's responsibility to notify the Colorado Division of Minerals and Geology (formerly the Mined Land Reclamation Division) of any significant changes at their site resulting from the implementation of the SWMP.

7. **Prohibition of Non-Stormwater Discharges**

a. Except as provided in paragraph b, below, **all discharges authorized by Part I.C. of the permit shall be composed entirely of stormwater**. Discharges of material other than stormwater must be addressed in Part I.B. or in a separate CDPS permit issued for that discharge.

b. Discharges from the following sources that are combined with stormwater discharges associated with mining activity may be authorized by this permit, provided that the non-stormwater component of the discharge is identified in the SWMP (see Part I.C.2.c.4 of the permit): emergency fire fighting activities, uncontaminated compressor condensate, irrigation drainage, lawn watering, air conditioner condensate, uncontaminated seeps and springs, and foundation or footing drains where flows are not contaminated.

8. **Employee Education**

The permittee shall develop and implement employee education programs to inform personnel at all levels of responsibility of the components and goals of the SWMP. Education shall address topics such as spill response, good housekeeping, and material management practices. The permittee shall identify periodic dates for such instruction. Contractor or temporary personnel shall be informed of mine operations and control features in order to prevent stormwater pollution from occurring.

9. **Total Maximum Daily Load (TMDL)**

If a TMDL has been approved for any waterbody into which the permittee discharges, and it has been determined that the types of stormwater discharges covered under this permit are or have the potential to be identified as a significant source of the pollutant in question, the permittee will be notified by the Division. The permittee will be required to do the following:

a) under the permittee's SWMP, implement specific management practices based on requirements of the TMDL, and evaluate whether the requirements are being met through implementation of existing stormwater BMPs or if additional BMPs are necessary. Document the calculations or other evidence that show that the requirements, including any

specific pollutant wasteload allocations (WLAs), are expected to be met; and

b) if the evaluation shows that additional or modified BMPs are necessary, describe the type and schedule for the BMP additions/revisions. A description of the SWMP changes shall be included with the next Annual Report, or if requested by the Division, whichever is sooner.

Stormwater discharge monitoring may also be required. The permittee may maintain coverage under the general permit provided they comply with the applicable requirements outlined above. The Division reserves the right to require individual or alternate general permit coverage.

D. DEFINITIONS OF TERMS

1. "Acute Toxicity" means there shall be no acute toxicity in the effluent from this discharge point. The acute toxicity limitation is exceeded if 1) a statistically significant difference in mortality (at the 95% confidence level) is observed for either species between the control and any dilution less that or equal to the identified IWC or 2) a species mortality in any dilution of effluent (including 100% effluent) exceeds 50%. OR "Chronic lethality" occurs when a statistically significant difference, at the 95% confidence level, occurs in the chronic test between the mortality of the test species in «IWC»% effluent (the chronic IWC = «IWC»%) and the control.

2. Antidegradation limits apply as the average of all data collected for months in that group during a rolling 24-month period. These limits become effective after data has been collected for all months in the group during the 24 months following permit issuance. Where antidegradation groups are not indicated, data from all months will be utilized to determine the reported value and the limit will become effective in the 24th month in which the permit is effective.

3. "Continuous" measurement, is a measurement obtained from an automatic recording device which continually measures provides measurements.

4. "Chronic lethality" occurs when a statistically significant difference, at the 95% confidence level, occurs in the chronic test between the mortality of the test species in 100% effluent (the chronic IWC = 100%) and the control.

5. "Daily Maximum limitation" means the limitation for this parameter shall be applied as an instantaneous maximum (or, for pH or DO, instantaneous minimum) value. The instantaneous value is defined as the analytical result of any individual sample. DMR's shall include the maximum (and/or minimum) of all instantaneous values within the calendar month. Any instantaneous value beyond the noted daily maximum limitation for the indicated parameter shall be considered a violation of this permit.

6. "Dissolved (D) metals fraction" is defined in the Basic Standards and Methodologies for Surface Water 1002-31, as that portion of a water and suspended sediment sample which passed through a 0.40 or 0.45 UM (micron) membrane filter. Determinations of "dissolved" constituents are made using the filtrate. This may include some very small (colloidal) suspended particles which passed through the membrane filter as well as the amount of substance present in true chemical solution.

7. "Grab" sample, is a single "dip and take" sample so as to be representative of the parameter being monitored.

8. "In-situ" measurement is defined as a single reading, observation or measurement taken in the field at the point of discharge.

9. "Instantaneous" measurement is a single reading, observation, or measurement performed on site using existing monitoring facilities.

10. "New source" is generally defined as a coal mine (or major alteration to a coal mine) the construction of which commenced after May 4, 1984. See 40 CFR 434.11(j) for the complete definition.

11. "Potentially dissolved (PD) metals fraction" is defined in the Basic Standards and Methodologies for Surface Water 1002-31, as that portion of a constituent measured from the filtrate of a water and suspended sediment sample that was first treated with nitric acid to a pH of 2 or less and let stand for 8 to 96 hours prior to sample filtration using a 0.40 or 0.45-UM (micron) membrane filter. Note the "potentially dissolved" method cannot be used where nitric acid will interfere with the analytical procedure used for the constituent measured.

12. "Quarterly measurement frequency" means samples may be collected at any time during the calendar quarter if a continual discharge occurs. If the discharge is intermittent, then samples shall be collected during the period that discharge occurs.

13. "Recorder" requires the continuous operation of a chart and/or totalizer (or drinking water rotor meters or pump hour meters where previously approved.)

14. "Settleable solids analytical procedure" is contained in 40 CFR 434.64. The method detection limit for measuring settleable solids under this part shall be 0.4 ml/l.

15. "Seven (7) day average" means, with the exception of fecal coliform or E. coli bacteria, the arithmetic mean of all samples collected in a

seven (7) consecutive day period. For fecal coliform or E. coli bacteria, it is the geometric mean of all samples taken in a seven (7) consecutive day period. Such seven (7) day averages shall be calculated for all calendar weeks, which are defined as beginning on Sunday and ending on Saturday. If the calendar week overlaps two months (i.e. the Sunday is in one month and the Saturday in the following month), the seven (7) day average calculated for that calendar week shall be associated with the month that contains the Saturday. Samples may not be used for more than one (1) reporting period. (Not applicable to fecal coliform or E. coli determinations.)

16. "Thirty (30) day average" means the arithmetic mean of all samples collected during a thirty-consecutive-day period. The permittee shall report the appropriate mean of all self-monitoring sample data collected during the calendar month on the Discharge Monitoring Reports. Samples shall not be used for more than one reporting period.

17. "Total Metals" means the concentration of metals determined in an unfiltered sample following vigorous digestion (Section 4.1.3), or the sum of the concentrations of metals in both the dissolved and suspended fractions, as described in Manual of Methods for Chemical Analysis of Water and Wastes, U.S. Environmental Protection Agency, March 1979, or its equivalent

18. "Total Recoverable Metals" means that portion of a water and suspended sediment sample measured by the total recoverable analytical procedure described in Methods for Chemical Analysis of Water and Wastes, U.S. Environmental Protection Agency, March 1979 or its equivalent.

19. "Twice Monthly" monitoring frequency means that two samples shall be collected each calendar month on separate weeks with at least one full week between the two sample dates. Also, there shall be at least one full week between the second sample of a month and the first sample of the following month.

20. "Visual" observation is observing the discharge to check for the presence of a visible sheen or floating oil.

21. "Water Quality Control Division" or "Division" means the state Water Quality Control Division as established in 25-8-101 et al.

Additional relevant definitions are found in the Colorado Water Quality Control Act, CRS §§ 25-8-101 et seq.., the Colorado Discharge Permit System Regulations, (Regulation 61 - 5 CCR 1002-61) and other applicable regulations.

D. GENERAL MONITORING, SAMPLING, AND REPORTING REQUIREMENTS

1. Routine Reporting of Data

Reporting of the data gathered in compliance with Part I.B.3. shall be on a quarterly basis. Reporting of all data gathered shall comply with the requirements of Part I.D. (General Requirements). Monitoring results shall be summarized for each calendar quarter and reported on Division approved discharge monitoring report (DMR) forms (EPA form 3320-1). The form shall be mailed to the Division at the address listed below so they are received no later than the 28th day of the month following the end of the quarter (for example, the DMR for the first calendar quarter must be received by the Division by April 28th). If no discharge occurs during the reporting period, "No Discharge" shall be reported.

The DMR forms consist of four pages - the top "original" copy, and three attached no-carbon-required copies. After the DMR form has been filled out and signed, the four copies must be separated and distributed as follows:

The first original signed copy of each discharge monitoring report (DMR) shall be submitted to the Division at the following address:

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Additional copies are for the permittee records. The Discharge Monitoring Report forms shall be filled out accurately and completely in accordance with requirements of this permit and the instructions on the forms. They shall be signed by an authorized person as identified in Part I.D.7 shall sign them.

Calculations for all limitations, which require the averaging of measurements, shall utilize an arithmetic mean unless otherwise specified by the Division in the permit.

2. Reporting - Stormwater Annual Report

The permittee will be required to submit an Annual Report, covering January 1 through December 31 of each year, on the overall compliance with the SWMP. The Annual Report will contain, at a minimum:

a) Name of permittee, address, phone number, and permit certification number.

b) A report on the facility's overall compliance with the SWMP.
c) A summary of each comprehensive stormwater facility inspection made, including date, findings, and action taken.
d) Results and interpretation of any stormwater monitoring performed.
e) The report shall be signed and certified for accuracy by the permittee, including the certification language contained in Part I.D.7. of the permit.

The Annual Report will be due to the Division on or before February 15 of each year, after the first full year of coverage under the permit. The exact due date for the permittee's first Annual Report will be listed in their permit certification. The Division reserves the right to require additional information in the report, on a case-by-case basis, as needed.

All reports required for submittal shall be signed and certified for accuracy by the permittee (see Part I.D.7.).

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD-P-B2
4300 Cherry Creek Drive South
Denver, CO 80222-1530

3. 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 wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and approval by the Division.

If the permittee monitors at the point of discharge any pollutant limited by the permit more frequently than required by the permit, using approved test procedures or as specified in the permit, the result of this monitoring shall be included in the calculation and reporting of data to the Division.

4. Analytical and Sampling Methods for Monitoring

The permittee shall install, calibrate, use and maintain monitoring methods and equipment, including biological and indicated pollutant monitoring methods. All sampling shall be performed by the permittee according to specified methods in 40 C.F.R. Part 136; methods approved by EPA pursuant to 40 C.F.R. Part 136; or methods approved by the Division, in the absence of a method specified in or approved pursuant to 40 C.F.R. part 136. The analytical method selected for a parameter shall be the one that can measure the lowest detected limit for that parameter unless the permit limitation or stream standard for those parameters not limited, is within the testing range of another approved method. When requested in writing, the Division may approve an alternative analytical procedure or any significant modification to an approved procedure.

When the most sensitive analytical method which complies with this part, has a detection limit greater than or equal to the permit limit, the permittee shall report "less than (the detectable limit)," as appropriate. Such reports shall not be considered as violations of the permit limit. The present lowest practical quantitation limits (PQL) for specific parameters (which have limitations that are, in some cases, less than or equal to the detection limit) are as follows:

Effluent Parameter	PQLs, µg/l
Arsenic	1
Cadmium	0.06
Chromium	2
Chromium, Hexavalent	2
Copper	5
Cyanide	10
Iron	10
Lead	1
Manganese	2
Mercury	0.003
Nickel	3
Phenols	15
Selenium	1
Silver	0.5
Uranium	1
Zinc	10

These limits apply to the total recoverable or the potentially dissolved fraction of metals.

For hexavalent chromium, samples must be unacidified so dissolved concentrations will be measured rather than potentially dissolved concentrations. The procedure for determining settleable solids is contained in 40 CFR 434.64. The method detection limit for measuring settleable solids under this part shall be 0.4 ml/l.

5. Records

The permittee shall establish and maintain records. Those records shall include the following:

a. The date, type, exact location, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) the analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used;
f. The results of such analyses; and
g. Any other observations, which may result in, an impact on the quality or quantity of the discharge as indicated in 40 CFR 122.44 (I)(1)(iii).

The permittee shall retain for a minimum of three (3) years records of all monitoring information, including all original strip chart recordings for continuous monitoring instrumentation, all calibration and maintenance records, copies of all reports required by this permit and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the permittee or when requested by the Division or EPA.

6. Flow Measuring Device

If not already a part of the permitted facility, within ninety (90) days after the effective date of the permit, a flow measuring device shall be installed to give representative values of effluent quantities at the respective discharge points. Unless specifically exempted or modified by the Division, a flow-measuring device will be applicable at all designated discharge points.

At the request of the Division, the permittee shall 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 within ten (10) percent of the actual flow being discharged from the facility.

7. Signatory and Certification Requirements

a. All reports and other information required by the Division, shall be signed and certified for accuracy by the permittee in accord with the following criteria:

i) In the case of corporations, by a principal executive officer of at least the level of vice-president or his or her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the form originates;

ii) In the case of a partnership, by a general partner;

iii) In the case of a sole proprietorship, by the proprietor;

iv) In the case of a municipal, state, or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

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

i) The authorization is made in writing by a person described above;

ii) The authorization specifies 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); and,

iii) The written authorization is submitted to the Division.

If an authorization as described in this section 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 this section must be submitted to the Division prior to or together with any reports, information, or applications to be signed by an authorized representative.

The permittee, or the duly authorized representative shall make and sign the following certification on all such documents:

"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."

PART II

A. NOTIFICATION REQUIREMENTS

1. Notification to Parties

All notification requirements under this section shall be directed as follows:

a. **Oral Notifications, other than for spills,** during normal business hours shall be to:

Water Quality Protection Section - Industrial Compliance Program
Water Quality Control Division
Telephone: (303) 692-3500

Spills notifications at any time and **other notifications** after hours shall be to:

Emergency Management Program
Laboratory and Radiation Services Division
Telephone: (877) 518-5608

b. **Written notification** shall be to:

Water Quality Protection Section - Industrial Compliance Program
Water Quality Control Division
Colorado Department of Public Health and Environment
WQCD-WQP-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530

2. Change in Discharge

Notice is required only when:

a. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged, or;

b. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported pursuant to an approved land application plan.

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

Whenever notification of any planned physical alterations or additions to the permitted facility is required pursuant to this section,, the permittee shall furnish the Division such plans and specifications which the Division deems reasonably necessary to evaluate the effect on the discharge, the stream, or ground water. If the Division finds that such new or altered discharge might be inconsistent with the conditions of the permit, the Division shall require a new or revised permit application and shall follow the procedures specified in Sections 61.5 through 61.6, and 61.15 of the Colorado Discharge Permit System Regulations.

3. Special Notification - Definitions

a. Bypass: The intentional diversion of waste streams from any portion of a treatment facility.

b. Severe Property Damage: Substantial physical damage to property at the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. It does not mean economic loss caused by delays in production.

c. Spill: An incident in which flows or solid materials are accidentally or unintentionally allowed to flow or escape so as to be lost from the treatment, processing or manufacturing system which may cause or threaten pollution of state waters.

d. Upset: An exceptional incident in which there is unintentional and temporary noncompliance with 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, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

4. Noncompliance Notification

a. If, for any reason, the permittee does not comply with or will be unable to comply with any discharge limitations or standards specified in this permit, the permittee shall, at a minimum, provide the Division and EPA with the following information:

i) A description of the discharge and cause of noncompliance;

ii) The period of noncompliance, including exact dates and times and/or the anticipated time when the discharge will return to compliance; and

iii) Steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

b. The permittee shall report the following circumstances **orally within twenty-four (24) hours** from the time the permittee becomes aware of the circumstances, and shall mail to the Division a written report containing the information requested in Part II.A.4 (a) **within five (5) days** after becoming aware of the following circumstances:

i) Circumstances leading to any noncompliance which may endanger health or the environment regardless of the cause of the incident;

ii) Circumstances leading to any unanticipated bypass which exceeds any effluent limitations in the permit;

iii) Circumstances leading to any upset or spill which causes an exceedance of any effluent limitation in the permit;

iv) Daily maximum violations for any of the pollutants limited by Part I.A of this permit and specified as requiring 24-hour notification. This includes any toxic pollutant or hazardous substance or any pollutant specifically identified as the method to control any toxic pollutant or hazardous substance.

c. The permittee shall report instances of non-compliance which are not required to be reported within 24-hours at the time Discharge Monitoring Reports are submitted. The reports shall contain the information listed in sub-paragraph (a) of this section.

5. Other Notification Requirements

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule in the permit shall be submitted no later than fourteen (14) days following each scheduled date, unless otherwise provided by the Division.

The permittee shall notify the Division, in writing, thirty (30) days in advance of a proposed transfer of permit as provided in Part II.B.3.

The permittee's notification of all anticipated noncompliance does not stay any permit condition.

All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Division as soon as they know or have 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":

i. One hundred micrograms per liter (100 ug/l);

ii. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2.4-dinitrophenol and 2-methyl-4.6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;

iii. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with Section 61.4(2)(g).

iv. The level established by the Division 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":

i. Five hundred micrograms per liter (500 ug/l);

ii. One milligram per liter (1 mg/l) for antimony; and

iii. Ten (10) times the maximum concentration value reported for that pollutant in the permit application.

iv. The level established by the Division in accordance with 40 CFR ' 122.44(f).

6. Bypass Notification

If the permittee knows in advance of the need for a bypass, a notice shall be submitted, at least ten days before the date of the bypass, to the Division. The bypass shall be subject to Division approval and limitations imposed by the Division. Violations of requirements imposed by the Division will constitute a violation of this permit.

7. Upsets

a. Effect of an Upset.

An upset constitutes an affirmative defense to an action brought for noncompliance with permit effluent limitations if the requirements of paragraph (b) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

b. Conditions Necessary for a Demonstration of Upset

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

i. An upset occurred and that the permittee can identify the specific cause(s) of the upset; and

ii. The permitted facility was at the time being properly operated and maintained; and

iii. The permittee submitted proper notice of the upset as required in Part II.A.4. of this permit (24-hour notice); and

iv. The permittee complied with any remedial measure necessary to minimize or prevent any discharge or sludge use or disposal in violation of this permit, which has a reason able likelihood of adversely affecting human health or the environment.

In addition to the demonstration required above, a permittee who wishes to establish the affirmative defense of upset for a violation of effluent limitations based upon water quality standards shall also demonstrate through monitoring, modeling or other methods that the relevant standards were achieved in the receiving water.

c. Burden of Proof

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

8. Discharge Point

Any discharge to the waters of the State from a point source other than specifically authorized by this permit is prohibited.

9. Proper Operation and Maintenance

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 as necessary to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance and adequate laboratory and process controls, including 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 necessary to achieve compliance with the conditions of the permit.

10. Minimization of Adverse Impact

The permittee shall take all reasonable steps to minimize or prevent any discharge of sludge use or disposal in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. As necessary, accelerated or additional monitoring to determine the nature and impact of the noncomplying discharge is required.

11. Removed Substances

Solids, sludges, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed in accordance with applicable state and federal regulations. For all domestic wastewater treatment works, at industrial facilities, the permittee shall dispose of sludge in accordance with all State and Federal regulations.

12. Submission of Incorrect or Incomplete Information

Where the permittee failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or report to the Division, the permittee shall promptly submit the relevant information, which was not submitted, or any additional information needed to correct any erroneous information previously submitted

13. Bypass

a. Bypasses are prohibited and the Division may take enforcement action against the permittee for bypass, unless:

i. The bypass is unavoidable to prevent loss of life, personal injury, or severe property damage;

ii. There were no feasible alternatives to 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 in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

iii. Proper notices were submitted in compliance with Part II.A.4.

b. "Severe property damage" as used in this Subsection means substantial physical damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources, which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

c. The permittee may allow a bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance or to assure optimal operation. These bypasses are not subject to the provisions of paragraph a. above.

d. The Division may approve an anticipated bypass, after considering adverse effects, if the Division determines that the bypass will meet the conditions specified in paragraph a. above.

14. Reduction, Loss, or Failure of Treatment Facility

The permittee has the duty to halt or reduce any activity if necessary to maintain compliance with the effluent limitations of the permit. Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production, control sources of wastewater, or all discharges, until the facility is restored or an alternative method of treatment is provided. This provision also applies to power failures, unless an alternative power source sufficient to operate the wastewater control facilities is provided.

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

B. RESPONSIBILITIES

1. Inspections and Right to Entry

The permittee shall allow the Division and/or the authorized representative, upon the presentation of credentials:

a. To enter upon the permittee's premises where a regulated facility or activity is located or in which any records are required to be kept under the terms and conditions of this permit;

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit and to inspect any monitoring equipment or monitoring method required in the permit; and

c. To enter upon the permittee's premises in a reasonable manner and at a reasonable time to inspect and/or investigate, any actual, suspected, or potential source of water pollution, or to ascertain compliance or non compliance with the Colorado Water Quality Control Act or any other applicable state or federal statute or regulation or any order promulgated by the Division. The investigation may include, but is not limited to, the following: sampling of any discharge and/or process waters, the taking of photographs, interviewing of any person having knowledge related to the discharge permit or alleged violation, access to any and all facilities or areas within the permittee's premises that may have any affect on the discharge, permit, or alleged violation. Such entry is also authorized for inspecting and copying records required to be kept concerning any effluent source.

d. The permittee shall provide access to the Division to sample the discharge at a point after the final treatment process but before the discharge mixing with state waters upon presentation of proper credentials.

In the making of such inspections, investigations, and determinations, the Division, insofar as practicable, may designate as its authorized representatives any qualified personnel of the Department of Agriculture. The Division may also request assistance from any other state or local agency or institution.

2. Duty to Provide Information

The permittee shall furnish to the Division, within a reasonable time, any information which the Division 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 Division, upon request, copies of records required to be kept by this permit.

3. Transfer of Ownership or Control

a. Except as provided in paragraph b. of this section, a permit may be transferred by a permittee only if the permit has been modified or revoked and reissued as provided in Section 61.8(8) of the Colorado Discharge Permit System Regulations, to identify the new permittee and to incorporate such other requirements as may be necessary under the Federal Act.

b. A permit may be automatically transferred to a new permittee if:

i. The current permittee notifies the Division in writing 30 days in advance of the proposed transfer date; and

ii. The notice includes a written agreement between the existing and new permittee(s) containing a specific date for transfer of permit responsibility, coverage and liability between them; and

iii. The Division does not notify the existing permittee and the proposed new permittee of its intent to modify, or revoke and reissue the permit.

iv. Fee requirements of the Regulations for the State Discharge Permit System, Section 61.15 have been met.

4. Availability of Reports

Except for data determined to be confidential under Section 308 of the Federal Clean Water Act and Colorado Discharge Permit System Regulations 5 CCR 1002-61, Section 61.5.(4), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Division and the Environmental Protection Agency.

The name and address of the permit applicant(s) and permittee(s), permit applications, permits and effluent data shall not be considered confidential. Knowingly making false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Federal Clean Water Act, and Section 25-8-610 C.R.S.

5. Modification, Suspension, Revocation, or Termination of Permits By the Division

The filing of a request by the permittee for a permit modification, revocation, and reissuance/termination or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

a. A permit may be modified, suspended, or terminated in whole or in part during its term for reasons determined by the Division

i. Violation of any terms or conditions of the permit;

ii. Obtaining a permit by misrepresentation or failing to disclose any fact which is material to the granting or denial of a permit or to the establishment of terms or conditions of the permit; or

iii. Materially false or inaccurate statements or information in the permit application or the permit.

iv. A determination that the permitted activity endangers human health or the classified or existing uses of state waters and can only be regulated to acceptable levels by permit modifications or termination.

b. A permit may be modified in whole or in part for the following causes, if such modification complies with the provisions of Section 61.10 of the Colorado Discharge Permit System Regulations:

i. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

ii. The Division has received new information which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of different permit conditions at the time of issuance. For permits issued to new sources or new dischargers, this cause includes information derived from effluent testing required under Section 61.4(7)(e) of the Colorado Discharge Permit System Regulations. This provision allows a modification of the permit to include conditions that are less stringent than the existing permit only to the extent allowed under Section 61.10 of the Colorado Discharge Permit System Regulations.

iii. The standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued. Permits may be modified during their terms for this cause only as follows:

(A) The permit condition requested to be modified was based on a promulgated effluent limitation guideline, EPA approved water quality standard, or an effluent limitation set forth in 5 CCR 1002-62, ' 62 et seq.; and

(B) EPA has revised, withdrawn, or modified that portion of the regulation or effluent limitation guideline on which the permit condition was based, or has approved a Commission action with respect to the water quality standard or effluent limitation on which the permit condition was based; and

(C) The permittee requests modification after the notice of final action by which the EPA effluent limitation guideline, water quality standard, or effluent limitation is revised, withdrawn, or modified; or

(D) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations or effluent limitation guidelines, if the remand and stay concern that portion of the regulations or guidelines on which the permit condition was based and a request is filed by the permittee in accordance with this Regulation, within ninety (90) days of judicial remand.

iv. The Division determines that good cause exists to modify a permit condition because of events over which the permittee has no control and for which there is no reasonable available remedy.

v. The permittee has received a variance.

vi. When required to incorporate applicable toxic effluent limitation or standards adopted pursuant to ' 307(a) of the Federal act.

vii. When required by the reopener conditions in the permit.

viii. As necessary under 40 C.F.R. 403.8(e), to include a compliance schedule for the development of a pretreatment program.

ix. When the level of discharge of any pollutant, which is not limited in the permit, exceeds the level, which can be achieved by the technology-based treatment requirements appropriate to the permittee under Section 61.8(2) of the Colorado Discharge Permit System Regulations.

x. To establish a pollutant notification level required in Section 61.8(5) of the Colorado Discharge Permit System Regulations.

xi. To correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions, to the extent allowed in Section 61.10 of the Colorado Discharge Permit System Regulations.

xii. When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

xiii. For any other cause provided in Section 61.10 of the Colorado Discharge Permit System Regulations.

c. At the request of a permittee, the Division may modify or terminate a permit and issue a new permit if the following conditions are met:

i. The Regional Administrator has been notified of the proposed modification or termination and does not object in writing within thirty (30) days of receipt of notification,

ii. The Division finds that the permittee has shown reasonable grounds consistent with the Federal and State statutes and regulations for such modifications or termination;

iii. Requirements of Section 61.15 of the Colorado Discharge Permit System Regulations have been met, and

iv. Requirements of public notice have been met.

d. Permit modification (except for minor modifications), termination or revocation and reissuance actions shall be subject to the requirements of Sections 61.5(2), 61.5(3), 61.6, 61.7 and 61.15 of the Colorado Discharge Permit System Regulations. The Division shall act on a permit modification request, other than minor modifications requests, within 180 days of receipt thereof. Except for minor modifications, the terms of the existing permit govern and are enforceable until the newly issued permit is formally modified or revoked and reissued following public notice.

e. Upon consent by the permittee, the Division may make minor permit modifications without following the requirements of Sections 61.5(2), 61.5(3), 61.7, and 61.15 of the Colorado Discharge Permit System Regulations. Minor modifications to permits are limited to:

i. Correcting typographical errors; or

ii. Increasing the frequency of monitoring or reporting by the permittee; or

iii. Changing an interim date in a schedule of compliance, provided the new date of compliance is not more than 120 days after the date specific in the existing permit and does not interfere with attainment of the final compliance date requirement; or

iv. Allowing for a transfer in ownership or operational control of a facility where the Division determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees has been submitted to the Division; or

v. Changing the construction schedule for a discharger which is a new source, but no such change shall affect a discharger's obligation to have all pollution control equipment installed and in operation prior to discharge; or

vi. Deleting a point source outfall when the discharge from that outfall is terminated and does not result in discharge of pollutants from other outfalls except in accordance with permit limits.

f. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term.

g. The filing of a request by the permittee for a permit modification, revocation and reissuance or termination does not stay any permit condition.

h. All permit modifications and reissuances are subject to the antibacksliding provisions set forth in 61.10 (e) through (g).

6. 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 to under Section 311 (Oil and Hazardous Substance Liability) of the Clean Water Act.

7. 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 law or regulation under authority granted by Section 510 of the Clean Water Act.

8. Permit Violations

Failure to comply with any terms and/or conditions of this permit shall be a violation of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit.

9. Property Rights

The issuance of this permit does not convey any property or water rights in either real or personal property, or stream flows, 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.

10. Severability

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

11. Renewal Application

If the permittee desires to continue to discharge, a permit renewal application shall be submitted at least one hundred eighty (180) days before this permit expires. If the permittee anticipates there will be no discharge after the expiration date of this permit, the Division should be promptly notified so that it can terminate the permit in accordance with Part II.B.5.

12. Confidentiality

Any information relating to any secret process, method of manufacture or production, or sales or marketing data which has been declared confidential by the permittee, and which may be acquired, ascertained, or discovered, whether in any sampling investigation, emergency investigation, or otherwise, shall not be publicly disclosed by any member, officer, or employee of the Commission or the Division, but shall be kept confidential. Any person seeking to invoke the protection of this Subsection (12) shall bear the burden of proving its applicability. This section shall never be interpreted as preventing full disclosure of effluent data.

13. Fees

The permittee is required to submit payment of an annual fee as set forth in the 1983 amendments to the Water Quality Control Act. Section 25-8-502 (l) (b), and the Colorado Discharge Permit System Regulations 5 CCR 1002-61, Section 61.15 as amended. Failure to submit the required fee when due and payable is a violation of the permit and will result in enforcement action pursuant to Section 25-8-601 et. seq., C.R.S. 1973 as amended.

14. Duration of Permit

The duration of a permit shall be for a fixed term and shall not exceed five (5) years. Filing of a timely and complete application shall cause the expired permit to continue in force to the effective date of the new permit. The permit's duration may be extended only through administrative extensions and not through interim modifications.

15. Section 307 Toxics

If a toxic effluent standard or prohibition, including any applicable schedule of compliance specified, is established by regulation pursuant to Section 307 of the Federal Act for a toxic pollutant which is present in the permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in the discharge permit, the Division shall institute proceedings to modify or revoke and reissue the permit to conform to the toxic effluent standard or prohibition.

16. Antibacksliding

a. A permit may not be renewed, reissued, or modified to contain effluent limitations adopted pursuant to Section 25-8-503(1)(b) (BPJ) of the Water Quality Control Act, which are less stringent than the comparable effluent limitations or standards in the previous permit, unless any one of the following exceptions is met and the conditions of paragraph c. of this section are met:

   i. Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justify the application of less stringent effluent limitations; or

   ii. Information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation or standard at the time of permit issuance; or

   iii. The Division determines that technical mistakes or mistaken interpretations of law were made in issuing the permit, which justified relaxation of the effluent limitations or standards; or

   iv. A less stringent effluent limitation or standard is necessary because of events over which the permittee has no control and for which there is not reasonable available remedy; or

   v. The permittee has received a permit variance; or

   vi. The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has

properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case, the limitations in the renewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

b. A permit may not be renewed, reissued, or modified to contain effluent limitations adopted pursuant to 61.8(2)(b) or (c) of the Colorado Discharge Permit System Regulations that are less stringent than the comparable effluent limitations in the previous permit, unless any of the exceptions provided herein is met and the conditions of paragraph c. of this section are met.

   i. In waters where the applicable water quality standard has not yet been attained, effluent limitations based on a total maximum daily load or other waste load allocation may be revised to be less stringent if the cumulative effect of all such revisions assures attainment of such water quality standard, or the designated use which is not being attained is removed in accordance with Section 31.6 of the Basic Standards.

   ii. In waters where the applicable water quality standard has been attained, effluent limitations based on a total maximum daily load, other waste load allocation, or any other permitting standard (including any water quality standard) may be revised to be less stringent if such revision is subject to and consistent with the antidegradation provisions of Section 31.8 of the Basic Standards. Consistency with Section 31.8 shall be presumed if the waters in question have been designated by the Commission as "use protected"; or

   iii. Whether or not the applicable water quality standard has been attained:

      (A) Material and substantial alterations or additions to the permitted facility occurred after permit issuance which justified the application of less stringent effluent limitations; or
      (B) A less stringent effluent limitation is necessary because of events over which the permittee has no control and for which there is not reasonable available remedy; or
      (C) The permittee has received a permit variance; or
      (D) The permittee has installed the treatment facilities required to meet the effluent limitations in the previous permit and has properly operated and maintained the facilities but has nevertheless been unable to achieve the previous effluent limitations, in which case, the limitations in the reviewed, reissued, or modified permit may reflect the level of pollutant control actually achieved (but shall not be less stringent than required by effluent guidelines in effect at the time of permit renewal, reissuance, or modification).

c. In no event may a permit with respect to which paragraphs a. and b. of this section apply be renewed, reissued, or modified to contain an effluent limitation or standard which is less stringent than required by federal effluent guidelines in effect at the time the permit is renewed, reissued, or modified. In no event may such a permit to discharge into state waters be renewed, reissued, or modified to contain a less stringent effluent limitation if the implementation of such limitation would result in a violation of an applicable water quality standard.

17. Effect of Permit Issuance

a. The issuance of a permit does not convey any property rights or any exclusive privilege.

b. The issuance of a permit does not authorize any injury to person or property or any invasion of personal rights, nor does it authorize the infringement of federal, state, or local laws or regulations.

c. Except for any toxic effluent standard or prohibition imposed under Section 307 of the Federal act or any standard for sewage sludge use or disposal under Section 405(d) of the Federal act, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Sections 301, 302, 306, 318, 403, and 405(a) and (b) of the Federal act. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in Section 61.8(8) of the Colorado Discharge Permit System Regulations.

d. Compliance with a permit condition which implements a particular standard for sewage sludge use or disposal shall be an affirmative defense in any enforcement action brought for a violation of that standard for sewage sludge use or disposal.

18. Requiring an Individual CDPS Permit

The Director may require any owner or operator covered under this permit to apply for and obtain an individual CDPS permit if:

a. The discharger is not in compliance with the conditions of this General Permit; or,

b. Conditions or standards have changed so that the discharge no longer qualifies for a General Permit; or,

c. Data becomes available which indicates water quality standards may be violated.

The owner or operator must be notified in writing that an application for an individual CDPS permit is required. When an individual CDPS permit is issued to an owner or operator otherwise covered under this General Permit, the applicability of the General Permit to that owner or operator is automatically terminated upon the effective date of the individual CDPS permit.

19. Requesting an Individual CDPS Permit

Any owner or operator covered by this General Permit may request to be excluded from the coverage by applying for an individual CDPS permit.

20. Requesting Coverage Under the General Permit

The owner or operator of a facility excluded from coverage by this General Permit solely because that facility already has an individual permit may request that the individual permit be revoked and that the facility be covered by this General Permit. Such request shall be evaluated by the Division per criterion specified in Part I of this permit.

RATIONALE
FIFTH RENEWAL
CDPS GENERAL PERMIT NO. COG-0500000- SAND AND GRAVEL PRODUCTION OPERATIONS
(AND OTHER NONMETALLIC MINERALS EXCEPT FUEL)
ANNUAL FEE $270, CATEGORY 07 SUBCATEGORY 1A (EFFECTIVE JULY 1, 2007)

I. INTRODUCTION

This is the fifth renewal of the general permit for sand and gravel (and other nonmetallic minerals) discharges (COG-0500000) to surface waters. This permit is for the regulation of stormwater runoff and process water discharges. Changes have been made to incorporate additional categories of mining facilities under this general permit.

II. GENERAL PERMIT SCOPE

A. Applicability

This general permit authorizes Stormwater and Process water discharges for the following types of facilities:

Mining and quarrying of nonmetallic minerals, except fuels; Standard Industrial Classification (SIC) Code 14.

Asphalt (SIC 2951) and concrete batch plants (SIC 3273) and recycling activities located at sand and gravel operations (Batch plants can include the use of recycled asphalt or concrete)

This general permit does not cover stormwater only discharges, which are covered under stormwater permit COR-340000.

Types of Nonmetallic Mineral Mining and Processing Facilities *- This general permit (COG-0500000) authorizes the discharge of wastewater and stormwater from the following categories of nonmetallic mineral mining and processing, as defined in 40 CFR Part 436:*

Crushed Stone (Subpart B)-means process wastewater generated during the mining or quarrying and processing of crushed and broken stone and rip rap. This includes all types of rock and stone, except rock and stone that is crushed or broken prior to the extraction of mineral, which is covered elsewhere. The processing of calcite, however, in conjunction with the processing of crushed and broken limestone or dolomite is included.

Construction Sand and Gravel (Subpart C) – means process wastewater generated during the mining and processing of sand and gravel for construction or fill uses.

Phosphate Rock (Subpart R)-means process wastewater generated by the mining or quarrying of phosphate bearing rock, ore, or earth, for the phosphate content.

Industrial Sand (Subpart D)-means process wastewater generated during the mining and processing of sand and gravel for uses other than construction and fill. These uses include, but are not limited to, glassmaking, molding, abrasives, filtration, refractories, and refractory bonding.

Graphite (Subpart AL)-means process wastewater generated during the mining and processing of naturally occurring graphite.

Batch Plants (Concrete or Hot Asphalt)-means process wastewater generated during the mixing process. This also includes the associated truck and drum wash area for concrete facilities, and the wet scrubber discharge from hot asphalt plants.

All references to sand and gravel will include the other non-metallic minerals (except fuels), unless specifically exempted. This general permit will cover both the process water discharges and stormwater discharges for sand and gravel operations including asphalt and concrete batch plants and recycling activities located at such facilities. Process water discharges are addressed under Part I.B of the permit; stormwater discharges are addressed under Part I.C of the permit.

Due to the potential toxicity and wide variety of pollutants, the minimal operations in Colorado, and some categories with provisions difficult to incorporate into a general permit, Mineral mining and processing point source category - 40 CFR 436 - subparts E (gypsum), F (asphaltic mineral), G (asbestos and wollastonite), J (barite), K (fluorspar), L (salines from brine lakes), M (borax), N (potash), O (sodium sulfate), S (Frasch Sulfer), V (bentonite), W (magnesite), X (diatomite), Y (jade), Z (novaculite), and AF (tripoli,), will not be covered under this general permit.

Groundwater *– Under Section 25-8-202(7) of the Colorado Water Quality Control Act, sand and gravel discharges to groundwater can not be authorized under the Division's jurisdiction, and a certification to discharge can not be issued. In these instances, an applicant will need to contact the Division of Reclamation Mining and Safety, or the Environmental Protection Agency under the Underground Injection Control program. In some cases, where the discharge to groundwater is in the alluvial material, and the groundwater discharge is considered to impact the surface waters, a facility may be authorized under this general permit.*

Stormwater - *When stormwater mixes with process water, the process water limitations (Part I.B of the permit) apply to the discharge of that mixed water. The stormwater section (Part I.C of the permit) is intended to cover those portions of a nonmetallic minerals production operation (except fuel) that are not already subject to effluent limitations under 40 CFR 436, and to cover stormwater runoff from asphalt and concrete batch plants and recycling areas.*

Domestic Wastewater *- Note that this general permit does not cover the discharge of domestic type wastewater. If this type of coverage is needed, the permittee may apply for an individual permit, or may apply separately for a domestic general permit (if applicable).*

Need for an Individual Permit- *Dischargers that do not fit under this characterization, possess highly toxic chemicals in elevated concentrations, elect to have an individual permit, or wish to have mixing zone or site-specific antidegradation considerations, should apply for coverage under an individual permit.*

B. Application

Dischargers can apply for coverage under this general permit once the permit is issued. Holders of certifications under the administratively extended Sand and Gravel and other Nonmetallic Mineral Mining Permit (COG-0500000) will automatically be transferred to this new general permit. Their coverage will be transferred to the new general permit without a lapse of coverage (i.e. discharging without a permit) and without loss of fee payments. Incidentally, the annual fee for each of these general permits is $270, effective July 1, 2007. The permittee will have 90 days, from the date of transfer, to comply with any new terms and conditions of this general permit. For all others, the owner or operator of the site shall submit one original completed application and a copy, including a signed certification that the SWMP is complete ***at least thirty days prior*** *to the commencement of mining activities.*

III. EFFLUENT LIMITATIONS

Numeric effluent limitations are imposed for pollutants that are specific to the discharges covered, and are shown in Tables III-1 through III-6. Some of these limits are based on the EPA Federal Effluent Guidelines for the applicable point source category and are described below. The certification will state which conditions apply, based on the nature of the discharge. Note that any parameter that is determined to be a site-specific pollutant of concern may be added to the discharge certification.

Table III-1- crushed stone (subpart B), construction sand and gravel (subpart C), and all other industrial facilities covered under SIC Code 14, except those specifically listed in the tables below.

Effluent Parameter	*Discharge Limitations*			*Rationale*
	30 Day Avg	*7 Day Avg*	*Daily Max*	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, mg/l	*30*	*45*	*NA*	*State Effluent Regulations*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
Site specific				
Selenium, ug/l[****]	*Various*	*NA*	*Various*	*Water Quality Standards*
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)[***]				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Limitations*
Acute	*LC50>100%*			*State Permit Limitations*
Total Dissolved Solids, mg/l[*]	*Report*	*NA*	*Report*	*Salinity Regulations*
Total Phosphorus, mg/l[**]	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

[*] Monitoring will normally apply to discharges within the Colorado River Basin.
[**] The Phosphorus limitations apply to discharges to the Dillon Reservoir Watershed, Cherry Creek Reservoir Watershed, Chatfield Reservoir Watershed, and the Bear Creek Watershed, as defined in Regulation 71, 72, 73, or 74, respectively.
[***] Not applicable to every certification. If included in the permit, either acute or chronic will apply. See Section IV (g)
[****] Selenium will be included based on the presence of selenium-containing shale deposits

Table III-2- Phosphate rock (Subpart R)

Effluent Parameter	***Discharge Limitations***			***Rationale***
	30 Day Avg	***7 Day Avg***	***Daily Max***	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, mg/l	*30*	*NA*	*60*	*Federal Effluent Guidelines*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
Site specific				
*Selenium, ug/l*****	*Various*	*NA*	*Various*	*Water Quality Standards*
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Limitations*
Acute	*LC50>100%*			*State Permit Limitations*
*Total Dissolved Solids, mg/l**	*Report*	*NA*	*Report*	*Salinity Regulations*
*Total Phosphorus, mg/l***	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

Footnotes *, **, ***, and **** can be found under Table III-1

Table III-3- Industrial Sand (subpart D) except Industrial Sand HF flotation facilities (see Table III-4)

Effluent Parameter	***Discharge Limitations***			***Rationale***
	30 Day Avg	***7 Day Avg***	***Daily Max***	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, mg/l	*25*	*NA*	*45*	*Federal Effluent Guidelines*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
Site specific				
*Selenium, ug/l*****	*Various*	*NA*	*Various*	*Water Quality Standards*
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Limitations*
Acute	*LC50>100%*			*State Permit Limitations*
*Total Dissolved Solids, mg/l**	*Report*	*NA*	*Report*	*Salinity Regulations*
*Total Phosphorus, mg/l***	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

Footnotes *, **, ***, and **** can be found under Table III-1

Table III-4- Industrial Sand (subpart D) HF flotation facilities only

Effluent Parameter	***Discharge Limitations***			***Rationale***
	30 Day Avg	***7 Day Avg***	***Daily Max***	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, lbs/day	*0.023 lbs per 1,000 lbs total production****	*NA*	*0.046 lbs per 1,000 lbs total production****	*Federal Effluent Guidelines*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
Total Fluoride, lbs/day	*0.003 lbs per 1,000 lbs total production******	*NA*	*0.006 lbs per 1,000 lbs total production*****	*Federal Effluent Guidelines*
Production Rate, lbs/day	*Report*	*NA*	*Report*	*Discharge Evaluation*
Site specific				
*Selenium, ug/l*****	*Various*	*NA*	*Various*	*Water Quality Standards*
*Fluoride, mg/l******	*NA*	*NA*	*2*	*Water Quality Standards*
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Regulations*
Acute	*LC50>100%*			*State Permit Limitations*
*Total Dissolved Solids, mg/l**	*Report*	*NA*	*Report*	*Salinity Regulations*
*Total Phosphorus, mg/l***	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

Footnotes *, **, ***, and **** can be found under Table III-1

***** This limitation will be calculated from the facility's production rate. The water quality-based limit for Fluoride applies only on Water Supply segments, and the more stringent limit (WQS, ELG) will apply.

Table III- 5- Graphite (subpart AL)

Effluent Parameter	***Discharge Limitations***			***Rationale***
	30 Day Avg	***7 Day Avg***	***Daily Max***	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, mg/l	*10*	*NA*	*20*	*Federal Effluent Guidelines*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
*Total Iron, mg/l******	*1*	*NA*	*2*	*Federal Effluent Guidelines*
Site specific				
*Selenium, ug/l*****	*Various*	*NA*	*Various*	*Water Quality Standards*
*Total Recoverable Iron, ug/l******	*1,000*	*NA*	*NA*	*Water Quality Standards*
*Dissolved Iron******	*300*	*NA*	*NA*	*Water Quality Standard*
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Limitations*
Acute	*LC50>100%*			*State Permit Limitations*
*Total Dissolved Solids, mg/l**	*Report*	*NA*	*Report*	*Salinity Regulations*
*Total Phosphorus, mg/l***	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

Footnotes *, **, ***, and **** can be found under Table III-1
***** The water quality-based limit for dissolved fluoride applies only on Water Supply segments. The more stringent limit (WQS, ELG) will apply.

Table III- 6. Batch Plants-Concrete and Hot Asphalt

Effluent Parameter	***Discharge Limitations***			***Rationale***
	30 Day Avg	***7 Day Avg***	***Daily Max***	
Flow, mgd	*Report*	*NA*	*Report*	*Discharge Evaluation*
Total Suspended Solids, mg/l	*30*	*NA*	*45*	*State Effluent Regulations*
pH, s.u.	*NA*	*NA*	*6.5-9.0*	*Water Quality Standards*
Oil and Grease, mg/l	*NA*	*NA*	*10*	*State Effluent Regulations*
*Total Iron, mg/l******	*1*	*NA*	*2*	*Federal Effluent Guidelines*
Site specific				
*Selenium, ug/l*****	*Various*	*NA*	*Various*	*Water Quality Standards*
*Total Recoverable Iron******				
*Dissolved Iron******				
Metals, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Organics, ug/l	*Various*	*NA*	*Various*	*Water Quality Standards*
Whole Effluent Toxicity (WET)				
Chronic	*Stat. Diff & IC25≥IWC*			*State Permit Limitations*
Acute	*LC50>100%*			*State Permit Limitations*
*Total Dissolved Solids, mg/l**	*Report*	*NA*	*Report*	*Salinity Regulations*
*Total Phosphorus, mg/l***	*Report*	*NA*	*0.2-1.0*	*Control Regulations*

Footnotes *, **, ***, and **** can be found under Table III-1
***** The water quality-based limit for dissolved fluoride applies only on Water Supply segments. The more stringent limit (WQS, ELG) will apply.

IV. EXPLANATION OF PERMIT LIMITATIONS

a. *Regulations for Effluent Limitations (Regulation No. 62) – Regulation 62.4 includes effluent limitations that apply to all discharges of wastewater to State waters. These regulations are the basis for the oil and grease limitations and some of the total suspended solids (TSS) limitations in the tables above. These regulations do not apply when there are federal Effluent Limitation Guidelines associated with a facility.*

b. *Technology-Based Limitations (Federal Effluent Limitation Guidelines) – Federal Effluent Limitation Guidelines (ELG's) have been promulgated for these facilities and must be applied to these discharges, unless a more stringent Water Quality Standard exists. The Water Quality Standards in many areas of the state are often more stringent than the federal ELG's, and therefore may be substituted in a certification.*

c. *Water Quality Standard-based Limitations (Discharges to Surface Waters)- Water quality-based limits are imposed for pH. Water quality-based reporting may also be imposed for other pollutants of concern based on the discussion that follows.*

1. *pH – This parameter is limited by Water Quality Standards as the water quality standards of 6.5-9.0 s.u. range are more stringent than those specified under the Regulations for Effluent Limitations.*

2. *Selenium –The permit writer will review the application and determine if selenium must be limited and/or monitored to protect the classified uses assigned to the receiving water. If required, the permit writer will set these limitations equal to the appropriate water-quality standards. Selenium will be considered a pollutant of concern for facilities operating in areas of shale deposits containing selenium (e.g. Mancos).*

3. *Metals- The permit writer will review the application and determine if metals parameters must be limited and/or monitored to protect the classified uses assigned to the receiving water. If required, the permit writer will set these limitations equal to the appropriate water-quality standards. As many water quality standards for metals are listed as TVS, and based upon an equation dependent on the hardness of the receiving stream, the permit writer will obtain hardness data to determine the appropriate metals limitations where appropriate.*

4. *Organics- The permit writer will review the application and determine if any organic parameters must be limited and/or monitored to protect the classified uses assigned to the receiving water. If required, the permit writer will set these limitations equal to the appropriate water-quality standards.*

5. *Chemicals- The addition of chemicals (including release agents) to the discharge is not allowed unless expressly authorized by the Division. A release agent is a substance used to aid in the separation of the desired material from the substrate, and must be disclosed. To approve a chemical, the Division must have the associated MSDS sheet(s) provided with the application. If authorized, all chemicals must be used and stored in accordance with the manufacturers' recommendations and in accordance with any applicable state or federal regulation.*

d. *Salinity Requirements – All permit actions for discharges to surface waters in the Colorado River Basin must include salinity monitoring. Accordingly, the permit writer will perform an analysis, as set out in the paragraphs that follow, to determine which salinity requirements apply pursuant to the requirements of Section 61.8(2)(l) of the Colorado Discharge Permit System Regulations(Regulation No. 61). Multiple discharges covered from a single facility are subject to the limitation that would apply if there were a single discharge point.*

   Based on the effluent data in the application from a new facility, the permit writer will make an assessment of the expected salinity load in the discharge (from concurrent flows at all outfalls) and if less than 1 ton/day or 366 tons/year, the calculation will be documented in the issued certification. For facilities discharging less than this threshold, quarterly monitoring will be required, as existed in the previous permit.

   For facilities that exceed the 1 ton/day or 366 tons/year threshold, a TDS limitation will be applied in the permit, unless the permittee demonstrates that it is not practicable to prevent the discharge of all salt. The Division will decide on this exception prior to the start of discharge and may require further actions by the permittee to reduce the salt load before approval of the discharge. In conformance with section 61.8(2)(l)(i)(A) of the Colorado Discharge Permit System Regulations, the permittee must submit a report that documents whether it is feasible to treat to these levels. The Salinity Regulations allow for a waiver of TDS limitations upon submittal of a report that demonstrates that achievement of zero salt loading or, in the event that is not achievable, discharge of less than one ton per day, is not economically feasible. There is no record that the permittee has previously submitted this report. If a report has previously been submitted, the permittee should submit a copy of this report. ***Quarterly*** *monitoring for total dissolved solids will continue regardless.*

   In conformance with the Colorado Discharge Permit System Regulation (Regulation No. 61), existing permits for discharges to the Colorado River basin incorporate total dissolved solids (TDS)as the monitoring parameter for compliance with the salinity requirements. Electrical conductivity (EC) may be substituted for TDS if a constant correlation exists between TDS and EC is established for the discharge, based on 5 paired samples, and approved by the permit writer.

e. *Phosphorus Regulations – Additional limitations for phosphorus may apply to discharges to surface waters in four watersheds – Dillon Reservoir, Cherry Creek Reservoir, Chatfield Reservoir, and Bear Creek Reservoir. Wasteloads (e.g., phosphorus) have been allocated in these regulations to various point and non-point sources that discharge on these watersheds. If a discharge is to one of these areas, as defined in Regulations 71, 72, 73, and 74, the permittee will be required to obtain a wasteload allocation from the appropriate authority prior to certification under this general permit.*

f. *Antidegradation – As set out in The Basic Standards and Methodologies of Surface Water, Section 31.8(3)(c)(ii)(C), an antidegradation analysis is required for all waters not designated as Use Protected, except in cases where the regulated activity will result in only temporary or short term changes in water quality, or where the ratio of the low flow to the facility flow is 100:1 or more. Discharges permitted under this general permit are not normally temporary or short-term, thus, these discharges are not*

exempted from an antidegradation review. Based on the information and data in the application, the permit writer will make an assessment of the low flow dilution ratio of the discharge to determine if antidegradation applies.

Under this general permit, an antidegradation (AD) limit will be calculated as 15% of the Water Quality Standard. The permittee would then have the choice of this AD limit, or of a non-impact limitation (NIL). The NIL is either the limitation contained as of September 2000, or may be determined by the use of an implicit limitation if a previous limit did not exist. The implicit limit is determined as the maximum effluent concentration in the years prior to September 2000 (later data may be substituted on a case by case basis if data is unavailable from this time period). Alternately, if data does not exist, a compliance schedule may be added to the permit to obtain such data, to determine the implicit limitation and the final antidegradation-based effluent limit. An individual permit will be required where the permittee requests consideration of dilution and ambient water quality.

In addition, the permittee may elect to perform an alternatives analysis. As this may be subject to public notice requirements, an individual permit will be required. See Regulation 31.8(3)(d) and the Division's Antidegradation Guidance document for more information regarding an alternatives analysis.

g. *Whole Effluent Toxicity (WET) – The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for Surface Waters.*

Some discharges covered under this general permit may exhibit whole effluent toxicity based on the potential pollutant concentrations in the discharge. Thus, WET testing may be incorporated into the permit on a case-by-case basis. If it is determined that WET testing is required, Chronic WET testing will normally be incorporated into the permit. However, Acute testing may be applied where the receiving stream has a zero low flow in all months and the discharge is intermittent, or when deemed appropriate for any other site-specific reason.

h. *Threatened and Endangered Species- The US Fish and Wildlife Service and the Division have entered into a Memorandum of Agreement (MOA) regarding discharges to federal T&E waters. In this MOA, a permittee that discharges to a T&E water may have additional constraints placed upon the discharge. These constraints may include accepting end-of-pipe limitations (no dilution), moving the discharge point to a different location, or using a diffuser to obtain instantaneous mixing of the effluent and the receiving water. This last option may allow for a portion of the available assimilative capacity (dilution) to be incorporated into the permit. However, as this is a general permit, all limitations are imposed as end-of-pipe limits, and therefore, the first option is met. Generally, it will be assumed that the end-of-pipe limitations will satisfy the MOA, and no further consideration is needed. On a case-by-case basis, additional constraints may need to be evaluated.*

h. *Mixing Zones – Under this general permit mixing zone regulations do not apply, as the water quality standards are applied as the effluent limits(i.e., no dilution is allowed.).*

i. *Discharges to 303(d) Listed Waters – Where the receiving water is included on the state's 303(d) list, total maximum daily loads (TMDLs) are being developed in accordance with the Division's schedule for TMDL completion. Once a TMDL has been established, if it is necessary to incorporate limitations for a facility certified under this general permit, based upon the outcomes of the TMDL or the results of the data analysis, a modification to the certification to discharge, or an individual permit may be required to regulate discharges from a facility. The facility would continue to be covered under this general permit certification until the individual permit is issued.*

For example, the industrial process of sand and gravel operations typically involves discharging alluvial water. When the alluvium is dewatered in an area of shale deposits (e.g. Mancos), selenium is likely to be present in elevated concentrations in the discharge and is automatically considered a pollutant of concern. Preliminary monitoring data indicates that operations in areas of shale are likely contributing to exceedances of stream standards for selenium, and therefore, monitoring requirements will be included for data collection for a future reasonable potential analysis. New discharges to these segments will be required to meet the water quality limitations for selenium upon commencement of discharge. The basic standards for selenium are found in Table III of The Basic Standards and Methodologies for Surface Water (5 CCR 1002-31).

There are currently ongoing national discussions between the USEPA and the USFWS on appropriate aquatic life standards for selenium. Should the USEPA adopt new water quality standards for selenium, the division's standards unit will begin incorporating federal standards into Colorado's water quality standards during basin triennial reviews. In the future, treatment of effluent to remove selenium may be required to attain water quality standards.

The basin regulations contain information on the adopted standard for the segment (basic standard or site-specific standard) for stream segments for selenium (see examples below), and should be checked for the specific segment and modifications. When temporary modifications are listed for a stream segment, the acute and chronic aquatic life standards of 18.4 ug/l and 4.6, respectively, may not apply.

Regulation No.	Main Water Bodies	Expiration Dates
32	Rock Creek, Salt Creek, Peck Creek, St. Charles River Greenhorn Creek, Sixmile Creek, Huerfano River, Cucharas River, Boggs Creek, Fountain Creek, Arkansas River, Apishapa River, Purgatoire River	12/31/2012
33	None	None
34	Animas River, Cement Creek, Mineral Creek	12/31/2011
35	Gunnison River, Uncompahgre River, Bear Creek	12/31/2011
36	Alamosa River	12/31/2011
37	Colorado River and tributaries, Johnson Creek, Yellow Creek	12/31/2011
38	South Platte and tributaries,	12/31/2011
	Big Thompson Creek	12/31/2009

j. Compliance Schedules- *Existing dischargers may be granted compliance schedules for any new effluent limitations applicable to the discharge. Some items for which a compliance schedule may be necessary may require an individual permit. Note that compliance schedules cannot be granted for limitations based upon the federal ELGs.*

k. Monitoring Requirements- *See Section I.B of the permit for monitoring requirements.*

m. Permit Termination- *Sites that are covered by a bond under the Colorado Division of Reclamation, Mining, and Safety will need to prove that bond release has occurred before permit coverage can be terminated. Sites that are not covered under a bond must provide additional information before the permit can be terminated.*

V. STORMWATER DISCHARGES

As required under the Clean Water Act amendments of 1987, the Environmental Protection Agency (EPA) has established a framework for regulating municipal and industrial stormwater discharges. The Water Quality Control Division ("the Division") has stormwater regulations (5CCR 1002-61) in place. These regulations require specific types of industrial facilities that discharge stormwater associated with industrial activity (industrial stormwater), to obtain a CDPS permit for such discharge. The regulations specifically include sand and gravel mining activities as industrial facilities. Facilities which discharge industrial stormwater either directly to surface waters or indirectly, through municipal separate storm sewers, must be covered by a permit. This general permit does not cover stormwater only discharges, which are covered under stormwater permit COR-340000.

The federal effluent guidelines that govern discharges from sand and gravel mining facilities (40 CFR 436) control most surface runoff. However, there are some sources of stormwater from these sites which are not addressed, such as roads and railroad lines, pond outslopes, inactive loadouts, sites used for storage and maintenance of material handling equipment, etc.

1. ***Stormwater Management Plan (SWMP):*** *The stormwater regulations primarily apply to areas not covered by 40 CFR Part 436. They require permittees to develop and implement a Stormwater Management Plan (SWMP) to protect the quality of stormwater leaving the site. The plan shall identify potential sources of pollution (including sediment) which may reasonably be expected to affect the quality of stormwater discharges associated with mining activity. In addition, the plan shall describe the best management practices (BMPs) which will be used to reduce the pollutants in stormwater discharges from the mining site.*

   Some activities required under the SWMP may already be in place. However, the SWMP will require the permittee to coordinate these activities with any necessary new activities in an orderly manner, so that the result is the reduction or elimination of pollutants reaching state waters from areas not limited by effluent limitations. Facilities must implement the provisions of the SWMP required under this part as a condition of this permit.

   It is the permittee's responsibility to notify the Colorado Division of Reclamation, Mining and Safety of any significant changes at their site resulting from the implementation of the SWMP. This is so that the Division of Reclamation, Mining and Safety may review the SWMP and incorporate any potential revisions into the facility's reclamation permit which might be needed.

   The SWMP shall include the following items, at a minimum:

   a) Site Map

b) Description of Potential Pollutant Sources/Material Inventory

c) Stormwater Quality Controls
1) SWMP Administrator
2) Materials handling and spill prevention
3) Erosion and sediment controls
4) Other pollution prevention measures
5) Preventive maintenance
6) Good housekeeping
7) Identification of discharges other than stormwater.

2. Other Requirements

a) Facility Inspections: The permittee will be required to make a thorough inspection of their stormwater management system, at least twice per year (in the spring and fall). (See Part I.D.4 of the permit for alternate schedules.) These inspections must be documented and summarized in the Annual Report to the Division.

b) Employee Education: The permittee shall develop and implement employee education programs to inform personnel at all levels of responsibility of the components and goals of the SWMP. This section has been expanded from the previous permit to include contractor and temporary personnel, in keeping with other stormwater permits.

E. Stormwater Management Plan (SWMP)

The SWMP Contents section has been modified. Some of the changes are limited to organization of information, which does not require modification of an existing permittee's current SWMP. Most of the SWMP changes involve clarifications, reformatting, or adopting requirements from the Division's Stormwater Construction general permit (e.g., BMP installation specifications). For existing permittees (i.e., those with permit coverage prior to the reissuance date of this permit), their SMWP must be amended to include the new required items:

For existing permittees, any SWMP changes based on the change in permit requirements must be completed within 5 months of the effective date of the certification. The plan is not to be submitted to the Division unless requested, but must be available on site as outlined in Part I.D.5(b) of the permit.

*1. **Terms and Conditions, General Limitations and Design Standards**: This section reiterates the requirement that facilities select, install, implement, and maintain appropriate BMPs, following good engineering, hydrologic and pollution control practices. In addition, requirements to adequately design BMPs to prevent pollution or degradation of State waters (see Part I.D.2 of the permit) have been revised and are discussed below.*

*2. **Site Map:** The list of items needed for the Site Map has been expanded, in order to adequately characterize the site. A list of items and factors has been added to the section on identifying potential stormwater pollutants, in order to clarify the Division's intent in this area. **This requirement may necessitate changes to existing permittees' SWMPs.***

*3. **Description of Potential Pollutant Sources:** The requirement to identify Potential Pollutant Sources has been expanded to include more details for the evaluation of such sources. This evaluation allows for the appropriate selection of BMPs for implementation at a facility or site. **This requirement may necessitate changes to existing permittees' SWMPs.***

*4. **Stormwater Management Controls:** See Part I.C.1 of the permit.*

*a) This section has been modified to require identification of a SWMP Administrator. The SWMP Administrator is a specific individual(s), position or title who is responsible for the process of developing, implementing, maintaining, and revising the SWMP. This individual serves as the comprehensive point of contact for all aspects of the facility's SWMP. **This requirement may necessitate changes to existing permittees' SWMPs.***

*b) Sections have been added requiring that preventive maintenance and good housekeeping measures be included in the SWMP. Preventive maintenance is critical to ensuring the success of the BMPs at a site. Good housekeeping measures are a common sense means of increasing compliance. **This requirement may necessitate changes to existing permittees' SWMPs.***

*5. **Permit Termination:** A section has been added on additional SWMP items for sites seeking permit termination. This section provides more guidance to permittees than has been available in the past, on the steps needed to inactivate a site's permit*

coverage. Most sites will be able to inactivate coverage once they have had bond release from the Colorado Division of Reclamation, Mining and Safety. ***This requirement may necessitate changes to existing permittees' SWMPs.***

6. ***Consistency with Other Plans:*** *A section has been added clarifying that other documents, such as an SPCC, can be used to meet some of the SWMP requirements, provided that the other documents are readily available and the SMWP includes appropriate cross references.*

Erin Scott
April 18, 2008

IV. PUBLIC NOTICE COMMENTS

No comments were received during the public notice period. Note, however, that the division eliminated the two year maximum for compliance schedules.

Erin Scott
May 28, 2008

Form No.
GWS-25

OFFICE OF THE STATE ENGINEER
COLORADO DIVISION OF WATER RESOURCES

818 Centennial Bldg., 1313 Sherman St., Denver, Colorado 80203
(303) 866-3581

LIC

WELL PERMIT NUMBER 260656 - - -
DIV. 7 WD 33 DES. BASIN MD

APPLICANT

NATIONAL KING COAL INC
4424 CR 120
HESPERUS, CO 81326-

(970) 385-4528

APPROVED WELL LOCATION
LA PLATA COUNTY
SW 1/4 SW 1/4 Section 36
Township 35 N Range 12 W New Mex P.M.

DISTANCES FROM SECTION LINES
50 Ft. from South Section Line
700 Ft. from West Section Line

UTM COORDINATES (NAD83)
Easting: Northing:

PERMIT TO CONSTRUCT A WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
4) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
5) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
6) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
7) The owner shall mark the well in a conspicuous place with well permit number(s) and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
8) This well must be constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules. If non-standard construction is anticipated, a variance request must be submitted in accordance with Rule 18 and approved prior to well construction.
9) A Well Construction and Test Report (Form GWS-31), including lithologic log must be submitted by the individual authorized to construct the well. For non-standard construction, the report must include an as-built drawing showing details such as depth, casing, perforated zones, and a description of the grouting type and interval.
10) This well shall be constructed not more than 200 feet from the location specified on this permit.

NOTE: This well is known as Hay Gulch Alluvial 2.

DW 1 DEC 04

APPROVED
DDW

Hal D. Simpson
State Engineer

Don West
By

Receipt No. 0532066 DATE ISSUED 12-01-2004 EXPIRATION DATE 12-01-2006

Send to: **Division of Water Resources**
1313 Sherman Street, Room 818
Denver, Colorado 80203

Fax: 303-866-3589
Phone: 303-866-3581

OWNER'S NOTICE OF CONSTRUCTED WELL

Construction of my well under **Permit No.** 260656 was

completed on DECEMBER 20, 2004.
(month) (day) (year)

The well was constructed by: LAMBERT AND ASSOCIATES.
(drilling contractor)

If the pumping equipment has been installed.....

The pump was installed in my well by: _____
(pump contractor)

on _____, _____.
(month) (day) (year)

Signed: _____

Date: 10/3/05 **Phone:** (970) 385-4528 x 14

The well must be constructed and pump installed by licensed water well construction and pump installation contractors, OR

PLEASE BE ADVISED that, pursuant to section 37-91-106(3), C.R.S. (2003), any person who intends to construct his/her own well or to install pumping equipment in a well as a "private driller" of "private pump installer" **must first successfully complete an examination** prescribed by the Board of Examiners of Water Well Construction and Pump Installation Contractors. (Contact the Division of Water Resources for details.)

Lambert and Associates
CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

January 10, 2005

National King Coal
P.O. Bx 2905
Durango, Colorado 81302

Attention : Mr. Tom Bird

D04007DR

Subject: Installation of Water Monitoring Well
National King Coal Mine Expansion Project
Hesperus, Colorado

Mr. Bird,

This letter presents the subsurface soil and water conditions encountered, and details regarding the installation of the monitoring well for the subject project. We installed the monitoring well in a location designated by you. We have not been contacted to perform geotechnical engineering services for the subject project.

We encountered soft silt and clay soil material from the ground surface to the bottom of the installation boring. Subsurface free water was encountered at a depth of approximately six (6) feet below the ground surface. The installation boring was advanced to a depth of eighteen (18) feet below the ground surface.

The water monitoring well consisted of two (2) inch diameter, schedule 40 PVC pipe installed to the bottom of the boring at eighteen (18) feet below the ground surface. The bottom approximate ten (10) feet was slotted. Approximately two (2) feet of PVC well casing extends above the adjacent ground surface. Pea gravel was packed from the bottom of the well to approximately six (6) feet below the ground surface. The upper six (6) feet of the well was then backfilled with powdered bentonite material. A six (6) inch well shroud was then placed over the monitoring well.

Please contact us if your have any questions, or if we may be of additional service.

Respectfully Submitted
LAMBERT AND ASSOCIATES

Reviewed by,

Jonathan P. Butler, P.E.
Staff Engineer

David L. Traumer, P.E.
Durango Office Manager

P.O. BOX 3986
GRAND JUNCTION, CO
(970) 245-4605

P.O. Box 0045
MONTROSE, CO 81402
(970) 249-2154

214 Bodo Drive
DURANGO, CO. 81301
(970) 259-5095

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT

FEDERAL PERMIT FOR SURFACE COAL MINING OPERATIONS

Permit Number: CO-0106A

Permit Term: 5 years

Effective Date: 04/17/2007
Transfer Date: 01/12/2009
Amended Date: 09/09/2010
Expiration Date: 04/17/2012

Permittee: GCC Energy, LLC
4424 County Road 120
Hesperus, Colorado 81326

Operation Name: King II Mine

General Location: La Plata County, Colorado

This permit approves and authorizes coal development or mining operations on the Federal lease COC-62920 on the following lands;

Township 35 North, Range 11 West, New Mexico P.M.

Section 19, lots 4, 5, E½SW¼, SE¼;

Township 35 North, Range 12 West, New Mexico P.M.

Section 24, lots 1, 2, SW¼SE¼;
Section 25, lots 1, 2, W½NE ¼, W½ ;
Section 26, SE¼NE¼, E½SE¼, SW¼SE¼, E½SW¼, NW¼SE¼, SW¼NE¼.

Comprising approximately 1,384 acres as shown on the location map.

1. STATUTES AND REGULATIONS - This permit is issued pursuant to the Surface Mining Control and Reclamation Act of 1977 (SMCRA), 30 U.S.C. §§ 1201, et seq., and the Indian Lands Program, 30 CFR Part 750. This permit is subject to all applicable laws and regulations that are now, or hereafter in force, even though not specifically referenced herein.

2. AUTHORIZATION - This permit authorizes those surface coal mining and reclamation operations described in the application for this permit approved by the Office of Surface Mining Reclamation and Enforcement (OSM) on 04/17/2007 except to the extent directed otherwise in this permit. The permit application approved is incorporated by reference into this permit. The permit area for the King II underground mine is located on lands owned in fee by the Ute Mountain Ute Tribe. The permit area for the King II mine consists of zero (0) acres.

   In approving the application for this permit OSM grants no variances from the performance standards.

3. CONDITIONS - The standard permit conditions at 30 CFR § 773.17 and the terms and conditions of the Bureau of Land Management Federal coal lease COC-62920 of October 31, 2002, are incorporated by reference into this permit. This permit also includes one (1) special condition, as described on page 3.

The terms and conditions of this permit are binding on the permittee, its officers, directors, employees, agents, contractors, and subcontractors, and the officers, directors, and employees of its agents, contractors, and subcontractors.

4. INITIATION OF OPERATIONS - This permit will terminate if the permittee has not begun the surface coal mining operations covered by this permit within 3 years of its effective date. OSM may grant a reasonable extension of time for the commencement of operations in accordance with 30 CFR § 773.19(e).

5. RENEWAL - This permit may be renewed in accordance with 30 CFR §§ 774.15 and 750.12(c)(1)(ii). An application for renewal shall be filed with OSM at least 120 days before the expiration date of this permit.

6. REVISION - (a) OSM may order reasonable revision of this permit at any time in accordance with 30 CFR § 774.11.

(b) OSM may revise this permit upon application from the permittee in accordance with 30 CFR §§ 774.13, 750.12(a), and 750.12(c)(1)(ii).

7. TRANSFER, ASSIGNMENT, OR SALE - This permit may be transferred or assigned, or the rights granted herein may be sold, in accordance with 30 CFR §§ 774.17 and 750.12(c)(3)(i). No transfer, assignment, or sale of rights granted by this permit shall be made without the prior written approval of OSM.

8. SUSPENSION, RESCISSION, OR REVOCATION - This permit may be suspended, rescinded, or revoked by OSM in accordance with 30 CFR § 773.23 or 30 CFR Chapter VII, Subchapter L.

9. HISTORIC AND PREHISTORIC RESOURCES PROTECTION - If a previously unidentified historic or prehistoric resource is discovered during the course of surface coal mining and reclamation operations under this permit, the permittee shall ensure that the resource is not disturbed until authorization to do so is provided by OSM. Upon discovery of any such resource, the permittee shall immediately notify OSM of its nature and location. The permittee shall take the action specified by OSM to protect the resource.

10. APPEALS - The permittee may appeal any decision or action of any official of OSM under this permit in accordance with the applicable provisions of 30 CFR §§ 773.22, 842.15(d), 843.16, 845.19, and 846.17(b), 30 CFR Part 775, and 43 CFR Part 4.

Issued by: _____ Date: 9/9/2010

Manager, Field Operations Branch
Western Region
Office of Surface Mining Reclamation
and Enforcement

SPECIAL PERMIT CONDITION

The Special Permit Condition, as described below, is hereby imposed on the permittee upon issuance of the CO-0106A permit and compels the permittee to take special actions unique to the operations conducted under this permit.

Special Permit Condition 1:

Within sixty (60) days of the permit amendment, GCC Energy, LLC shall submit five (5) complete electronic copies, on compact disc, of the entire Permit Application Package (PAP) for the King II mine, including all text, exhibits, maps, plates and appendices as revised through July 23, 2010.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Colorado State Office
2850 Youngfield Street
Lakewood, Colorado 80215-7210
www.co.blm.gov

In Reply Refer To:
3410 (CO-921)
COC76563

SEP 13 2016

CERTIFIED MAIL – Return Receipt Requested

Decision

GCC Energy, LLC
Attn: Tom Bird
6473 County Road 120
Hesperus, CO 81326

Coal Exploration License Issued
Surety Bond Accepted

Enclosed is your copy of coal exploration license COC76563 with the approved exploration plan. The exploration license is effective September 13, 2016.

Bond Under License to Explore for Coal Deposits with Bond No. SUR0038409 in the amount of $53,000.00, having GCC Energy, LLC, as principal and Argonaut Insurance Company at P.O. Box 469011, San Antonio, TX, 78246, as surety, has been examined, found satisfactory, and is accepted effective September 13, 2016.

Sincerely,

Brian St George
Acting, Deputy State Director
Division of Energy, Lands and Minerals

Enclosures

cc:
Field Office Manager, Tres Rios Field Office w/license
Surety

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

COAL EXPLORATION LICENSE

Serial Number COC76563

Issue Date: SEP 13 2016

Expiration Date: SEP 13 2018

This license, entered into on, SEP 13 2016 by the United States of America, the licensor, through the Bureau of Land Management (BLM), and

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

the licensee, is hereby issued under the Mineral Leasing Act of 1920, as amended (30 U.S.C. section 181 et seq.) and is subject to all applicable Federal, State, and local laws and regulations, including Title 43, Code of Federal Regulations (CFR), Part 3400.

Sec. 1. RIGHTS UNDER LICENSE--This license confers the right to perform exploration operations in accordance with the terms and conditions of this license, the approved exploration plan, and applicable regulations in the following-described lands situated in the State of Colorado:

New Mexico Principal Meridian, Colorado

T. 35 N., R. 11 W.,
sec. 17, lot 2, lots 5 thru 10, and N½SW¼;
sec. 18, lots 1 thru 10, NE¼, E½NW¼, NE¼SW¼, and N½SE¼;
sec. 19, lots 1, 2, 6, and 7, NE¼, and E½NW¼;
sec. 20, NW¼;
sec. 30, lots 1 thru 4, NW¼NE¼, and E½NW¼.

T. 35 N., R. 12 W.,
sec. 13, N½NE¼, E½NW¼, SW¼NW¼, S½SW¼, NE¼SE¼, and S½SE¼;
sec. 14, S½NE¼, SW¼, W½SE¼, and SE¼SE¼;
sec. 15, S½;
sec. 21, E½, E½NW¼, and E½SW¼;
sec. 22, N½, SW¼, and W½SE¼;
sec. 23, N½NE¼, N½NW¼, SE¼NE¼, SE¼SW¼, and SE¼;
sec. 24, N½, SW¼, and NW¼SE¼;
sec. 25, lots 3 thru 6.

DOI-BLM
CO STATE OFFICE
COS0 [illegible]
2016 SEP -2 AM 7:24

These lands contain 4,846.200 acres, more or less.

This license is issued for a period of two years and shall confer no right to a lease. It shall not be extended; however, the licensee may apply for a new exploration license to be issued simultaneously with the expiration of this license.

The issuance of this license shall not preclude the issuance of a coal lease at such time and to such persons as deemed appropriate by the BLM State Director or by his delegated representative, hereafter called the "authorized officer." If a coal lease is issued for lands included in this exploration license, those lands common to both lease and license shall be canceled from the license effective the date of lease issuance.

Sec. 2. EXPLORATION--The licensee shall diligently explore the lands by drilling, by excavating, by geophysical or geochemical surveying, or by other acceptable methods. The licensee is entitled to use for exploration purposes so much of the surface of the licensed lands as reasonably necessary for such operations in accordance with the approved exploration plan which is attached and made a part of this license.

Sec. 3. OPERATIONS--(a) The licensee shall comply with all applicable rules and regulations of the Secretary of the Interior and, as to any lands in this license which are administered by another Federal agency, with the regulations and orders of that agency.

(b) The licensee shall comply with the provisions of the operations regulations at 43 CFR Part 3480 and all orders issued pursuant thereto. Copies of the operating regulations may be obtained from the **Tres Rios Field Office Manager**.

(c) The licensee shall allow inspection of the premises and operations by authorized representatives of the Department of the Interior or other Federal agency administering the lands and shall allow the free ingress and egress of Government officers and other persons using the lands under authority of the United States. Upon request of the authorized officer or the **Tres Rios Field Office Manager**, the licensee shall report all matters pertaining to the character and progress of exploration work.

Sec. 4. MULTIPLE USE--(a) This license shall not adversely affect valid existing rights acquired prior to license issuance on the lands described herein.

(b) The granting of this license shall not preclude the issuance of other licenses, permits, or leases and shall not preclude other developments of the same lands.

(c) Operations under this license shall not unreasonably interfere with or endanger any other operations or use authorized pursuant to the provisions of any other act or regulation.

(d) The United States reserves the right to sell or otherwise to dispose of Federal lands under existing law or under laws hereafter enacted, insofar as such disposal shall not materially interfere with the rights of the licensee.

(e) If any of the licensed lands shall have been or may be entered and patented with a reservation of mineral deposits to the United States, the licensee shall observe such conditions as provided by law as to the use and occupancy of the surface of those lands.

Sec. 5. PROTECTION OF SURFACE, NATURAL RESOURCES, AND IMPROVEMENTS--The licensee agrees to take reasonable steps to prevent operations under this license from unnecessarily causing or contributing to soil erosion; damaging crops, forage, or timber; polluting air and water; or damaging improvements owned by the United States and other parties. Upon any partial or total relinquishment, upon the cancellation or expiration of this license, or at any other time prior thereto when required, the licensee shall, to the extent deemed necessary by the licensor, (a) fill any pits, ditches, and other excavations, (b) remove or cover all debris, and (c) so far as reasonably possible, restore the surface of the licensed lands and access roads to their former condition, including the removal of structures. The licensor may prescribe the steps to be taken and the restoration to be made with respect to the licensed lands and improvements thereon.

2006 SEP -2 AM 7:24
DEPT. OF STATE
COSO MINERALS

Sec. 6. PROTECTION OF CULTURAL AND PALEONTOLOGICAL RESOURCES--

(a) Cultural Resources. Prior to any surface disturbing activities, the licensee shall conduct a cultural resources survey of all previously unsurveyed areas that will be directly impacted by exploration operations under this license. The survey shall be an intensive field inventory of cultural, historical, and archeological values, including, but not limited to, any and all objects of antiquity, historic or prehistoric ruins and artifacts, or other specimens of scientific interest.

(1) The survey shall be conducted by a qualified professional cultural resources specialist (e.g., archeologist, historian or historical architect, as appropriate), approved in advance by the **Tres Rios Field Office Manager.** A report on the survey and recommendations for protecting any identified cultural resources shall be submitted to the **Tres Rios Field Office Manager**. After review and approval of the report, exploration operations may be further conditioned with the imposition of additional stipulations for protection of the identified cultural resources.

(2) The cost of the cultural resources survey, the report, and any measures to protect cultural resources identified thereby shall be borne by the licensee. All identified items shall remain the property of the appropriate surface owner, but the United States reserves its right and obligation under applicable law to take action necessary to protect, preserve, or acquire such items.

Sec. 7. BOND--The licensee shall file with the Colorado State Office a compliance bond in the amount of **$53,000** to ensure compliance with the terms and conditions of the license and the regulations.

Sec. 8. USE OF DATA--The licensee shall furnish to the **Tres Rios Field Office Manager** copies of all data (including, but not limited to, geological, geophysical, and core drilling analyses) obtained during exploration. The licensee shall submit such data at such time and in such form as required by the **Tres Rios Field Office Manager**, the authorized officer, or the surface management agency; or as specified in this license or in the exploration plan. The confidentiality of all data so obtained shall be maintained until after the areas involved have been leased or until such time as the **Tres Rios Field Office Manager** determines that making the data available to the public would not damage the competitive position of the licensee, whichever comes first. The authorized officer may require the licensee to collect and to report ground and surface water data available in the conduct of the approved exploration plan.

Sec 9. TRANSFER OF LICENSE--Transfer of this license shall not be effective until it is approved by the authorized officer.

Sec. 10. MODIFICATION OF LICENSE--

(a) The licensee may request a modification of the exploration plan if geologic or other conditions warrant.

(b) The authorized officer may adjust the terms and conditions of the license, including the stipulations or the **Tres Rios Field Office Manager** may direct adjustment in the exploration plan when unforeseen conditions are encountered that could result in substantial surface disturbance or damage to the environment or to improvements, or when geologic or other physical conditions warrant.

(c) Any modification of the exploration plan is subject to approval by the **Tres Rios Field Office Manager.**

Sec. 11. RELINQUISHMENT OF LICENSE--The licensee may relinquish this license, in whole or in part, by filing in the Colorado State Office a written relinquishment. The relinquishment shall be effective the date it is filed, subject to the continued obligation of the licensee and his surety: (a) to comply with the terms and conditions of the license, the exploration plan, and the regulations and, (b) to provide for the preservation of any permanent improvements on the licensed lands.

DOI-BLM
COS STATE OFFICE
COPY
SEP 2 AM 7:24

Sec. 12. REVOCATION OF LICENSE--This license may be revoked for noncompliance with the terms and conditions of the license, the approved exploration plan, or the regulations after the licensee has been notified of such violation and the licensee has failed to correct the violation within the time specified in such notice.

Sec. 13. EQUAL OPPORTUNITY CLAUSE--This license is subject to the provisions of Executive Order No. 11246 of September 24, 1965, as amended, which sets forth the nondiscrimination clauses. A copy of this order may be obtained from the issuing office.

Sec. 14. STIPULATIONS--SEE ATTACHMENT A and ATTACHMENT B

GCC Energy, LLC

By: _____

Name: Trent Petersen

Title: Vice President

Date: 09/01/2016

UNITED STATES OF AMERICA

By: _____

Name: Brian St George

Title: Acting, Deputy State Director
Division of Energy, Lands and Minerals

Date: 9/13/16

2016 SEP -2 AM 7:24
BLM
CO STATE OFFICE
COSO MAIL ROOM

Attachment A: Stipulations

GCC Energy Coal Exploration License
COC 76563

GCC Energy is required to comply with any federal laws regarding the protection and management of natural resources. In addition, the company has committed to a number of design features. These design features are described in Section 2.2 and elsewhere in the environmental assessment (DOI-BLM-CO-S010-2014-0025). Some of these federal laws and design features are listed in Attachment B. In addition, the following stipulations are attached to the exploration license.

1. In order to protect species protected under various laws, the following timing restrictions must be complied with:

	From	To
Migratory Birds	May 15	July 15
Mexican Spotted Owl	March 15	August 31
Nesting Bald and Golden Eagles	February 1	July 15
Bald Eagle winter roosts	November 15	March 15
Nesting Goshawks	November 15	March 15
Nesting raptors	March 1	August 31

2016 SEP -2 AM 7:24
DOI-BLM
CO STATE OFFICE

   Clearance surveys may be conducted in order to work during the above listed timing restrictions.

2. Control of noxious weeds will be required through successful vegetation establishment and/or herbicide application. The operator must insure compliance with all local, state, and federal laws and regulations, as well as labeling directions specific to the use of any given herbicide.

   A weed status report will be submitted annually in the month of January. The report will indicate what kind of weeds are present and where they are present. It will also report how any weeds were treated, using the BLM Tres Rios weed treatment form. A digital map, including geodata base files for weed presence and for treatment areas will also be included.

3. If applications of herbicide are prescribed, however, it is the responsibility of the operator to insure compliance with all local, state and federal laws and regulations, as well as labeling directions specific to the use of any given herbicide.

4. All drill holes will be logged with a minimum of natural gamma, density, and resistivity geophysical logs, and caliper curves.

5. All reports must include a digital version. Any maps should be in a format that is compatible with ArcMap 10.3.1. Specific features such as actual location of drill sites, and any coal outcrops should have a separate geospatial data file. Geographical coordinates should be in North American Datum 1983.

Attachment A: Stipulations

GCC Energy Coal Exploration License
COC 76563

6. A reclamation report will be submitted to the BLM within 90 days of the completion of exploration and reclamation operations on the ground. The report will include a list of each hole, the depth of each hole, a description or figure of how each hole was plugged, and the status of any earthwork and revegetation.

7. A reclamation status report will continue to be submitted annually in the month of January until the BLM has determined that reclamation is complete.

8. The Operator shall document any evidence of encounters with water during the drilling program (43 CFR 3410.4). Any evidence of potential water-bearing zones will be noted on each geologic and geophysical log. Where possible, other conditions should be documented, e.g. flow, drawdown, or recovery rates, etc. If yield is low, a visual observation of these or other characteristics may be noted. Such reports shall be filed with the BLM – Tres Rios Field Office within 90 days after the completion of exploration operations.

9. The Operator will submit two cross-sections of the geology of the area based on geologic and/or geophysical logs. Cross-sections shall be located approximately perpendicular to each other. The purpose of the cross-sections will be to best show the nature of the coal deposits and geohydrology in the area of the exploration license.

10. Where there is adequate yield, water samples will be collected and tested for pH, conductivity, total dissolved solids, standard cations and anions. The operator will submit a proposed sampling protocol for the BLM's consideration before drilling begins. Information will include the condition of the hole at the time of sampling including, the type of any drilling muds or other additives. Sampling protocol must demonstrate what steps will be taken to minimize contamination and maintain the quality of any water samples and how standard laboratory protocols will be followed for storage and shipping of samples.

11. Analyses of coal and other pertinent tests will be appropriately identified by drill hole number and depth. Analyses will also document what types of tests were run (proximate, ultimate, moisture-mineral-matter free basis, etc.), and whether the reported results were analyzed or calculated as composite or incremental samples.

2016 SEP -2 AM 7:24
DOI-BLM
CO STATE OFFICE

Attachment B:
Some Regulations and Applicant-Committed Design Features

GCC Energy Coal Exploration License
COC 76563

I. REGULATIONS - The Operator must comply with the all pertinent federal laws and associated regulations including but not limited to the following;

- The Migratory Bird Treaty Act of 1918, as amended.
- Mineral Leasing Act of 1920, as amended.
- National Historic Preservation Act (NHPA) of 1966, as amended.
- Clean Water Act of 1972, as amended
- The Endangered Species Act of 1973
- Archaeological and Historic Preservation Act of 1974
- Federal Land Policy and Management Act of 1976
- Native American Graves Protection and Repatriation Act of 1990

As such, the Operator must comply with these and other requirements;

1. If buried cultural resources are discovered during exploration operations under this license, the operator shall immediately notify the Field Manager and shall not disturb such discovered resources until the Field Manager issues specific instructions.

   a) Within 5 working days after notification, the Field Manager shall evaluate any cultural resources discovered and shall determine whether any action may be required to protect or to preserve such discoveries.

   b) Cost of data recovery for cultural resources discovered during exploration operations shall be borne by the operator, if the operator is ordered to take any protective measures. Ownership of cultural resources discovered shall be determined in accordance with applicable law.

2. Pursuant to 43 CFR 10.4(g) the Operator must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(cl and (d), you must stop activities in the vicinity of the discovery and protect for 30 days or until notified to proceed by the Authorized Office.

3. All exploration drill holes must be plugged with a permanent plugging material that is unaffected by water and hydrocarbon gases and will prevent the migration of gases and water in the drill hole under normal hole pressures (43 CFR 3484.1(3).

4. The Operator shall file with the authorized officer all exploration reports as described in 43 CFR 3485.1.

DOI-BLM
CO STATE OFFICE
COLO MAIL ROOM
2006 SEP -2 AM 7:24

Attachment B:
Some Regulations and Applicant-Committed Design Features

GCC Energy Coal Exploration License
COC 76563

II. DESIGN FEATURES – GCC Energy, LLC has committed to these and other design features as described in the environmental assessment, DOI-BLM-CO-S010-2014-0025.

A. General

1. The land owner will be notified prior to implementation of the proposed project.

2. GCC will comply with the standards provided at 43 CFR 3484. 1 (Performance Standards for Exploration) and with all applicable requirements of the surface management agency.

3. Vehicles and equipment will be cleaned prior to arrival at the drilling sites.

4. No construction or routine maintenance activities will occur during periods when soil is too wet to support construction equipment adequately. If such equipment creates ruts in excess of 6 inches deep, then soil shall be deemed too wet.

5. All employees, contractors, and sub-contractors of the project will be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment; and that it is illegal to collect, damage, or disturb cultural resources; and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 USC 470aa-mm).

6. GCC or contracted personnel are required to have a safety meeting and be informed of potential interaction with livestock and wildlife and precautions required during construction activities at drilling locations.

7. Vehicular traffic would be restricted to the authorized areas and existing roads.

8. Straw wattles would be utilized, as necessary, to prevent erosion.

9. If any hazardous wastes are used or encountered during exploration activities, they would be handled and disposed of according to federal law. Any non-hazardous solid waste generated in the proposed drilling sites would be stored in appropriate containers and disposed of at a permitted facility when necessary.

10. A red-tailed hawk *(Bllleojamaice11sis)* nest located within 500 feet of the proposed GCC-14-01 drill- hole, will be monitored for nesting activity during construction/drilling. If the nest is active, construction and drilling operations could be put off until the young have fledged. This would eliminate the chances of the nest being impacted.

DOI-BLM
CO STATE OFF ICE
DSO MAIL
2009 SEP -2 AM 7:24

Attachment B:
Some Regulations and Applicant-Committed Design Features

GCC Energy Coal Exploration License
COC 76563

B. Construction

1. No blading/grading will be required for the construction of new access routes.

2. GCC will apply for Ute Mountain Ute Water Pollution Prevention permits, if necessary.

3. Drill-hole locations will be located no closer than 200 feet from any intermittent or ephemeral channels, ditches, or canals.

4. Sites are located on relatively level ground.

5. When possible, existing topography would be retained.

6. During construction and drilling activities, GCC will control access to the drill sites and access roads.

7. No Ponderosa pine or fir trees will be removed for any reason.

2016 SEP -2 AM 7:24
DOI-BLM
CO STATE OFFICE

C. Operations

1. Any lubricant, oil or grease, or fuel spills will be removed from the spill area as quickly as possible.

2. All wastes and contaminated soils will be removed and disposed of at a permitted facility.

3. Water will be used to provide a mist to control dust.

4. The Operator shall immediately notify the BLM authorized officer of any discovery of paleontological resources on or within eight feet of the surface. The operator shall suspend all activities in the vicinity of such discovery until notified to proceed by the Authorized Officer and shall protect the discovery from damage or looting.

D. Reclamation

1. Upon abandonment, all exploration holes will be filled in accordance with drill hole plugging procedures that meet State and BLM requirements. Bentonite chips or plug gel, or a similar seal will be established from the bottom of the hole and extend to within ten feet of the surface. Plugging material will be poured into each hole at the recommended product rate for the size hole and type of plug material to prevent bridging. A cement seal will be set in the holes, from ten feet below the surface to within three feet of the surface. Once drilling and sampling activities have been completed, all disturbed areas would be reclaimed as described in section 2.1.4 (Reclamation) of the EA (DOI-BLM-CO-SOJ 0-2014-0025) and below.

2. Topsoil will be removed and stockpiled prior to cuttings pit excavation to prevent contamination, minimize erosion loss, and to aid in reclamation.

Attachment B:
Some Regulations and Applicant-Committed Design Features

GCC Energy Coal Exploration License
COC 76563

3. Drill sites, including cuttings pits, will be reclaimed to match the existing topography after drilling activities are completed.

4. Seeding will occur during late summer or fall, or to take advantage of seasonal rains.

5. Should listed invasive or non-native weeds establish in disturbed areas, then they will be treated/controlled by the Operator as instructed by the BLM Authorized Officer or the UMU Tribe. (p. 24)

DOI-BLM
CO STATE OFFICE
2016 SEP -2 AM 7:24

Federal Coal Exploration Plan

GCC Energy, LLC King Coal Mine Exploration

La Plata County, Colorado

Exploration License Application

Submitted by:

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

June 4, 2014 (Revised Final)

APPENDICES

Appendix A – Map **A-1**

GCC Energy, LLC
Federal Coal Exploration Plan 3482.1(a)(3)

3482.1(a) (3) (i) Name, Address, and Telephone Number of Applicant

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
(970) 385-4528

3482.1 (a) (3) (ii) Name, Address of Representative Present during Exploration

Seth McCourt, Mine Engineer
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
(970) 385-4638

3482.1 (a) (3) (iii) Narrative Description of proposed exploration area, cross-referenced to the map required under paragraph (a)(3)(vii) of this section, including applicable Federal lease and license serial numbers; surface topography; geologic, surface water, and other physical features; vegetative cover; endangered or threatened species listed pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531, *et seq.*); districts, sites, buildings, structures, or objects listed on, or eligible for listing on, the National Register of Historic Places; and known cultural or archeological resources located within the proposed exploration area.

Narrative Description

The proposed exploration drill locations are located on Ute Mountain Ute (UMU) Indian Tribe ranch lands in La Plata County, Colorado. The mineral estate is both privately held and administered by the Bureau of Land Management (BLM), Tres Rios Field Office (TRFO). The exploration drilling is needed to determine coal quality and volumes for possible future expansion of existing GCC Energy, Inc. (GCC) operations at the King II Mine. The exploration will help determine quality, location, and thickness of coal. The exploration area is northwest of the existing King II Mine and is approximately 5,570 acres. A total of 19 drill sites are proposed within the exploration area, and 5 drill sites proposed within the currently proposed lease modification area, for a total of 24 drill hole locations. It is possible that not all 24 locations will be drilled. Provided in Appendix A is the Exploration Project Area Map showing the location of all proposed drill site locations; the majority of which are located immediately off existing roads.

Legal Description

The legal descriptions of the exploration drill sites are listed as follows:

New Mexico Principal Meridian

T.35N., R.11W.,
Sec. 17: lots 2, 5, 6, 7, 8, 9, 10;
Sec. 17: N½SW¼;
Sec 18: 1-10, inclusive;
Sec. 18: NE¼, NE¼SW¼, N½SE¼;
Sec. 19: 1, 2, 6, 7;
Sec. 19: NE¼, E½NW¼;
Sec. 20: NW¼;
Sec. 30: lots 1-4, inclusive;
Sec. 30: NW¼NE¼, E½NW¼.

T.35N., R. 12W.,
Sec. 13: N½NE¼, E½NW¼, SW¼NW¼, S½S½, NE¼SE¼;
Sec. 14: S½NE¼, SW¼, W½SE¼, SE¼SE¼;
Sec. 15: S½;
Sec. 21: E½, E½W½;
Sec. 22: N½, SW¼, W½SE¼;
Sec. 23: N½N½, SE¼NE¼, SE¼SE¼,
Sec: 24: N½, NE¼SW¼, S½SW¼, NW¼SE¼;
Sec: 25: lots 3, 4, 5, 6

Surface Topography

Elevation within the exploration area ranges from approximately 7,500 feet to 8,700 feet. Spring Gulch borders the northern portion; East Alkali Gulch and Hay Gulch Irrigation Ditch borders the east, and Cherry Creek is several miles to the west. Several other named and unnamed canyons, gulches, and washes trend through the exploration area; resulting in terrain that varies from steep and rugged to gently sloping mesa tops.

Geologic Features

The principle geologic formation underlying the exploration area is the Cliff House Sandstone; other formations occurring in the exploration area include the Menefee Formation and Point Lookout Sandstone. Sandstone rock outcrops occur throughout the exploration area primarily as canyon walls.

Surface Water Features

The exploration area is bisected by several named and unnamed ephemeral and intermittent washes. Deadman Gulch and Spring Creek Gulch flow east to west and are located along the northern border of the proposed exploration area. West Roberts Canyon trends north to south and borders the eastern exploration area. East Alkali Gulch trends northeast to southwest and traverses through the middle of the exploration area. West Alkali Gulch bisects the western portion of the exploration area and trends north to south. Devils Canyon and Reservoir Canyon traverse the far western boundary and trends east to west. Drainage from the exploration area generally flows west, southwest towards Cherry Creek, located 0.5-

mile west of the exploration area. All drainages are characterized as intermittent or ephemeral; several have stock ponds associated with them. Proposed drill holes would be located no closer than 200 feet from intermittent channels. No wetlands occur at any of the proposed drill site locations.

Other Physical Features—Soils

Soils occurring within the exploration drill sites are listed in Table 1.

Table 1. Soils Characteristics at Proposed Exploration Drill Site Locations.

Drill Location ID	Soil Type	Erosion Potential
GCC 14-01; GCC 14-02, GCC-14-13	Archuleta-Sanchez complex, 12 to 65% slopes	Moderate water erosion, low wind erosion
GCC 14-03, GCC-14-09, GCC-14-10, GCC-14-11, GCC-14-12, GCC-14-14, GCC-14-16, GCC-14-18, GCC-14-19, GCC-14-20, GCC-14-21, GCC-14-23, GCC-14-24	Zau stony loam, 3 to 9% slopes	Low water erosion, Low wind erosion
GCC-14-04	Hesperus loam, 3 to 12% slopes	Moderate water erosion, moderate wind erosion
GCC-14-05	Glodvale very stony fine sandy loam, 15 to 65% slopes	Low water erosion, low wind erosion
GCC-14-06, GCC-14-08	Coni loam, 4 to 25% slopes	Moderate water erosion, low wind erosion
GCC-14-07, GCC-14-22, GCC 14-17	Fortwingate-Rock outcrop complex, 6 to 25% slopes	No rating
GCC-14-15	Valto-Rock outcrop complex, 12 to 65% slopes	No rating

Vegetative Cover

Dominant vegetative communities occurring within the exploration area are classified as Rocky Mountain Gambel oak-mixed montane shrublands and Rocky Mountain ponderosa pine woodland. Other vegetative communities occurring within the exploration area include: Rocky Mountain montane mesic mixed conifer forest and woodland and Colorado Plateau piñon-juniper woodland. Dominant vegetation occurring at majority of the proposed drill locations include piñon (*Pinus edulis*) and juniper (*Juniperus osteosperma*) with understory species such as: gambel oak (*Quercus gambelii*), snowberry (*Gaultheria*), black sagebrush (*Artemisia nova*), squirreltail (*Elymus elymoides*), and buckwheat (*Eriogonum*).

Threatened and Endangered Species

Under section 7 of the Endangered Species Act of 1973, as amended, the BLM is required to consult with the U.S. Fish and Wildlife Service (USFWS) on any proposed action decision, which may affect federally listed threatened, endangered, or candidate species or species proposed for listing. According to the USFWS, there are 13 federally listed threatened, endangered, and candidate species with the potential to occur in La Plata County, Colorado. No habitat for any of the 13 listed species occurs at any of the 24 drill sites. However, suitable habitat for the federally threatened Mexican Spotted Owl (MSO) occurs

along some of the exploration area canyons. No drill sites or access routes are proposed within any canyons with potential MSO habitat. Exploration drilling activities are planned for fall 2014, thereby avoiding the sensitive breeding period (May thru August) when this owl may be present in the area.

National Register of Historic Places and; Known Cultural or Archaeological Resources

PaleoWest Archaeology conducted a file search of the Colorado Office of Archaeology and Historic Preservations' online COMPASS records for the township, range, and section locations in which the 24 new drill holes are proposed. No previously recorded sites were found in proximity to any of the proposed drill hole locations or access routes. Cultural class III surveys were conducted April 16, 17, and 29, 2014. All proposed drill site locations were moved to avoid any cultural resources.

3482.1 (a) (3) (iv) Typical Drilling Methods and Activities that May Occur During the Exploration, Reclamation, and Abandonment of Operations including, but not limited to -

(A) The types, Sizes, Numbers, Capacity, and uses of equipment for drilling and blasting, and road or other access route construction

The 24 exploration drill holes would be rotary-drilled; nominally 5 to 6 inches in diameter to predetermined core points. This predetermined zone will be cored by conventional 3-inch coring methods. Drilling will be done with air and water injection, or water with synthetic polymer lubricant. Cutting pits would be necessary at all locations and would be drilled by conventional methods.

Drilling will be accomplished with a truck-mounted core rig, accompanied by a water truck typically of a 3,000-gallon capacity. When necessary, a flat-bed service truck and smaller pickup trucks would also be required for service and transportation to and from the drill sites. Water would be provided to the drill sites from the mine water supply.

Some or all of the holes may be geophysically logged. The equipment necessary for such work is typically mounted in a full-size Suburban-type 4X4. If only oil-field equipment is available, larger trucks, similar in size to a 3,000-gallon water truck, may be required.

Ten of the drill sites (GCC-14-02, 03, 07, 13, 14, 15, 16, 17, 22, and 24) would require construction of new/temporary access routes. All access routes would include an approximate 12-foot-wide travel surface and would be traveled via overland travel (no blading/grading required). Existing access road may require normal maintenance to access sites, which may include use of a grader, dozer, or backhoe to allow for passage of the project equipment. Road maintenance would not exceed 12 feet in width. Proposed new/temporary access routes to the drill sites would account for 3.06 acres of disturbance. Road work and drilling is planned for late Fall 2014.

(B) Excavated Earth, or Debris; Disposal Activities

The anticipated activities for the proposed drill program include replacement of drill cuttings, cores into the drill hole (with the exception of the lab analysis portion), and sealing of the drill hole with an approved cement. Topsoil would be replaced over the drill hole location, and tracks would be raked or brushed to remove obvious signs of activity; cut brush would be scattered across the disturbed area. No blading/grading would be required for construction of the access routes. Vegetation removed for overland travel would be replaced and areas re-seeded where necessary.

(C) Proposed Method for Plugging Drill Holes

Drill holes would be sealed by replacing cuttings or other suitable media in the hole and then placing a suitable plug 10 feet below the ground surface for support of a cement plug, within 5 feet of the ground surface. No water is anticipated to be intercepted during the drilling due to the water table lying below the coal seam. In the event water is encountered, the cuttings pit would provide sufficient volume to handle water. The drill hole would then be finished with air.

(D) Estimated Size and Depth of Drill Holes, Trenches, and Test Pits

Site disturbance would be restricted to a 100-foot by 100-foot square at each proposed drill site. Each drill site would be up to 10,000 square feet (0.23 acre) in size, resulting in a maximum total surface disturbance of 5.52 acres for the 24 drill sites. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods.

A cutting pit will be constructed to capture the cuttings for replacement into the completed borehole prior to plugging the hole, and would be reclaimed to pre-disturbance condition, or as specified by BLM and/or the UMU tribe. Cuttings pits would be located away from natural depressions and watercourse in a manner that prevents natural runoff from entering the pit. Cuttings pits would be constructed with a capacity adequate for the anticipated volume of effluent. Topsoil would be removed and stockpiled prior to cuttings pit excavation to prevent contamination, minimize erosion loss, and to aid in reclamation.

GCC does not anticipate the excavation of trenches or test pits as part of the exploration plan. Drill hole depth, length of access roads, length of rotary drilling, and length of core drilling per hole are listed in Table 2.

Table 2. Drill Hole Depths

Hole #	Total Depth (feet)
GCC-14-01	90
GCC-14-02	260
GCC-14-03	270
GCC-14-04	215
GCC-14-05	250
GCC-14-06	310
GCC-14-07	275
GCC-14-08	330
GCC-14-09	330
GCC-14-10	290
GCC-14-11	305
GCC-14-12	295
GCC-14-13	255
GCC-14-14	295
GCC-14-15	235

GCC-14-16	160
GCC-14-17	190
GCC-14-18	220
GCC-14-19	190
GCC-14-20	195
GCC-14-21	220
GCC-14-22	215
GCC-14-23	220
GCC-14-24	190

The water source for drilling is located 2 miles from the access road; it is anticipated that two to three holes can be supplied with one truck load. As such, approximately 10 water truck roundtrips would be necessary.

(E) Plans for Transfer and Modification of Exploration Drill Holes to be used as Surveillance, Monitoring, or Water Wells

There are no plans for transfer and modification of exploration drill holes to be used as surveillance, monitoring, or as a water well in this drilling plan.

3482.1 (a) (3) (v) Estimated Timetable for conducting and completing each Phase of the Exploration, Drilling, and Reclamation

The estimated time per hole is 30 hours, which includes mobilization, drill, core, and demobilization for each site. The proposed work schedule is a 5-day work week of approximately 10 hours per day. Weather conditions may alter the anticipated time frame. With one drill rig expected to be utilized, the exploration could be completed in late October 2014, assuming cooperating weather and road conditions, as well as a drilling start-up in early September 2014. A late start could result in winter weather delays, which could result in drilling completion during 2015.

Reclamation would take approximately 10 hours per hole, given the minimal amount of disturbance. A total of 24 days is anticipated with some additional time included for unforeseen complications.

3482.1 (a) (3) (vi) Estimated Amounts of Coal to be Removed during Exploration, Description of Method to be Used to Determine Those Amounts, and the Proposed Use of the Coal Removed.

The exact thickness of the coal seam will be determined by the proposed exploratory drilling. The coal thickness varies from 5 to 10 feet in the current, nearby mining operation. With utilizing a 5.50-foot average coal thickness, an estimate of 30 pounds of coal per hole would be retained and submitted for laboratory analysis. This estimate is utilizing 80 pounds per cubic feet for a 7.50-foot column of 0.25-foot core sample (cross sectional area of approximately 6 inches). Historical data from drill holes outside but relatively adjacent to the exploration area, list numerous 2-foot intercepts. However, it is not anticipated that drill holes in the exploration area would encounter increased thickness greater than the current mining activity.

3482.1 (a) (3) (vii) Measures to Comply with 815.15 and 3484.1(a)

GCC will comply with the standards of the rules of 30 CFR 815.15 and with all applicable requirements of the surface management agency.

3484.1 (a) (2) The shallow zones targeted for coal exploration are not considered for potential of prospectively valuable for oil, gas, or geothermal resources and as such are not anticipated to require blowout protection. However, GCC will, if required by the authorized officer, set a cement casing in the hole and install suitable blowout prevention equipment when drilling.

3484.1 (a) (3) All exploration drill holes will be capped with at least 5 feet of cement (if required) and plugged with a permanent plugging material that is unaffected by water and hydrocarbon gases and will prevent the migration of gases and water in the drill hole under normal hole pressures. GCC will use cement or other suitable plugging material approved by the authorized officer, and plug the hole through the thickness of the coal bed(s) or deposit(s) and aquifers, or to the bottom of the drill hole. A lesser cap or plug may be approved by the authorized officer. Exploration activities shall be managed to prevent water pollution and mixing of ground and surface waters and ensure the safety of people, livestock, and wildlife.

3484.1 (a) (4) GCC will retain for 1 year, all drill and geophysical logs and shall make such logs available for inspection or analysis by the authorized officer, if requested. GCC will retain representative samples of the cores for 1 year. Typically, all data collected including seam depth, thickness, quality analysis, geophysical logs, structure contacts, geotechnical drill core logs, strength test results, etc. will be copied and transferred to the appropriate personnel at the BLM offices for review and confidential storage, pursuant to 43 CFR 3485.1. GCC anticipates that all coal material from the coal bed cores will be crushed and sent to a certified commercial laboratory for analysis. GCC will request that the commercial laboratory retain material not used for testing and analysis for a period of not less than 1 year. GCC cannot guarantee that any material will remain after testing and analysis, or that such material that might remain will be representative in a statistical sense of the original drill hole.

3484.1 (a) (5) GCC does not have plans to utilize any of the exploration drill holes as surveillance wells for the purpose of monitoring the effects of subsequent operations. In the event GCC decides to utilize a drill hole as a surveillance well, GCC will notify the BLM of which drill hole location(s) will be used as surveillance well(s) prior to drilling. GCC also understands that the BLM may require completion of some exploratory drill holes as hydrologic observation sites. All surveillance wells are limited to surface access agreement rights.

3482.1 (a) (3) (viii) Included Maps

GCC has included a Project Area Map in Appendix A to address all the following requirements: the maps collectively show, at a scale of 1:24,000 or larger, the areas affected by the proposed exploration and reclamation. The maps show existing roads, occupied dwellings, and pipelines; proposed location of trenches, roads, and other access routes and structures to be constructed; applicable Federal lease and license boundaries; the location of land excavations to be conducted; coal exploratory holes to be drilled

or altered; earth- or debris-disposal areas; existing bodies of surface water; and topographic and drainage features.

3482.1 (a) (3) (ix) The name and address of the owner of record of the surface land, if other than the United States. If the surface is owned by a person other than the applicant or if the Federal coal is leased to a person other than the applicant, a description of the basis upon which the applicant claims the right to enter that land for the purpose of conduction exploration and reclamation.

GCC will submit all surface access agreements required to conduct the proposed exploration activities prior to regulatory approval of this coal exploration plan.

Surface Owners with proposed drilling on their surfaces:

Ute Mountain Ute Indian Tribe
P.O. Box 248
Towaoc, CO 81334

Mineral Owners with proposed drilling activity:

Federal

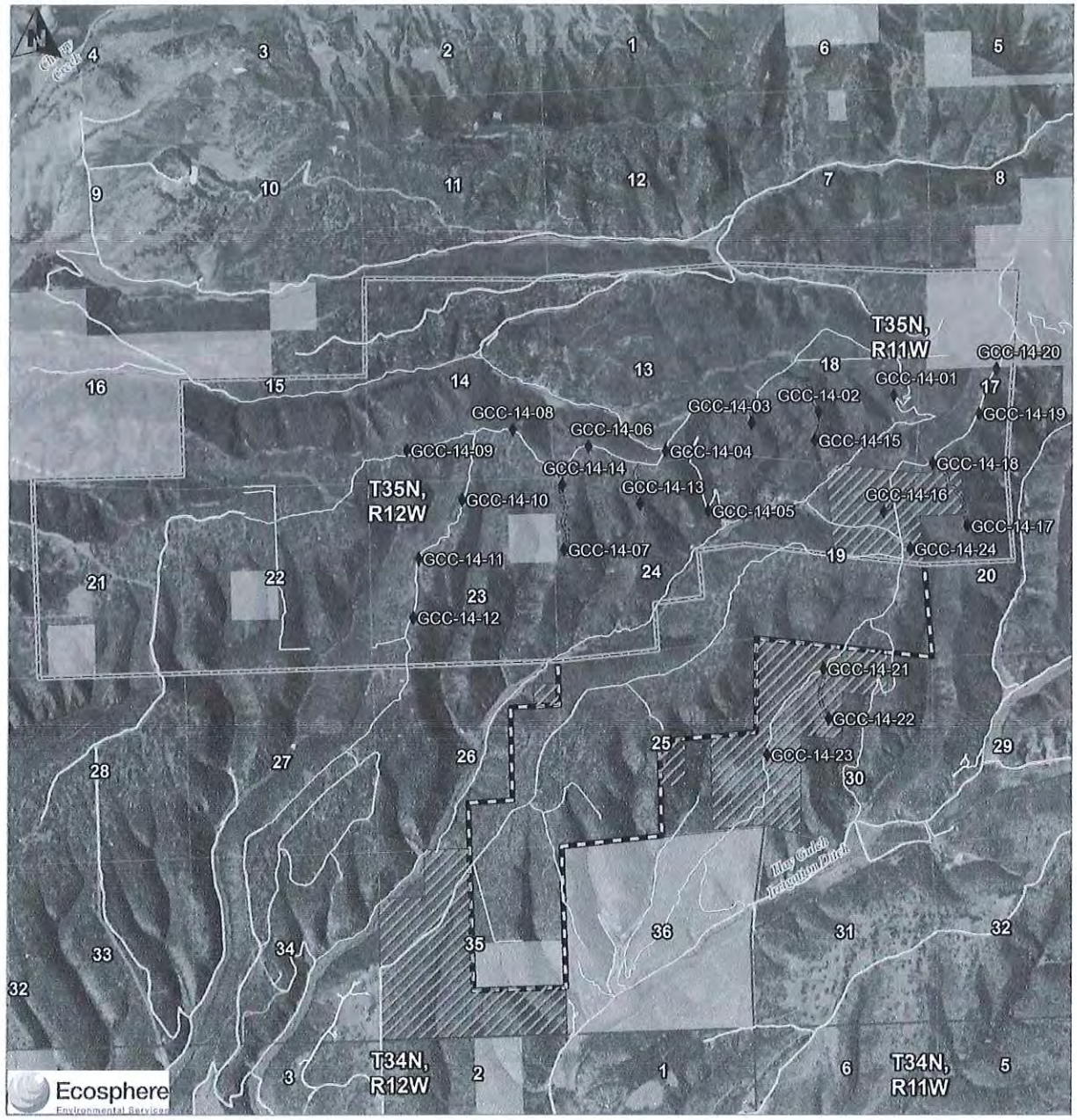
Federal Lease Seam only – GCC 62620

Dunn/Ute/Stephens Coal, All Seams

3482.1 (a) (3) (x) Other Data Required by Authorized Officer

Appendix B includes a draft Notice of Invitation.

Appendix A – Map



Lease Exploration Area
Lease Modification Area
Existing Lease
Bureau of Land Management
Private
State

New Access Roads
Local Roads
Lake/Pond
Artificial Path
Canal
Intermittent Stream

0 0.5 1 2
Miles

1:44,000

Coordinate System: NAD 1983 UTM Zone 12N

GCC Energy, LLC

Exploration Drilling License Application

Project Area Map

La Plata County, Colorado

Parts of Township 35N, Range11 & 12W

Date: 5/13/2014

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

May 4, 2015

Regulatory Division SPK-2015-00138

GCC Energy, LLC
Attn: Mr. Trent Peterson
6473 County Road 120
Hesperus, Colorado 81326

Dear Mr. Peterson:

This concerns your King II Mine project which involved construction of the King II Mine operating facility. The project is located at 6473 County Road 120 within Section 36, Township 35 North, Range 12 West, New Mexico Principal Meridian, Latitude 37.245726840586°, Longitude -108.131839143888°, Hesperus, La Plata County, Colorado.

Based upon my inspection of the site, including the preserved drainage upstream and downstream of the facility, and the information you provided, we have determined that the construction of the King II Mine did not require a permit under Section 404 of Clean Water Act. Our inspection found that although the drainages show up as an intermittent tributary to Hay Gulch on the USGS Topographic Map, the drainages in question do not contain enough flow to create an ordinary high-water mark and is therefore not considered waters of the U.S. Our disclaimer of jurisdiction is only for this activity as it pertains to Section 404 of the Federal Clean Water Act and does not refer to, nor affect jurisdiction over any waters present on site.

We appreciate your cooperation during our investigation and the time you spent providing information to help us conclude that your activity did not result in a violation.

Please refer to identification number SPK-2015-00138 in any correspondence concerning this project. If you have any questions, please contact me at the Durango Regulatory Office, 1970 E 3rd Ave., #109, Durango, Colorado 81301, by email at *Kara.A.Hellige@usace.army.mil*, or telephone at 970-259-1604. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Sincerely,

Kara A. Hellige
Senior Project Manager, CO West Branch
Regulatory Division

cc:
Mr. Art Palmores, US Environmental Protection Agency, 8ENF-W, 1595 Wynkoop Street, Denver, Colorado 80202
Mr. Scott Clow, Ute Mountain Ute, P.O. Box 448, Towaoc, Colorado 81334
Mr. Daniel Murray, La Plata County, 1060 Main #104, Durango, Colorado 81301
Ms. Nicole Caveny, United States Department of the Interior, Office of Surface Mining Reclamation and Enforcement, 1999 Broadway, Suite 3320, Denver, Colorado 80202
Mr. Nathan Darnall, U.S. Fish and Wildlife Service, Western Colorado Ecological Services Office, 445 West Gunnison Avenue, Suite 240, Grand Junction, Colorado 81501-5720
Ms. Marcia Talvitie, Colorado Division of Reclamation, Mining, and Safety, 1313 Sherman St., Room 215, Denver, Colorado 80203
Mr. Jose Orsini, Trinity Consultants, 919 Lake Baldwin Lane, Suite B, Orlando, Florida 32814

COST SUMMARY WORK

Task description: **Summary of Costs for King I and King II Mines**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 000 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-000
User: SLB

Agency or organization name: DRMS

TASK LIST (DIRECT COSTS)

Task	Description	Form Used	Fleet Size	Task Hours	Cost
001	Demolish King I Structures	DEMOLISH	1	40.00	$57,412.16
002	King I - Rip 12" in upper facility area	RIPPER	1	2.95	$658.00
003	King I - push ripped waste to tipple highwall	DOZER	1	16.28	$3,625.00
004	King I - haul topsoil/growth medium to Upper Facilities Area	TRUCK1	1	4.51	$1,122.00
005	King I - Finish grade upper facilities area	GRADER	1	1.81	$177.00
006	King I - Revegetate upper facilities area (area #3)	REVEGE	1	4.00	$1,811.00
007	King I - Haul topsoil/growth medium to highwall	TRUCK1	1	3.19	$795.00
008	King I - backfill portals, grade fill slope and topsoil	DOZER	1	1.54	$331.00
009	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	$1,211.00
010	King I - rip and final grade lower facilities area	GRADER	1	1.09	$109.00
011	King I - revegetate highwall area (Area #4)	REVEGE	1	4.00	$1,100.00
012	King I - regrade cover of pre-law portion of refuse area	DOZER	1	8.11	$1,745.00
013	King I - regrade 6" growth medium on pre-law refuse area	DOZER	1	1.16	$249.00
014	King I - revegetate refuse area (Area #5)	REVEGE	1	2.00	$536.00
015	King I - Push 3.5' cover to refuse pile	DOZER	1	39.02	$8,400.00
016	King I - grade 3.5' cover on post-law refuse area	DOZER	1	10.03	$2,159.00
017	King I - Haul topsoil to post-law refuse area	TRUCK1	1	3.03	$755.00
018	King I - finish grade post-law refuse area (area #6)	GRADER	1	0.97	$96.00
019	King I - revegetate refuse area (Area #6)	REVEGE	1	2.00	$998.00
020	King I - finish grade topsoil area	GRADER	1	1.84	$181.00
021	King I - revegetate borrow area	REVEGE	1	4.00	$1,848.00
022	King I - seal vent hole	BOREHOLE	1	8.00	$1,425.65
023	King I - backfill and regrade east and west sediment ponds	DOZER	1	10.40	$2,238.00
024	Install Rip Rap in Drainages	NA	1	18.95	$4,245.98
025	King I - revegetate east and west ponds (Area #6)	REVEGE	1	4.00	$1,719.00
032	King I -Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINTENANCE	1	24.00	$4,258.80
050	King I&II - mobilize for initial reclamation	MOBILIZE	1	8.00	$10,051.00
051	King I&II - mobilize for rill and gully maintenance, X 3	MOBILIZE	1	8.00	$5,148.00
052	King I&II - mobilize for second pond cleaning	MOBILIZE	1	8.00	$2,780.00
060	King II-Rill and gully maint. 8 hours every other yr, 10 yrs	SITEMAINTENANCE	1	24.00	$4,258.80
062	Weed Control over liability period	REVEGE	1	35.00	$3,142.00
064	Clean sediment ponds (two cleanings)	EXCAVATE	1	65.13	$5,177.00
065	King II - haul sediment from ponds to King I site	TRUCK1	1	30.85	$26,060.00
100	Seal Mine Openings	MINESEAL	1	32.00	$66,783.20
200	King II structural demolition	DEMOLISH	1	140.00	$263,763.28
300	King II - Haul coal waste rock to King I waste pile	TRUCK1	1	1.06	$321.00

301	King II - Rip coal sales area	RIPPER	1	1.61	$360.00
302	King II - Haul gravel from coal sales, portals, rd/wtr tank	TRUCK1	1	14.81	$5,120.00
303	King II - Haul office fill to portal cuts/acc rd/wtr tank	TRUCK1	1	50.64	$20,800.00
304	King II - grade portal cuts, access roads, water tank pad	DOZER	1	38.65	$8,320.00
305	King II-Compact fill on portal cuts/access rd/water tank pad	COMPACT	1	17.23	$3,568.00
306	King II - Rip portal, access rd., coal sales areas	RIPPER	1	34.32	$7,646.00
307	King II - grade portal cuts, access roads, water tank pad	DOZER	1	109.74	$23,625.00
308	King II - remove east and west cleanwater ditches	DOZER	1	8.62	$1,855.00
309	King II - construct drainage channel in Cochrane Canyon	DOZER	1	3.51	$755.00
310	King II - construct channel in office drainage	DOZER	1	4.53	$976.00
311	King II - backfill pond	DOZER	1	18.49	$3,979.00
312	King II - Rip coal sales area	RIPPER	1	3.43	$765.00
313	King II - Grade haul road	DOZER	1	13.20	$2,841.00
314	Water truck for dust control	MISCTRUK	1	240.00	$13,814.00
401	King II - distribute tosoil from Cochrane stockpile	TRUCK1	1	101.93	$41,867.00
402	King II - finish grade topsoil area	GRADER	1	20.66	$2,019.00
403	King II - revegetate rangeland areas	REVEGE	1	40.00	$20,923.00
404	King II - revegetate pinon-juniper areas	REVEGE	1	6.00	$6,025.00
406	King II - seed water line corridor (>100' from CR 120)	REVEGE	1	2.00	$637.00
407	King II - seed water line corridor (<100' from CR 120)	REVEGE	1	2.00	$93.00
409	Seal Boreholes CO-14-01 through CO-14-09	BOREHOLE	1	0.00	$7,724.98
410	Regrade drill pads and pits CO-14-01 through CO-14-09	DOZER	1	7.06	$637.00
411	Replace topsoil on CO-14-01 through CO-14-09 disturbance	DOZER	1	3.00	$270.00
412	Broadcast seed CO-14-01 through CO-14-09 disturbance	REVEGE	1	18.00	$2,041.00
500	King II - seal downgradient monitoring well	BOREHOLE	1	4.00	$589.99
			SUBTOTALS:	**1336.35**	**$663,941**

INDIRECT COSTS

OVERHEAD AND PROFIT:

Liability insurance:	2.02%	Total =	$13,411.61
Performance bond:	1.05%	Total =	$6,971.38
Job superintendent:	658.70 hrs	Total =	$49,507.89
Profit:	10.00%	Total =	$66,394.10
		TOTAL O & P =	$136,284.98
		CONTRACT AMOUNT (direct + O & P) =	$800,225.98

LEGAL - ENGINEERING - PROJECT MANAGEMENT:

Financial warranty processing (legal/related costs):	0.00	Total =	0.00
Engineering work and/or contract/bid preparation:	6.00%	Total =	$48,013.56
Reclamation management and/or administration:	4.50%		$36,010.17
CONTINGENCY:	0.00	Total =	$0.00

TOTAL INDIRECT COST =	$220,308.71
TOTAL BOND AMOUNT (direct + indirect) =	**$884,249.71**

DEMOLITION WORK

Task description: **Demolish King I Structures**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 001 State: Colorado Abbreviation: None
Date: 1/27/2015 County: La Plata Filename: C035-001
User: SLB

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 94.00 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Two office trailers	12x120x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	14,400.00	CF	$1.08	$15,537.60
Portal Building	12x20x8	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	1,920.00	CF	$1.08	$2,071.68
Main Conveyor	40	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	40.00	LF	$44.42	$1,776.80
Tipple Building	60x65x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	31,200.00	CF	$0.17	$5,428.80
Tipple Lean-to Shed	16x44x8	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	5,632.00	CF	$0.17	$979.97
East bins	15x25x50	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	18,750.00	CF	$0.17	$3,262.50
Mine fan	8x6x30	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	1,440.00	CF	$1.08	$1,553.76
Mine fan	8x6x10	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	480.00	CF	$1.08	$517.92
Stacker conveyor	300	Conveyor, elevated, including	300.00	LF	$44.42	$13,326.00

		supports - 5 ft. W x 6 ft. H housing				
Stacker tower #1	16x16x50/10x10x50	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	8,900.00	CF	$1.08	$9,603.10
Stacker tower #2	8.5x16x25/8.5x5.5x25	Bldg. (SN) demo./off-site disposal in approved landfill - Max. 15 mile haul	2,284.00	CF	$1.08	$2,464.44
2 500 gallon fuel tanks	NA	Haul tank to certified salvage dump - 3,000 to 5,000 gal. tank	2.00	EA	$760.00	$1,520.00
Bury debris	10x10x40.5	Push demolished materials/rubble/debris into pit - Max. 200 ft. push	150.00	CY	$0.74	$111.00
Scale house	40x42x10	Bldg. (SN) demo./on-site disposal in existing pit or cut - Max. 200 ft. push	16,800.00	CF	$0.17	$2,923.20

Job Hours: **40.00** **Subtotal (unadjusted):** **$61,076.77** **Total Cost (adjusted for location):** **$57,412.16**

BULLDOZER RIPPING WORK

Task description: **King I - Rip 12" in upper facility area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 002 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-002
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper Operating Cost/Hour:	$7.46	100
Operator Cost/Hour:	$38.01	NA
Total Unit Cost/Hour:	$222.73	
Total Fleet Cost/Hour:	**$222.73**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.96 acres Rip Depth (ft): 1.00 Volume: 3,162 BCY or CCY

Source of estimated quantity: Map King I-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	300.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.800	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.800	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.66	Acres/hr
Adjusted Hourly Fleet Production:	**0.66**	Acres/hr

JOB TIME AND COST

Fleet size: 1 Grader(s) Total job time: **2.95** Hours

Unit cost:	$335.626	Per acre	Total job cost:	**$658**

BULLDOZER WORK

Task description: **King I - push ripped waste to tipple highwall**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	003	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-003
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$7.46	100
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $222.73
Total Fleet Cost/Hour: **$222.73**

MATERIAL QUANTITIES

Initial Volume:	3,794
Swell factor:	1.000
Loose volume:	**3,794** LCY

Source of estimated volume: Volume from Task 002, 20% swell
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 233.11 LCY/hr

Adjusted fleet production: **233.11** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.955/LCY

Total job time: **16.28** Hours

Total job cost: **$3,625**

TRUCK/LOADER TEAM WORK

Task description: **King I - haul topsoil/growth medium to Upper Facilities Area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 004 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-004
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$12.65	$21.63	NA	NA	NA	NA
Operating cost/hour:	$63.40	$38.09	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$37.13	NA	NA	NA	NA
Unit Subtotals:	$76.05	$96.85	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$248.95	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$248.95**

MATERIAL QUANTITIES

Initial volume: 1,581 CCY Swell factor: 1.165
Loose volume: **1,842** LCY

Source of estimated volume: 1.96 acres x 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7400 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	-0.090	minutes
Adjusted Loader Cycle Time:	**0.393**	minutes
Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2218	0.293

Haul Time: **0.293** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	500.00	0.00	5.00	5.00	2814	0.203

Return Time: **0.203** minutes
Total Truck Cycle Time: **2.781** minutes

Loading Tool unit Production 494.19 LCY/Hour Adjusted for job efficiency: 410.18 LCY/Hour
Truck Unit Production 246.12 LCY/Hour Adjusted for job efficiency: 204.28 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 408.55 LCY/Hour
Adjusted single truck/loader team production: 408.55 LCY/Hour
Adjusted multiple truck/loader team production: **408.55** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **4.51** Hours

Unit cost: $0.609 /LCY Total job cost: **$1,122**

MOTOR GRADER WORK

Task description: **King I - Finish grade upper facilities area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	005	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-005
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$26.77	NA
Operating Cost/Hour:	$46.43	100
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$24.47	NA
Total Unit Cost/Hour:	$97.67	
Total Fleet Cost/Hour:	**$99.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.96 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production:	1.0818	acres/Hour
Adjusted Hourly Fleet Production:	**1.0818**	acres/Hour

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**1.81**	Hours
Unit cost:	$90.28	per acre	Total job cost:	**$177**	

REVEGETATION WORK

Task description: **King I - Revegetate upper facilities area (area #3)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 006 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-006
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre

Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	1.96	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,676.98**
Reseeding Job Cost:	**$134.42**
Total Job Cost:	**$1,811**
Job Hours:	**4.00**

TRUCK/LOADER TEAM WORK

Task description: **King I - Haul topsoil/growth medium to highwall**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 007 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-007
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$12.65	$21.63	NA	NA	NA	NA
Operating cost/hour:	$63.40	$38.09	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$37.13	NA	NA	NA	NA
Unit Subtotals:	$76.05	$96.85	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$248.95	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$248.95**

MATERIAL QUANTITIES

Initial volume: 1,057 CCY Swell factor: 1.000
Loose volume: **1,057** LCY

Source of estimated volume: 1.96 acres, 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	-6.00	5.00	-1.00	2938	0.444

Haul Time: **0.444** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1100.00	6.00	5.00	11.00	1584	0.702

Return Time: **0.702** minutes
Total Truck Cycle Time: **3.431** minutes

Loading Tool unit Production 494.19 LCY/Hour Adjusted for job efficiency: 410.18 LCY/Hour
Truck Unit Production 199.49 LCY/Hour Adjusted for job efficiency: 165.58 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 331.15 LCY/Hour
Adjusted single truck/loader team production: 331.15 LCY/Hour
Adjusted multiple truck/loader team production: **331.15** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **3.19** Hours

Unit cost: $0.752 /LCY Total job cost: **$795**

BULLDOZER WORK

Task description: **King I - backfill portals, grade fill slope and topsoil**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	008	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-008
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	400
Swell factor:	1.000
Loose volume:	**400** LCY

Source of estimated volume: Reclamation plan
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 200 feet
Unadjusted hourly production: 491.9 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: -5 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(SSD-AC)
Push gradient:	1.115	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.5284

Adjusted unit production: 259.92 LCY/hr

Adjusted fleet production: **259.92** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.828/LCY

Total job time: **1.54** Hours

Total job cost: **$331**

REVEGETATION WORK

Task description: **King I - revegetate highwall area (Area #4)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 009 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-009
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre

Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	1.31	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,120.84**
Reseeding Job Cost:	**$89.84**
Total Job Cost:	**$1,211**
Job Hours:	**4.00**

MOTOR GRADER WORK

Task description: **King I - rip and final grade lower facilities area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	010	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-010
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$26.77	NA
Operating Cost/Hour:	$46.43	100
Ripper Operating Cost/Hour:	$2.25	100
Operator Cost/Hour:	$24.47	NA
Total Unit Cost/Hour:	$99.92	
Total Fleet Cost/Hour:	**$99.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.18 acres

Source of estimated acreage: TR-9 submittal

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production:	1.0818	acres/Hour
Adjusted Hourly Fleet Production:	**1.0818**	acres/Hour

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**1.09**	Hours
Unit cost:	$92.36	per acre	Total job cost:	**$109**	

REVEGETATION WORK

Task description: **King I - revegetate highwall area (Area #4)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 011 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-011
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre
Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	1.19	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,018.16**
Reseeding Job Cost:	**$81.61**
Total Job Cost:	**$1,100**
Job Hours:	**4.00**

BULLDOZER WORK

Task description: **King I - regrade cover of pre-law portion of refuse area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	012	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-012
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	3,275
Swell factor:	1.000
Loose volume:	**3,275** LCY

Source of estimated volume: 0.58 acres, 3.5' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.533/LCY

Total job time: **8.11** Hours

Total job cost: **$1,745**

BULLDOZER WORK

Task description: **King I - regrade 6" growth medium on pre-law refuse area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	013	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-013
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	468
Swell factor:	1.000
Loose volume:	**468** LCY

Source of estimated volume: 0.58 acres, 6" depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Loose stockpile 1.2

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.200	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4739

Adjusted unit production: 404.05 LCY/hr

Adjusted fleet production: **404.05** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.533/LCY

Total job time: **1.16** Hours

Total job cost: **$249**

REVEGETATION WORK

Task description: **King I - revegetate refuse area (Area #5)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 014 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-014
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre

Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	0.58	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$496.25**
Reseeding Job Cost:	**$39.78**
Total Job Cost:	**$536**
Job Hours:	**2.00**

BULLDOZER WORK

Task description: **King I - Push 3.5' cover to refuse pile**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	015	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-015
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	6,098
Swell factor:	1.000
Loose volume:	**6,098** LCY

Source of estimated volume: 3.5' depth on 1.08 acres
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 100 feet
Unadjusted hourly production: 852.6 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 25 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	0.422	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.1833

Adjusted unit production: 156.28 LCY/hr

Adjusted fleet production: **156.28** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $1.377/LCY

Total job time: **39.02** Hours

Total job cost: **$8,400**

BULLDOZER WORK

Task description: **King I - grade 3.5' cover on post-law refuse area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	016	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-016
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	6,098
Swell factor:	1.000
Loose volume:	**6,098** LCY

Source of estimated volume: 3.5' depth on 1.08 acres
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr

Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.354/LCY

Total job time: **10.03** Hours

Total job cost: **$2,159**

TRUCK/LOADER TEAM WORK

Task description: **King I - Haul topsoil to post-law refuse area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 017 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-017
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	NA
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	NA	NA	NA
Ownership cost/hour:	$12.65	$21.63	NA	NA	NA	NA
Operating cost/hour:	$63.40	$38.09	NA	NA	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	NA	NA	NA
Operator cost/hour:	$0.00	$37.13	NA	NA	NA	NA
Unit Subtotals:	$76.05	$96.85	NA	NA	NA	NA
Number of Units:	2	1	0	0	0	0
Group Subtotals:	Work:	$248.95	Support:	$0.00	Maint:	$0.00

Total work team cost/hour: **$248.95**

MATERIAL QUANTITIES

Initial volume: 871 CCY Swell factor: 1.429
Loose volume: **1,245** LCY

Source of estimated volume: 1.08 acres, 6” depth
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	-0.090	minutes
Adjusted Loader Cycle Time:	**0.393**	minutes
Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2218	0.158

Haul Time: **0.158** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	200.00	0.00	5.00	5.00	2814	0.097

Return Time: **0.097** minutes
Total Truck Cycle Time: **2.540** minutes

Loading Tool unit Production 494.19 LCY/Hour Adjusted for job efficiency: 410.18 LCY/Hour
Truck Unit Production 269.47 LCY/Hour Adjusted for job efficiency: 223.66 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 447.32 LCY/Hour
Adjusted single truck/loader team production: 410.18 LCY/Hour
Adjusted multiple truck/loader team production: **410.18** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **3.03** Hours

Unit cost: $0.607 /LCY Total job cost: **$755**

MOTOR GRADER WORK

Task description: **King I - finish grade post-law refuse area (area #6)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	018	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-018
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$26.77	NA
Operating Cost/Hour:	$46.43	100
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$24.47	NA
Total Unit Cost/Hour:	$97.67	
Total Fleet Cost/Hour:	**$99.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 1.06 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production:	1.0818	acres/Hour
Adjusted Hourly Fleet Production:	**1.0818**	acres/Hour

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**0.98**	Hours
Unit cost:	$90.28	per acre	Total job cost:	**$96**	

REVEGETATION WORK

Task description: **King I - revegetate refuse area (Area #6)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 019 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-019
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre
Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	1.08	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$924.05**
Reseeding Job Cost:	**$74.07**
Total Job Cost:	**$998**
Job Hours:	**2.00**

MOTOR GRADER WORK

Task description: **King I - finish grade topsoil area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	020	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-020
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$26.77	NA
Operating Cost/Hour:	$46.43	100
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$24.47	NA
Total Unit Cost/Hour:	$97.67	
Total Fleet Cost/Hour:	**$99.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 2.00 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production:	1.0818	acres/Hour
Adjusted Hourly Fleet Production:	**1.0818**	acres/Hour

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**1.85**	Hours
Unit cost:	$90.28	per acre	Total job cost:	**$181**	

REVEGETATION WORK

Task description: **King I - revegetate borrow area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 021 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-021
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre

Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	**Cost /Acre**
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	**No / Acre**	**Type and Size**	**Planting Cost**	**Fertilizer Pellet Cost**	**Cost /Acre**
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	2	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,711.20**
Reseeding Job Cost:	**$137.16**
Total Job Cost:	**$1,848**
Job Hours:	**4.00**

BOREHOLE SEALING WORK

Task description: **King I - seal vent hole**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 022 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-022
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal hole	Portland cement grout - 8 in. (labor, equip, materials)	7	100	100.00	LF	$12.22	$1,222.16
Bottom Plug	Stainless steel plug - 8 in. diameter borehole	7	100	1.00	EA	$188.52	$188.52
Cut Casing	Exposed casing removal - 4 to 10 in. diameter steel pipe (LF)	7	2	2.00	LF	$6.04	$12.08
Mark Hole	Borehole location/identification marker (EA, material cost only)	7	1	1.00	EA	$2.89	$2.89

Job Hours: **8.00** **Total Cost**: **$1,426.00**

BULLDOZER WORK

Task description: **King I - backfill and regrade east and west sediment ponds**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	023	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-023
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat D8T - 8SU
Horsepower:	310
Blade Type:	Semi-Universal
Attachment:	3-shank ripper
Shift Basis:	1 per day
Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume:	3,226
Swell factor:	1.165
Loose volume:	**3,758** LCY

Source of estimated volume: Operator estimate
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 75 feet
Unadjusted hourly production: 1,017.1 LCY/hr

Materials consistency description: Compacted fill or embankment 0.9

Average push gradient: 0 %
Average site altitude: 7,400 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	0.900	(CAT HB))
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)
Job efficiency:	0.830	(1 SHIFT/DAY)

Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3554

Adjusted unit production: 361.48 LCY/hr

Adjusted fleet production: **361.48** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)

Unit cost: $0.596/LCY

Total job time: **10.40** Hours

Total job cost: **$2,238**

Postmining Channel Construction Task No. 024

Date :	11-Feb-15	Permit	C1981035	Site:	King Coal Mines		
User:	SLB			State : Colorado		County:	La Plata

Agency Name: Colorado Division of Reclamation, Mining and Safety
Permit
Action: Permit Renewal 6 Task Description: Construct Post-Mining Drainage Channels

Channel	L (ft)	D (ft)	W (bot) (ft)	Slopes (X:1)	W (Top) (ft)	V/LF (CY)	V tot (CY)	Riprap	Slope L (ft)	Surf Area (sf)	Riprap V CY
A	100	1.500	1.0	2.0	7.0	0.2222	22		2.50	600	0
B	330	1.500	2.0	2.0	8.0	0.2778	92		4.27	3,480	0
C	350	1.000	2.0	2.0	6.0	0.1481	52		4.12	3,586	0
D	770	1.000	1.0	2.0	5.0	0.1111	86		2.24	4,214	0
E	190	1.750	1.0	2.0	8.0	0.2917	55		2.66	1,200	38
F	35	1.750	1.0	2.0	8.0	0.2917	10		2.66	221	7
Totals	1,775						317			13,300	45

Materials Needed:	Geotextile (SY):	330	Riprap (CY):	45.0000	45	Excavation (CY):	317
Material Costs:	Geotextile (SY):	$ 2.22	Riprap (CY):	$53.25		Excavation (CY):	$ 3.57
Means Reference	33 46 26.10 0110		31 37 13.10 0100			31 23 16.42 0310	
Totals:	Geotextile (SY):	$ 732.60	Riprap (CY):	$2,381.97		Excavation (CY):	$ 1,131.41
Hours:	Geotextile (SY):	3.77	Riprap (CY):	5.77		Excavation (CY):	9.39
	87.5 SY/HR		7.75 CY/HR			33.75 CY/HR	

Total Post-Mining Channel Reconstruction hours: 18.93
Total Post-Mining Channel Reconstruction Cost: $ 4,245.98

REVEGETATION WORK

Task description: **King I - revegetate east and west ponds (Area #6)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 025 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-025
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre

Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	1.86	Cost /Acre:	$855.60
Estimated Failure Rate:	50%	Cost /Acre*:	$137.16
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,591.42**
Reseeding Job Cost:	**$127.56**
Total Job Cost:	**$1,719**
Job Hours:	**4.00**

SITE MAINTENANCE

Task description: **King I -Rill and gully maint. 8 hours every other yr, 10 yrs**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 032 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-032
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	$81.57	$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	$95.88	$2,301.12

Job Hours: 24.00 **Total Cost: $4,258.80**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for initial reclamation**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 050 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-050
User: SLB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D8T - 8SU	47.71	$62.67	$117.55	2	$360.44	$235.10	$0.00
CAT 938H	16.34	$21.63	$88.67	2	$220.60	$177.34	$0.00
CAT 12M	16.01	$24.98	$88.67	1	$113.65	$88.67	$0.00
CAT 825H	36.08	$62.10	$117.55	1	$179.65	$117.55	$0.00
Drill/Broadcast Seeder with Tractor	25.00	$39.59	$88.67	1	$128.26	$88.67	$0.00
Power Mulcher (Reinco M90)	6.00	$7.03	$88.67	1	$95.70	$88.67	$0.00
GENERIC 3.0 in. - 1, 700 ft. capy.	0.00	$17.72	$88.67	1	$106.39	$88.67	$250.00
				Subtotals:	**$1,204.69**	**$884.67**	**$250.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	$101.68	2	$203.36	$203.36
Water Tanker, 2,500 Gal.	$29.67	1	$29.67	$29.67
		Subtotals:	**$233.03**	**$233.03**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: DURANGO

Total one-way travel distance:	20.00	miles
Average Travel Speed:	40.00	mph
Total Non-Roadable Mob/Demob Cost * ‘* two round trips with haul rig:	$9,817.50	
Total Roadable Mob/Demob Cost ** ** one round trip, no haul rig:	$233.03	

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time:	**8.00**	Hours
Total job cost:	**$10,051**	

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for rill and gully maintenance, X 3**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 051 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-051
User: SLB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
Cat D3K LGP - 3P	9.20	$13.24	$88.67	3	$305.74	$266.01	$0.00
CAT 12M	16.01	$24.98	$88.67	3	$340.94	$266.01	$0.00
Subtotals:					**$646.68**	**$532.02**	**$0.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Water Tanker, 2,500 Gal.	$29.67	3	$89.01	$89.01
Subtotals:			**$89.01**	**$89.01**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: DURANGO
Total one-way travel distance: 20.00 miles
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost *
'* two round trips with haul rig: $5,058.78
Total Roadable Mob/Demob Cost **
** one round trip, no haul rig: $89.01

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time: **8.00** Hours

Total job cost: **$5,148**

SITE MAINTENANCE

Task description: **King II-Rill and gully maint. 8 hours every other yr, 10 yrs**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 060 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-060
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Maintenance Item	Hours per Year	Menu Selection	Quantity	Unit	Unit Cost	Total Cost
D3 Dozer	8.00	Cat D3K LGP - 3P	24.00	EA	$81.57	$1,957.68
12M Grader	8.00	CAT 12M	24.00	EA	$95.88	$2,301.12

Job Hours: 24.00 **Total Cost: $4,258.80**

EQUIPMENT MOBILIZATION/DEMOBILIZATION

Task description: **King I&II - mobilize for second pond cleaning**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 052 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-052
User: SLB

Agency or organization name: DRMS

EQUIPMENT TRANSPORT RIG COST

Shift basis: 1 per day
Cost Data Source: CRG Data

Truck Tractor Description: GENERIC ON-HIGHWAY TRUCK TRACTOR, 6X4, DIESEL POWERED, 400 HP (2ND HALF, 2006)

Truck Trailer Description: GENERIC FOLDING GOOSENECK, DROP DECK EQUIPMENT TRAILER (25T, 50T, AND 100T)

Cost Breakdown:

Available Rig Capacities	**0-25 Tons**	**26-50 Tons**	**51+ Tons**
Ownership Cost/Hour:	$16.63	$18.37	$22.33
Operating Cost/Hour:	$44.38	$46.13	$50.07
Operator Cost/Hour:	$27.66	$27.66	$27.66
Helper Cost/Hour:	$0.00	$25.39	$25.39
Total Unit Cost/Hour:	$88.67	$117.55	$125.45

NON ROADABLE EQUIPMENT:

Machine Description	Weight/ Unit (TONS)	Owner ship Cost/hr/ unit	Haul Rig Cost/hr/unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet	DOT Permit Cost/ fleet
CAT 938H	16.34	$21.63	$88.67	2	$220.60	$177.34	$0.00
Cat 312D L 9'-2" Stick	14.83	$20.89	$88.67	1	$109.56	$88.67	$0.00
				Subtotals:	**$330.16**	**$266.01**	**$0.00**

ROADABLE EQUIPMENT:

Machine Description	Total Cost/hr/ unit	Fleet Size	Haul Trip Cost/hr/ fleet	Return Trip Cost/hr/ fleet
Generic 10-12 cy, 6x4	$101.68	2	$203.36	$203.36
		Subtotals:	**$203.36**	**$203.36**

EQUIPMENT HAUL DISTANCE and Time

Nearest Major City or Town within project area region: DURANGO
Total one-way travel distance: 20.00 miles
Average Travel Speed: 40.00 mph

Total Non-Roadable Mob/Demob Cost *
'* two round trips with haul rig: $2,577.13
Total Roadable Mob/Demob Cost **
** one round trip, no haul rig: $203.36

Transportation Cycle Time:

	Non-Roadable Equipment	Roadable Equipment
Haul Time (Hours):	0.50	0.50
Return Time (Hours):	0.50	0.50
Loading Time (Hours):	2.00	NA
Unloading Time (Hours):	1.00	NA
Subtotals:	4.00	1.00

JOB TIME AND COST

Total job time: **8.00** Hours

Total job cost: **$2,780**

REVEGETATION WORK

Task description: **Weed Control over liability period**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 062 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-062
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
			$
Totals Seed Mix	0.00	0.00	**$0.00**

Application

Description	Cost /Acre
	$
Total Seed Application Cost/Acre	**$0.00**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
	5.00		$0.00	$0.00
Total Mulch Materials Cost/Acre				**$0.00**

Application

Description	Cost /Acre
Weed spray, hand, non-aquatic area, nox. [DMG]	$179.57
Total Mulch Application Cost/Acre	**$179.57**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	17.5	Cost /Acre:	$179.57
Estimated Failure Rate:	0%	Cost /Acre*:	$0.00
*Selected Replanting Work Items:	NONE		

Initial Job Cost:	**$3,142.48**
Reseeding Job Cost:	**$0.00**
Total Job Cost:	**$3,142**
Job Hours:	**35.00**

HYDRAULIC EXCAVATOR WORK

Task description: **Clean sediment ponds (two cleanings)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	064	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-064
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	Cat 312D L 9'-2" Stick	Horsepower:	90
Attachment 1:	ROPS Cab	Weight (MT):	13.48
		Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$20.89	NA
Operating Cost/Hour:	$30.41	100
Operator Cost/Hour:	$28.17	NA
Total Unit Cost/Hour:	$79.47	
Total Fleet Cost/Hour:	$79.47	

MATERIAL QUANTITIES

Initial volume:	6,453	CCY	Swell factor:	1.135
Loose volume:	**7,324**	LCY		

Source of estimated volume: 2 pond cleanings, 2 ac ft per cleanout

Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Excavator Cycle Time (load bucket, swing loaded, dump bucket, swing empty):

Basic Job Condition Description: AVERAGE

Secondary Job Condition within Basic Description: AVERAGE

Cycle Time Value: 0.256 minutes

Load Bucket Capacity

Bucket Size Class: Medium

Rated Capacity:	0.68	LCY (heaped)
Bucket Fill Factor:	0.850	Hard, tough clay (80% - 90%) 0.850
Adjusted Capacity:	**0.58**	LCY

Job Condition Correction Factors

Site Altitude: 7500 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Unadjusted Hourly Unit Production:	135.47	LCY/Hour
Adjusted Hourly Unit Production:	112.44	LCY/Hour
Adjusted Hourly Fleet Production:	**112.44**	LCY/Hour

JOB TIME AND COST

Fleet size: 1 Excavator Total job time: **65.14** Hours

Unit cost:	$0.707	/LCY	Total job cost:	**$5,177**

TRUCK/LOADER TEAM WORK

Task description: **King II - haul sediment from ponds to King I site**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 065 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-065
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$15.21	$21.63	NA	$21.63	NA	NA
Operating cost/hour:	$66.59	$38.09	NA	$38.09	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$26.72	$37.13	NA	$37.13	NA	NA
Unit Subtotals:	$108.51	$96.85	NA	$96.85	NA	NA
Number of Units:	6	1	0	1	0	0
Group Subtotals:	Work:	$747.91	Support:	$96.85	Maint:	$0.00

Total work team cost/hour: **$844.76**

MATERIAL QUANTITIES

Initial volume: 6,453 CCY Swell factor: 1.000
Loose volume: **6,453** LCY

Source of estimated volume: 2 pond cleanings, 2 ac ft each cleanout
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,700 Pounds/LCY
Description: Earth - Wet excavated
Rated Payload: 50,300 Pounds
Payload Capacity: 18.63 LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8” to 3/4” diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)

Net Cycle Time Adjustment:	-0.080	minutes
Adjusted Loader Cycle Time:	**0.403**	minutes
Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2” tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	11.50	5.00	16.50	690	15.314

Haul Time: **15.314** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: **3.705** minutes
Total Truck Cycle Time: **21.727** minutes

Loading Tool unit Production 504.90 LCY/Hour Adjusted for job efficiency: 419.06 LCY/Hour
Truck Unit Production 42.00 LCY/Hour Adjusted for job efficiency: 34.86 LCY/Hour

Optimal No. of Trucks: 12 Truck(s) Selected Number of Trucks: 6 Truck(s)

Adjusted hourly truck team production: 209.18 LCY/Hour
Adjusted single truck/loader team production: 209.18 LCY/Hour
Adjusted multiple truck/loader team production: **209.18** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **30.85** Hours

Unit cost: $4.038 /LCY Total job cost: **$26,060**

SAFEGUARDING UNDERGROUND OPENINGS

Task description: **Seal Mine Openings**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 100 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-100
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Opening Description	Dimensions	Closure Method	Quantity	Unit	Unit Cost	Total Cost
Portal 1 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$76.48	$15,296.00
Portal 1 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$5.12	$844.80
Portal 1 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$3.00	$555.00
Portal 2 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$76.48	$15,296.00
Portal 2 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$5.12	$844.80
Portal 2 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$3.00	$555.00
Portal 3 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$76.48	$15,296.00
Portal 3 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$5.12	$844.80
Portal 3 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$3.00	$555.00
Portal 4 seal	200	Adit closure - bulkhead seal, >= 36 sq. ft. (per sq. ft.)	200.00	SF	$76.48	$15,296.00
Portal 4 drain pipe	165	PVC drain pipe, 6 in. diameter (per ln. ft. incl. mat. & labor)	165.00	LF	$5.12	$844.80
Portal 4 backfill	185	Adit closure - backfilling (per cu. yd.)	185.00	CY	$3.00	$555.00

Job Hours: **32.00** **Total Cost**: **$66,783.20**

DEMOLITION WORK

Task description: **King II structural demolition**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 200 State: Colorado Abbreviation: None
Date: 1/27/2015 County: La Plata Filename: C035-200
User: SLB

Agency or organization name: DRMS

UNIT COSTS **Location adjustment: 94.00 %**

Structure or Item Description	Dimensions	Demolition Menu Selection	Quantity	Unit	Unit Cost	Total Cost
Water storage tank	100k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,333.00	CF	$0.20	$2,679.93
water storage tank slab	24' diam, .75 thick	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	613.00	SF	$2.33	$1,428.29
water storage tank	37k gal	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,933.00	CF	$0.20	$1,594.53
water storage tank slab	32x14x.5	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	448.00	SF	$1.75	$784.00
Main pump house	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	$0.20	$356.57
Shop equipment wash pad slab	20x25x.75	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,250.00	SF	$2.33	$2,912.50
shop equipment wash pad footers	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	150.00	LF	$6.99	$1,048.50
Shop building	60x50x16	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	48,000.00	CF	$0.20	$9,648.00
shop building slab	60x50x.75	Demo. and on-site disposal in	3,000.00	SF	$2.33	$6,990.00

		excavated pit, 8 in. thick - Max. 200 ft. push				
shop building footers	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	220.00	LF	$6.99	$1,537.80
Mine fan	28.6x25x10.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	7,508.00	CF	$0.20	$1,509.11
mine fan slab	4x8x6	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	192.00	SF	$3.49	$670.08
Retaining wall adjacent to fan	1x60x8	Wall, concrete, demolition only, 12 in. thick - Average reinforcing	480.00	SF	$18.38	$8,822.40
retaining wall footers	7x1	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	60.00	LF	$20.96	$1,257.60
Fan portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$964.80
fan portal slab	30x20	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	600.00	SF	$3.49	$2,094.00
fan portal footers	.75x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	100.00	LF	$15.72	$1,572.00
Travelway portal	30x20x8	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$964.80
travelway portal footers	14x1	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	60.00	LF	$20.96	$1,257.60
Portal Motor Control Center (MCC)	14x10x12.67	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	1,774.00	CF	$0.20	$356.57
MCC slab	14x10	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	140.00	SF	$1.75	$245.00
MCC footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	48.00	LF	$6.99	$335.52
Rock dust storage silo	11' diam x 40'	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,799.00	CF	$0.21	$812.99
rock dust storage silo slab	12x12	Demo. and on-site disposal in	144.00	SF	$3.49	$502.56

		excavated pit, 12 in. thick - Max. 200 ft. push				
rock dust storage silo footers	2x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	2.00	LF	$15.72	$31.44
Concrete retaining wall #2	70x2x4	Wall, block, demolition only, 12 in. thick - Horizontal reinforcing	560.00	SF	$2.12	$1,187.20
Exec. offices/Parts warehouse/Bath house bldgs	150x60x34	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	306,000.00	CF	$0.23	$69,156.00
offices/warehouse/bath house slab	150x60	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	9,000.00	SF	$1.75	$15,750.00
offices/warehouse/bath house footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	420.00	LF	$15.72	$6,602.40
Covered storage building	80x20x18.5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	29,600.00	CF	$0.20	$5,949.60
storage building slab	80x26	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	2,080.00	SF	$1.75	$3,640.00
storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	260.00	LF	$15.72	$4,087.20
Main septic system tank	4000 gal	Excavate and load tank onto trailer, non-leaking - 3,000 gal. to 5,000 gal.	1.00	EA	$556.50	$556.50
Fuel storage building and apron	45x25x20	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	22,500.00	CF	$0.20	$4,522.50
fuel storage building slab	45x27	Demo. and on-site disposal in excavated pit, 8 in. thick - Max. 200 ft. push	1,215.00	SF	$2.33	$2,830.95
fuel storage building footers	1x4	Demo. and on-site disposal in excavated pit, 1.5 ft. x 3 ft. - Max. 200 ft. push	140.00	LF	$15.72	$2,200.80
Belt portal	15x20x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	3,000.00	CF	$0.20	$603.00
belt portal footers	1x2	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	30.00	LF	$6.99	$209.70
Return portal	15x20x10	Bldg. (SN) demo./on-site disposal	3,000.00	CF	$0.20	$603.00

		in excavated pit - Max. 10,000 ft. haul				
return portal footers	1x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	30.00	LF	$10.48	$314.40
Belt portal pump house	20x14x10	Bldg. (SC) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,800.00	CF	$0.25	$708.40
belt portal pump house slab	20x14	Demo. and on-site disposal in excavated pit, 10 in. thick - Max. 200 ft. push	280.00	SF	$2.91	$814.80
belt portal pump house footer	2x1	Demo. and on-site disposal in excavated pit, 1.0 ft. x 2 ft. - Max. 200 ft. push	68.00	LF	$6.99	$475.32
Electrical substation	19x14x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,660.00	CF	$0.20	$534.66
electircal substation slab	19x14	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	266.00	SF	$1.75	$465.50
Electrical substation slabs	35x35	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	1,225.00	SF	$1.75	$2,143.75
Main dumpster pad	20x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	160.00	SF	$1.75	$280.00
Slope conveyor (box truss section)	8x8	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	240.00	LF	$44.42	$10,660.80
Slope conveyor (non-box truss section)	4x4	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	110.00	LF	$44.42	$4,886.20
Magnet Dumpster Pad #1	8x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	64.00	SF	$1.75	$112.00
Coal Stack Tube #1 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	$0.23	$983.10
Magnet Dumpster Pad #2	8x8	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	64.00	SF	$1.75	$112.00
Raw Coal Conveyor	4x4	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	177.00	LF	$44.42	$7,862.34

Crushing/Screening structure	28x25x53	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	37,100.00	CF	$0.23	$8,384.60
crushing/screening slab	40x30	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	7,200.00	SF	$1.75	$12,600.00
Crushing/Screening Pile Caps	6 - 4x6.5x3.5	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	546.00	SF	$3.49	$1,905.54
Crushing/screening pile footers	1.5x1.5	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	24.00	LF	$10.48	$251.52
Lump conveyor (radial stacker belt)	3x3	Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	$17.56	$1,756.00
Stoker conveyor (radial stacker belt)	3x3	Conveyor, overland, including supports - 5 ft. W x 6 ft. H housing	100.00	LF	$17.56	$1,756.00
Crushed coal storage conveyor	4x8x320	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	320.00	LF	$44.42	$14,214.40
crushed coal storage conveyor slab	7.75x6	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	47.00	SF	$3.49	$164.03
crushed coal storage conveyor footers	4x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max. 200 ft. push	6.00	LF	$20.96	$125.76
Coal Stack Tube #2 Head House	14.5x12x25	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,350.00	CF	$0.23	$983.10
Cross-Belt Coal Sampler	20x20	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	400.00	SF	$1.75	$700.00
Truck Loadout Conveyor	4x8x260	Conveyor, elevated, including supports - 5 ft. W x 6 ft. H housing	260.00	LF	$44.42	$11,549.20
Truck Loadout & Bins	30x15x30	Bldg. (MN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	13,500.00	CF	$0.23	$3,051.00
truck loadout & bins slab	6.5x3.5x4	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	273.00	SF	$3.49	$952.77
truck loadout & bins footers	2x4	Demo. and on-site disposal in excavated pit, 2.0 ft. x 3 ft. - Max.	24.00	LF	$20.96	$503.04

		200 ft. push				
Truck scale	120x20x2	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	4,800.00	CF	$0.20	$964.80
truck scale slab	150x16	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	2,400.00	SF	$3.49	$8,376.00
Coal sales building	20x12x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 10,000 ft. haul	2,400.00	CF	$0.20	$482.40
coal sales slab	20x12	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 50 ft. push	240.00	SF	$1.73	$415.20
Coal Sales Building Septic System Tank	6x10x5	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	300.00	CF	$0.19	$56.70
Main Motor Control Center (Main MCC)	21x16.67x10	Bldg. (SN) demo./on-site disposal in excavated pit - Max. 200 ft. push	3,501.00	CF	$0.19	$661.69
Main MCC slab	21x20	Demo. and on-site disposal in excavated pit, 6 in. thick - Max. 200 ft. push	420.00	SF	$1.75	$735.00
Main MCC footers	1.5x2	Demo. and on-site disposal in excavated pit, 1.5 ft. x 2 ft. - Max. 200 ft. push	84.00	LF	$10.48	$880.32
Cattle guard	8x24x.5	Demo. and on-site disposal in excavated pit, 12 in. thick - Max. 200 ft. push	96.00	SF	$3.49	$335.04
Culvert C-1	48"	Pipe, corrugated metal (CMP) - 48 in. diameter pipe	81.00	LF	$6.23	$504.63
Culvert C-2	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	48.00	LF	$3.26	$156.48
Culvert C-2A	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	48.00	LF	$2.46	$118.08
Culvert C-3 (double)	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	$3.26	$391.20
Culvert C-5A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	63.00	LF	$3.26	$205.38
Culvert C-5B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	$3.26	$130.40
Culvert C-6	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	90.00	LF	$3.26	$293.40
Culvert C-7	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	203.00	LF	$3.26	$661.78

Culvert C-8	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	58.00	LF	$3.26	$189.08
Culvert C-9	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	201.00	LF	$3.26	$655.26
Culvert C-10	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	158.00	LF	$3.26	$515.08
Culvert C-11	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	82.00	LF	$3.26	$267.32
West Clearwater Culvert	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	220.00	LF	$3.26	$717.20
Culvert C-14	18"	Pipe, corrugated metal (CMP) - 18 in. diameter pipe	40.00	LF	$2.46	$98.40
Culvert C-14A	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	40.00	LF	$3.26	$130.40
Culvert C-14B	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	12.00	LF	$3.26	$39.12
Culvert C-15	15"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	60.00	LF	$3.26	$195.60
Pond primary spillway	24"	Pipe, corrugated metal (CMP) - 24 in. diameter pipe	120.00	LF	$3.26	$391.20
Pond emergency spillway	36"	Pipe, corrugated metal (CMP) - 36 in. diameter pipe	120.00	LF	$4.97	$596.40
Material and debris removal	NA	Loading and 2 mile haul, no salvage - Machine loading	200.00	CY	$17.05	$3,410.00
Remove/dispose of signs and markers	NA	USER PROVIDED ITEM	1.00	EA	$500.00	$500.00

Job Hours: **140.00** **Subtotal (unadjusted):** **$280,599.23** **Total Cost (adjusted for location):** **$263,763.28**

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul coal waste rock to King I waste pile**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 300 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-300
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

	Equipment Description
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$15.21	$21.63	NA	$21.63	NA	NA
Operating cost/hour:	$66.59	$38.09	NA	$38.09	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$26.72	$37.13	NA	$37.13	NA	NA
Unit Subtotals:	$108.51	$96.85	NA	$96.85	NA	NA
Number of Units:	1	1	0	1	0	0
Group Subtotals:	Work:	$205.36	Support:	$96.85	Maint:	$0.00

Total work team cost/hour: **$302.21**

MATERIAL QUANTITIES

Initial volume: 37 CCY Swell factor: 1.000
Loose volume: **37** LCY

Source of estimated volume: Assume 100 sf x 10 ft high
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:

Truck Payload (weight) Basis:

Material weight: 2,900 Pounds/LCY
Description: User Provided
Rated Payload: 50,300 Pounds
Payload Capacity: 17.34 LCY

Truck Bed (volume) Basis:

Struck Volume: 12.00 LCY
Heaped Volume: 18.00 LCY

Average Volume:	15.00	LCY
Adjusted Volume:	17.34	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA

Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	10560.00	11.50	5.00	16.50	690	15.314

Haul Time: **15.314** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res	Total Res	Velocity	Travel Time

			(%)	(%)	(fpm)	(min)
1	10560.00	-11.50	5.00	-6.50	2938	3.705

Return Time: **3.705** minutes
Total Truck Cycle Time: **21.727** minutes

Loading Tool unit Production 504.90 LCY/Hour Adjusted for job efficiency: 419.06 LCY/Hour
Truck Unit Production 42.00 LCY/Hour Adjusted for job efficiency: 34.86 LCY/Hour

Optimal No. of Trucks: 12 Truck(s) Selected Number of Trucks: 1 Truck(s)

Adjusted hourly truck team production: 34.86 LCY/Hour
Adjusted single truck/loader team production: 34.86 LCY/Hour
Adjusted multiple truck/loader team production: **34.86** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **1.06** Hours

Unit cost: $8.668 /LCY Total job cost: **$321**

BULLDOZER RIPPING WORK

Task description: **King II - Rip coal sales area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 301 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-301
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper Operating Cost/Hour:	$7.46	100
Operator Cost/Hour:	$38.01	NA
Total Unit Cost/Hour:	$222.73	
Total Fleet Cost/Hour:	**$222.73**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 0.80 acres Rip Depth (ft): 2.00 Volume: 2,581 BCY or CCY

Source of estimated quantity: Map King II-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.596	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.49	Acres/hr
Adjusted Hourly Fleet Production:	**0.49**	Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**1.62**	Hours
Unit cost:	$450.281	Per acre	Total job cost:	**$360**	

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul gravel from coal sales, portals, rd/wtr tank**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 302 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-302
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 10-12 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$12.65	$21.63	NA	$21.63	NA	NA
Operating cost/hour:	$63.40	$38.09	NA	$38.09	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$0.00	$37.13	NA	$37.13	NA	NA
Unit Subtotals:	$76.05	$96.85	NA	$96.85	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$248.95	Support:	$96.85	Maint:	$0.00

Total work team cost/hour: **$345.80**

MATERIAL QUANTITIES

Initial volume: 4,604 CCY Swell factor: 1.060
Loose volume: **4,880** LCY

Source of estimated volume: Operator's estimate PR-8
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:
Truck Payload (weight) Basis:

Material weight: 2,850 Pounds/LCY
Description: User Provided
Rated Payload: 35,400 Pounds
Payload Capacity: 12.42 LCY

Truck Bed (volume) Basis:

Struck Volume:	10.00	LCY
Heaped Volume:	12.00	LCY
Average Volume:	11.00	LCY
Adjusted Volume:	12.00	LCY

Final Truck Volume Based on Number of Loader Passes: **11.41** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 3 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Conveyor or dozer piled 10 ft. high or less 0.01	0.010	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.090	minutes
	Adjusted Loader Cycle Time:	**0.393**	minutes
	Net Load Time per Truck:	**0.885**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	0.885	Minutes	Adjusted for site altitude:	0.885	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	2.00	5.00	7.00	1568	0.747

Haul Time: **0.747** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	1120.00	-2.00	5.00	3.00	2874	0.415

Return Time: **0.415** minutes

Total Truck Cycle Time: **3.447** minutes

Loading Tool unit Production 494.19 LCY/Hour Adjusted for job efficiency: 410.18 LCY/Hour

Truck Unit Production 198.56 LCY/Hour Adjusted for job efficiency: 164.81 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 329.62 LCY/Hour

Adjusted single truck/loader team production: 329.62 LCY/Hour

Adjusted multiple truck/loader team production: **329.62** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **14.81** Hours

Unit cost: $1.049 /LCY Total job cost: **$5,120**

TRUCK/LOADER TEAM WORK

Task description: **King II - Haul office fill to portal cuts/acc rd/wtr tank**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 303 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-303
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$15.21	$21.63	NA	$21.63	NA	NA
Operating cost/hour:	$66.59	$38.09	NA	$38.09	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$26.72	$37.13	NA	$37.13	NA	NA
Unit Subtotals:	$108.51	$96.85	NA	$96.85	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$313.87	Support:	$96.85	Maint:	$0.00

Total work team cost/hour: **$410.72**

MATERIAL QUANTITIES

Initial volume: 18,217 CCY Swell factor: 1.165
Loose volume: **21,223** LCY

Source of estimated volume: Map King II-007: portal 18148 yds, fan port/wtr tank 4673 yd
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:
Truck Payload (weight) Basis:
Material weight: 2,700 Pounds/LCY
Description: User Provided
Rated Payload: 50,300 Pounds
Payload Capacity: 18.63 LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 2" tire penetration 5.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	3.00	5.00	8.00	1381	0.397

Haul Time: **0.397** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	490.00	-3.00	5.00	2.00	2905	0.204

Return Time: **0.204** minutes

Total Truck Cycle Time: **3.309** minutes

Loading Tool unit Production 504.90 LCY/Hour Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production 275.83 LCY/Hour Adjusted for job efficiency: 228.94 LCY/Hour

Optimal No. of Trucks: 2 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 457.89 LCY/Hour

Adjusted single truck/loader team production: 419.06 LCY/Hour

Adjusted multiple truck/loader team production: **419.06** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **50.64** Hours

Unit cost: $0.980 /LCY Total job cost: **$20,800**

BULLDOZER WORK

Task description: **King II - grade portal cuts, access roads, water tank pad**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 304 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-304
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 16,562
Swell factor: 1.165
Loose volume: **19,295** LCY

Source of estimated volume: Map King II-007C
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr
Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.431/LCY

Total job time: **38.65** Hours
Total job cost: **$8,320**

COMPACTION WORK

Task description: **King II-Compact fill on portal cuts/access rd/water tank pad**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 305 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-305
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: CAT 825H Horsepower: 354
Compactor Type: Soil - tamping foot Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$62.10	NA
Operating Cost/Hour:	$116.14	100
Operator Cost/Hour:	$28.75	NA
Total Unit Cost/Hour:	$206.99	
Total Fleet Cost/Hour:	**$206.99**	

MATERIAL QUANTITIES

Loose volume: 22,821 LCY Shrinkage factor: 0.750
Compacted volume: **17,116** CCY

Source of estimated volume: Tasks 302 and 303
Source of estimated shrinkage factor: Cat Handbook

HOURLY PRODUCTION

Unadjusted hourly production = (W x S x L x C) / P

Compacted width per pass (W):	7.34	feet
Average Compactor Speed (S):	5.00	mph
Compacted thickness of each lift (L):	10.00	inches
Conversion Constant (C):	16.3	(5,280ft./12in./27cu.ft.)
Required number of machine passes (P):	5	passes
Unadjusted Hourly Unit Production:	1,196.42	CCY/hour

Job Condition Correction Factors Site Altitude: 7,300 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.8300	multiplier

Adjusted Hourly Unit Production: 993.03 CCY/Hour
Adjusted Hourly Fleet Production: **993.03** CCY/Hour

JOB TIME AND COST

Fleet size: 1 Compactor(s) Total job time: **17.24** Hours

Unit cost: $0.208 per CCY Total job cost: **$3,568**

BULLDOZER RIPPING WORK

Task description: **King II - Rip portal, access rd., coal sales areas**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 306 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-306
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper Operating Cost/Hour:	$7.46	100
Operator Cost/Hour:	$38.01	NA
Total Unit Cost/Hour:	$222.73	
Total Fleet Cost/Hour:	**$222.73**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 16.98 acres Rip Depth (ft): 2.00 Volume: 54,789 BCY or CCY

Source of estimated quantity: Page 2.05.3-3

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production: 0.596 Acres/hr

Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier

Adjusted Hourly Unit Production: 0.49 Acres/hr
Adjusted Hourly Fleet Production: **0.49** Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**34.33**	Hours
Unit cost:	$450.281	Per acre	Total job cost:	**$7,646**	

BULLDOZER WORK

Task description: **King II - grade portal cuts, access roads, water tank pad**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 307 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-307
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 54,789
Swell factor: 1.000
Loose volume: **54,789** LCY

Source of estimated volume: Page 2.05.3-3, 16.98 ac x 2' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr
Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.431/LCY

Total job time: **109.74** Hours
Total job cost: **$23,625**

BULLDOZER WORK

Task description: **King II - remove east and west cleanwater ditches**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 308 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-308
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 3,235
Swell factor: 1.330
Loose volume: **4,303** LCY

Source of estimated volume: West:4x3x2480 - East: 10x3x1920
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 5 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	0.903	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3566

Adjusted unit production: 499.24 LCY/hr
Adjusted fleet production: **499.24** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.431/LCY

Total job time: **8.62** Hours
Total job cost: **$1,855**

BULLDOZER WORK

Task description: **King II - construct drainage channel in Cochrane Canyon**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 309 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-309
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 2,133
Swell factor: 1.000
Loose volume: **2,133** LCY

Source of estimated volume: Mp King II-011A, Post-Mining X-Section Plan
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr
Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.354/LCY

Total job time: **3.51** Hours
Total job cost: **$755**

BULLDOZER WORK

Task description: **King II - construct channel in office drainage**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 310 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-310
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 2,756
Swell factor: 1.000
Loose volume: **2,756** LCY

Source of estimated volume: Mp King II-011A, Post-Mining X-Section Plan, 10x3x2480
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr
Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.354/LCY

Total job time: **4.53** Hours
Total job cost: **$976**

BULLDOZER WORK

Task description: **King II - backfill pond**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 311 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-311
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 9,993
Swell factor: 1.125
Loose volume: **11,242** LCY

Source of estimated volume: Pond design
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Partly consolidated stockpile 1.1

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: User Provided

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.100	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.4344

Adjusted unit production: 608.16 LCY/hr
Adjusted fleet production: **608.16** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.354/LCY

Total job time: **18.49** Hours
Total job cost: **$3,979**

BULLDOZER RIPPING WORK

Task description: **King II - Rip coal sales area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 312 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-312
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU Horsepower: 310
Ripper Attachment: 3-Shank Ripper Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper Operating Cost/Hour:	$7.46	100
Operator Cost/Hour:	$38.01	NA
Total Unit Cost/Hour:	$222.73	
Total Fleet Cost/Hour:	**$222.73**	

MATERIAL QUANTITIES

Selected estimating method: Area

Alternate Methods:

Seismic: NA Bank Volume: NA BCY NA
Area: 1.70 acres Rip Depth (ft): 2.00 Volume: 5,485 BCY or CCY

Source of estimated quantity: Map King II-007

HOURLY PRODUCTION

Seismic:

Seismic Velocity: NA feet/second

Area:

Average Ripping Depth:	1.00	mph
Average Ripping Width:	7.08	degrees
Average Ripping Length:	50.00	feet
Average Dozer Speed:	88.00	feet
Average Maneuver Time:	0.25	feet
Production per unit area:	0.596	acres/hour

Job Condition Correction Factors

Unadjusted Hourly Unit Production:	0.596	Acres/hr
Site Altitude:	7,400	feet
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.83	(1 shift/day)
Net Correction:	0.83	multiplier
Adjusted Hourly Unit Production:	0.49	Acres/hr
Adjusted Hourly Fleet Production:	**0.49**	Acres/hr

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**3.44**	Hours
Unit cost:	$450.281	Per acre	Total job cost:	**$765**	

BULLDOZER WORK

Task description: **King II - Grade haul road**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 313 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-313
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D8T - 8SU
Horsepower: 310
Blade Type: Semi-Universal
Attachment: 3-shank ripper
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$69.05	NA
Operating Cost/Hour:	$108.22	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $215.28
Total Fleet Cost/Hour: **$215.28**

MATERIAL QUANTITIES

Initial Volume: 5,485
Swell factor: 1.330
Loose volume: **7,295** LCY

Source of estimated volume: 1.7 acres x 2' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 1,400.0 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.800	(FND-RF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3949

Adjusted unit production: 552.86 LCY/hr
Adjusted fleet production: **552.86** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.389/LCY

Total job time: **13.20** Hours
Total job cost: **$2,841**

MISCELLANEOUS TRUCK WORK

Task description: **Water truck for dust control**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	314	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-314
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Make and Model:	Water Tanker, 2,500 Gal.	Horsepower:	150
Attachment 1:		Shift Basis:	1 per day
Attachment 2:		Weight:	5.25
Labor Unit 1:	Tanker Driver - 1 rear axle		(US Tons)
Labor Unit 2:			

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$7.43	NA
Operating Cost/Hour:	$22.24	100
Operator Cost/Hour:	$27.88	NA
Total Unit Cost/Hour:	$57.56	
Total Fleet Cost/Hour:	$57.56	

JOB TIME AND COST

Fleet size:	1	Truck(s)	Total job time:	**240.00**	Hours
Unit cost:	$57.56	/Hour	Total job cost:	**$13,814**	

TRUCK/LOADER TEAM WORK

Task description: **King II - distribute tosoil from Cochrane stockpile**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 401 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-401
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Shift basis: 1 per day

Equipment Description	
Truck Loader Team -Truck:	Generic 12-18 cy, 6x4
-Loader:	CAT 938H
Support Equipment -Load Area:	NA
-Dump Area:	CAT 938H
Road Maintenance –Motor Grader:	NA
-Water Truck:	NA

Cost Breakdown:

	Truck/Loader Team		Support Equipment		Maintenance Equipment	
	Truck	Loader	Load Area	Dump Area	Motor Grader	Water Truck
%Utilization-machine:	100	100	NA	100	NA	NA
Ownership cost/hour:	$15.21	$21.63	NA	$21.63	NA	NA
Operating cost/hour:	$66.59	$38.09	NA	$38.09	NA	NA
Ripper op. cost/hour:	NA	$0.00	NA	$0.00	NA	NA
Operator cost/hour:	$26.72	$37.13	NA	$37.13	NA	NA
Unit Subtotals:	$108.51	$96.85	NA	$96.85	NA	NA
Number of Units:	2	1	0	1	0	0
Group Subtotals:	Work:	$313.87	Support:	$96.85	Maint:	$0.00

Total work team cost/hour: **$410.72**

MATERIAL QUANTITIES

Initial volume: 27,699 CCY Swell factor: 1.215
Loose volume: **33,654** LCY

Source of estimated volume: 22.36 ac - 1.5 ponds
Source of estimated swell factor: Cat Handbook
Material Purchase Cost: $0.00
Total Cost: $0.00

HOURLY PRODUCTION

Truck Capacity:
Truck Payload (weight) Basis:

Material weight: 1,600 Pounds/LCY
Description: Top Soil
Rated Payload: 50,300 Pounds
Payload Capacity: 31.44 LCY

Truck Bed (volume) Basis:

Struck Volume:	12.00	LCY
Heaped Volume:	18.00	LCY
Average Volume:	15.00	LCY
Adjusted Volume:	18.00	LCY

Final Truck Volume Based on Number of Loader Passes: **15.21** LCY

Loading Tool Capacity

Bucket Size Class: NA

Rated Capacity:	3.900	LCY (heaped)
Bucket Fill Factor:	0.975	Loose material - mixed moist aggregates (95-100%) 0.975
Adjusted Capacity:	**3.803**	LCY

Job Condition Corrections: Site Altitude (ft.): 7500 feet

	Truck	Loader	Source
Altitude Adj:	1.000	1.000	(CAT HB)
Job Efficiency:	0.830	0.830	(CAT HB)
Net Correction:	**0.830**	**0.830**	

Loading Tool Cycle Time: Number of Loading Tool Passes Required to Fill Truck: 4 passes

Excavators and Front Shovels:

Machine Cycle Time vs. Job Condition Rating: NA
Selected Value within this Basic Rating: NA

Track Loaders – Material Description:

Cycle Time Elements (min.):

Load: NA Maneuver: NA Dump: 0.100

Wheel and Track Loaders - Unadjusted Basic Loader Cycle Time (load, dump, maneuver): 0.483 minutes

Cycle Time Factors		Factor (min.)	Source
Material:	Material 1/8" to 3/4" diameter -0.02	-0.020	(Cat HB)
Stockpile:	Dumped by truck 0.02	0.020	(Cat HB)
Truck Ownership:	Common ownership of trucks and loaders -0.04	-0.040	(Cat HB)
Operation:	Constant operation -0.04	-0.040	(Cat HB)
Dump Target:	Nominal target 0.00	0.000	(Cat HB)
	Net Cycle Time Adjustment:	-0.080	minutes
	Adjusted Loader Cycle Time:	**0.403**	minutes
	Net Load Time per Truck:	**1.308**	minutes

Truck Cycle Time:

Truck Exchange Time:	0.50	Minutes	Adjusted for site altitude:	0.500	Minut
Truck Load Time:	1.308	Minutes	Adjusted for site altitude:	1.308	Minut
Truck Maneuver and Dump Time:	0.90	Minutes	Adjusted for site altitude:	0.900	Minut

Truck Travel (Haul & Return) Time: Road Condition: Rutted dirt, little maintenance, no water, 1" tire penetration 4.0

Haul Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	2.00	4.00	6.00	1855	1.158

Haul Time: **1.158** minutes

Return Route:

Seg #	Haul Distance (Ft)	Grade (%)	Roll. Res (%)	Total Res (%)	Velocity (fpm)	Travel Time (min)
1	2000.00	-2.00	4.00	2.00	2905	0.723

Return Time: **0.723** minutes

Total Truck Cycle Time: **4.589** minutes

Loading Tool unit Production 504.90 LCY/Hour Adjusted for job efficiency: 419.06 LCY/Hour

Truck Unit Production 198.89 LCY/Hour Adjusted for job efficiency: 165.08 LCY/Hour

Optimal No. of Trucks: 3 Truck(s) Selected Number of Trucks: 2 Truck(s)

Adjusted hourly truck team production: 330.15 LCY/Hour

Adjusted single truck/loader team production: 330.15 LCY/Hour

Adjusted multiple truck/loader team production: **330.15** LCY/Hour

JOB TIME AND COST

Fleet size: 1 Team(s) Total job time: **101.93** Hours

Unit cost: $1.244 /LCY Total job cost: **$41,867**

MOTOR GRADER WORK

Task description: **King II - finish grade topsoil area**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #:	402	State:	Colorado	Abbreviation:	None
Date:	2/11/2015	County:	La Plata	Filename:	C035-402
User:	SLB				

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine:	CAT 12M	Horsepower:	158
Ripper Attachment:	Multi-Shank Ripper	Shift Basis:	1 per day
		Data Source:	(CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$26.77	NA
Operating Cost/Hour:	$46.43	100
Ripper Operating Cost/Hour:	$0.00	0
Operator Cost/Hour:	$24.47	NA
Total Unit Cost/Hour:	$97.67	
Total Fleet Cost/Hour:	**$99.92**	

MATERIAL QUANTITIES

Total Area to be graded or ripped: 22.36 acres

Source of estimated acreage: Section 2.05.3 of permit application

HOURLY PRODUCTION

Average Grader Speed:	1.25	mph
Selected Application:	Production Deration - 1.25	
Selected Blade Angle:	30	degrees
Effective Blade Length:	10.40	feet
Width of blade overlap per pass:	2.00	feet
Net grading or ripping width per pass:	8.40	feet
Unadjusted Hourly Unit Production:	1.2727	acres/hour

Job Condition Correction Factors Site Altitude: 7400 feet

		Source
Altitude Adj:	1.00	(CAT HB)
Job Efficiency:	0.85	(1sh/d, mod.)
Net Correction:	0.8500	multiplier

Adjusted Hourly Unit Production:	1.0818	acres/Hour
Adjusted Hourly Fleet Production:	**1.0818**	acres/Hour

JOB TIME AND COST

Fleet size:	1	Grader(s)	Total job time:	**20.67**	Hours
Unit cost:	$90.28	per acre	Total job cost:	**$2,019**	

REVEGETATION WORK

Task description: **King II - revegetate rangeland areas**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 403 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-403
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Blue Grama - Native	0.60	9.79	$6.21
Indian Ricegrass - Native	1.45	4.69	$9.77
Mountain Brome - Bromar	1.74	2.80	$5.92
Sideoats Grama - Butte	1.00	3.28	$11.14
Burnett, Small (or Little) - Delar	2.90	3.66	$5.13
Slender Wheatgrass - Native	1.24	4.53	$2.79
Western Wheatgrass - Native	2.18	5.51	$6.63
Globemallow, Scarlet (or copper)	0.44	4.98	$61.81
Totals Seed Mix	11.55	39.24	**$109.40**

Application

Description	Cost /Acre
Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Crimping, with tractor {DMG survey data}	$65.89
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$152.57**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	19.36	Cost /Acre:	$981.93
Estimated Failure Rate:	50%	Cost /Acre*:	$197.60
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$19,010.16**
Reseeding Job Cost:	**$1,912.77**
Total Job Cost:	**$20,923**
Job Hours:	**40.00**

REVEGETATION WORK

Task description: **King II - revegetate pinon-juniper areas**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 404 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-404
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bitterbrush, Antelope	8.71	2.68	$176.46
Blue Grama - Native	0.60	9.79	$6.21
Indian Ricegrass - Native	1.45	4.69	$9.77
Mountain Brome - Bromar	1.74	2.80	$5.92
Sideoats Grama - Butte	1.00	3.28	$11.14
Burnett, Small (or Little) - Delar	2.90	3.66	$5.13
Slender Wheatgrass - Native	1.24	4.53	$2.79
Mahogany, Mountain	4.84	6.56	$224.14
Western Wheatgrass - Native	2.18	5.51	$6.63
Globemallow, Scarlet (or copper)	0.44	4.98	$61.81
Sumac, Skunkbrush	4.36	2.04	$154.43
Winter Fat	1.94	4.94	$63.42

Totals Seed Mix	31.40	55.46	**$727.85**

Application

Description	**Cost /Acre**
Drill seeding (DRMS Cost Data)	$88.20
Total Seed Application Cost/Acre	**$88.20**

MULCHING and MISCELLANEOUS

Materials

Description	**Units / Acre**	**Unit**	**Cost / Unit**	**Cost /Acre**
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	**Cost /Acre**
Crimping, with tractor {DMG survey data}	$65.89
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$152.57**

NURSERY STOCK PLANTING

Common Name	**No / Acre**	**Type and Size**	**Planting Cost**	**Fertilizer Pellet Cost**	**Cost /Acre**
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	3	Cost /Acre:	$1,600.38
Estimated Failure Rate:	50%	Cost /Acre*:	$816.05
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$4,801.14**
Reseeding Job Cost:	**$1,224.08**
Total Job Cost:	**$6,025**
Job Hours:	**6.00**

REVEGETATION WORK

Task description: **King II - seed water line corridor (>100' from CR 120)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 406 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-406
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 92 19.14 0100)	$507.47
Total Seed Application Cost/Acre	**$507.47**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	0.41	Cost /Acre:	$1,274.87
Estimated Failure Rate:	50%	Cost /Acre*:	$556.43
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$522.70**
Reseeding Job Cost:	**$114.07**
Total Job Cost:	**$637**
Job Hours:	**2.00**

REVEGETATION WORK

Task description: **King II - seed water line corridor (<100' from CR 120)**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 407 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-407
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
10-34-0, 18-46-0, 5-10-5	150.00	pound	$0.33	$49.05
			Total Fertilizer Materials Cost/Acre	**$49.05**

Application

Description	Cost /Acre
Tractor towed spreader (MEANS 32 01 90.13 0120)	$52.71
Total Fertilizer Application Cost/Acre	**$52.71**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	1.74	5.59	$11.90
Switchgrass - Pathfinder	0.75	6.70	$3.98
Mountain Brome - Bromar	1.82	2.92	$6.19
Burnett, Small (or Little) - Delar	2.61	3.30	$4.62
Sheep Fescue - Bighorn	0.31	4.84	$0.95
Thickspike Wheatgrass - Critana	1.16	4.10	$6.00
Western Wheatgrass - Native	2.54	6.41	$7.72
Flax, Lewis Blue	0.46	3.05	$7.60
Totals Seed Mix	11.39	36.92	**$48.96**

Application

Description	Cost /Acre
Tractor spreader (MEANS 32 92 19.14 0100)	$507.47
Total Seed Application Cost/Acre	**$507.47**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Power mulcher (MEANS 32 91 13.16 0250)	$86.68
Total Mulch Application Cost/Acre	**$86.68**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
Totals Nursery Stock Cost / Acre					**$0.00**

JOB TIME AND COST

No. of Acres:	0.06	Cost /Acre:	$1,274.87
Estimated Failure Rate:	50%	Cost /Acre*:	$556.43
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$76.49**
Reseeding Job Cost:	**$16.69**
Total Job Cost:	**$93**
Job Hours:	**2.00**

BOREHOLE SEALING WORK

Task description: **Seal Boreholes CO-14-01 through CO-14-09**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 409 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-409
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Bottom Plugs	Stainless steel plug - 6 in. diameter borehole	6	NA	18.00	EA	$137.62	$2,477.16
Seal Holes	Portland cement grout (Bag, material cost only...94 lb. bag)	6	27	27.45	bag	$11.83	$324.73
Cut Casing	Exposed casing removal - 4 to 10 in. diameter steel pipe (LF)	6	3	27.00	LF	$6.04	$163.08
Hole Marker	Borehole location/identification marker (EA, material cost only)	NA	NA	9.00	EA	$2.89	$26.01
Drill Rig Time	GENERIC 3.0 in. - 1, 700 ft. capy.	NA	NA	36.00	EA	$73.95	$2,662.20
Water Truck Time	Water Tanker, 2,500 Gal.	NA	NA	36.00	EA	$57.55	$2,071.80

Job Hours: **0.00** **Total Cost**: **$7,725.00**

BULLDOZER WORK

Task description: **Regrade drill pads and pits CO-14-01 through CO-14-09**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 410 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-410
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K XL - 5P
Horsepower: 96
Blade Type: Power Angle Tilt
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$16.59	NA
Operating Cost/Hour:	$35.58	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $90.18
Total Fleet Cost/Hour: **$90.18**

MATERIAL QUANTITIES

Initial Volume: 833
Swell factor: 1.165
Loose volume: **971** LCY

Source of estimated volume: 9 pads, 50' x 50', 1' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 464.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,900 lbs/LCY

Weight description: Decomposed rock - 50% Rock, 50% Earth

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.793	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.2962

Adjusted unit production: 137.53 LCY/hr
Adjusted fleet production: **137.53** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.656/LCY

Total job time: **7.06** Hours
Total job cost: **$637**

BULLDOZER WORK

Task description: **Replace topsoil on CO-14-01 through CO-14-09 disturbance**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 411 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-411
User: SLB

Agency or organization name: DRMS

HOURLY EQUIPMENT COST

Basic Machine: Cat D5K XL - 5P
Horsepower: 96
Blade Type: Power Angle Tilt
Attachment: NA
Shift Basis: 1 per day
Data Source: (CRG)

Cost Breakdown:

		Utilization %
Ownership Cost/Hour:	$16.59	NA
Operating Cost/Hour:	$35.58	100
Ripper op. Cost/Hour:	$0.00	0
Operator Cost/Hour:	$38.01	NA

Total unit Cost/Hour: $90.18
Total Fleet Cost/Hour: **$90.18**

MATERIAL QUANTITIES

Initial Volume: 417
Swell factor: 1.125
Loose volume: **469** LCY

Source of estimated volume: 9 pads, 50' x 50', 0.5' depth
Source of estimated swell factor: Cat Handbook

HOURLY PRODUCTION

Average push distance: 50 feet
Unadjusted hourly production: 464.3 LCY/hr

Materials consistency description: Consolidated stockpile 1.0

Average push gradient: 0 %
Average site altitude: 7,500 feet

Material weight: 2,550 lbs/LCY

Weight description: Earth - Dry packed

Job Condition Correction Factor		Source
Operator Skill:	0.750	(AVG.)
Material consistency:	1.000	(CAT HB)
Dozing method:	1.000	(GEN.)
Visibility:	1.000	(AVG.)

Job efficiency:	0.830	(1 SHIFT/DAY)
Spoil pile:	0.600	(FND-SF)
Push gradient:	1.000	(CAT HB)
Altitude:	1.000	(CAT HB)
Material Weight:	0.902	(CAT HB)
Blade type:	1.000	(PAT)

Net correction: 0.3369

Adjusted unit production: 156.42 LCY/hr
Adjusted fleet production: **156.42** LCY/hr

JOB TIME AND COST

Fleet size: 1 Dozer(s)
Unit cost: $0.577/LCY

Total job time: **3.00** Hours
Total job cost: **$270**

REVEGETATION WORK

Task description: **Broadcast seed CO-14-01 through CO-14-09 disturbance**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 412 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-412
User: SLB

Agency or organization name: DRMS

FERTILIZING

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
			$	$
			Total Fertilizer Materials Cost/Acre	**$0.00**

Application

Description	Cost /Acre
	$
Total Fertilizer Application Cost/Acre	**$0.00**

TILLING

Description	Cost /Acre
	$
Total Tilling Cost/Acre	**$0.00**

SEEDING

Seed Mix	Rate – PLS LBS / Acre	Seeds per SQ. FT	Cost /Acre
Bluebunch Wheatgrass - Secar	3.48	11.18	$23.80
Switchgrass - Pathfinder	1.50	13.40	$7.97
Mountain Brome - Bromar	3.64	5.85	$12.38
Burnett, Small (or Little) - Delar	5.22	6.59	$9.24
Sheep Fescue - Bighorn	0.62	9.68	$1.90
Thickspike Wheatgrass - Critana	2.32	8.20	$11.99
Western Wheatgrass - Native	5.08	12.83	$15.44
Flax, Lewis Blue	0.92	6.10	$15.20
Totals Seed Mix	22.78	73.83	**$97.92**

Application

Description	Cost /Acre
Broadcast seeding [DMG]	$261.28
Total Seed Application Cost/Acre	**$261.28**

MULCHING and MISCELLANEOUS

Materials

Description	Units / Acre	Unit	Cost / Unit	Cost /Acre
Straw, delivered {MEANS 31 25 14.16 1200}	2.00	TON	$265.00	$530.00
Total Mulch Materials Cost/Acre				**$530.00**

Application

Description	Cost /Acre
Hand spread, 1" deep (MEANS 32 91 13.16 0200)	$2,855.60
Total Mulch Application Cost/Acre	**$2,855.60**

NURSERY STOCK PLANTING

Common Name	No / Acre	Type and Size	Planting Cost	Fertilizer Pellet Cost	Cost /Acre
					$
				Totals Nursery Stock Cost / Acre	**$0.00**

JOB TIME AND COST

No. of Acres:	0.52	Cost /Acre:	$3,744.80
Estimated Failure Rate:	50%	Cost /Acre*:	$359.20
*Selected Replanting Work Items:	SEEDING		

Initial Job Cost:	**$1,947.30**
Reseeding Job Cost:	**$93.39**
Total Job Cost:	**$2,041**
Job Hours:	**18.00**

BOREHOLE SEALING WORK

Task description: **King II - seal downgradient monitoring well**

Site: **King Coal Mine** Permit Action: Midterm Review No. 7 Permit/Job#: C1981035

PROJECT IDENTIFICATION

Task #: 500 State: Colorado Abbreviation: None
Date: 2/11/2015 County: La Plata Filename: C035-500
User: SLB

Agency or organization name: DRMS

UNIT COSTS

Borehole Description	Sealing/Item Method	Diameter	Length	Quantity	Unit	Unit Cost	Total Cost
Seal Hole	Granular bentonite (Bag, material cost only...50 lb. bag)	4	15	10.00	bag	$10.19	$101.90
Cut Casing	Exposed casing removal - 4 to 10 in. diameter steel pipe (LF)	4	2	2.00	LF	$6.04	$12.08
Mark Hole	Borehole location/identification marker (EA, material cost only)	4	1	1.00	EA	$2.89	$2.89
Drill Rig Time	GENERIC 3.0 in. - 500 ft. capy.	4	15	4.00	EA	$60.73	$242.92
Water Truck Time	Water Tanker, 2,500 Gal.	4	15	4.00	EA	$57.55	$230.20

Job Hours: **4.00** **Total Cost**: **$590.00**

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

September 22, 2016

Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326-9633

Re: King Coal Mine (Permit No. C-1981-035)
Minor Revision No. 41 (MR- 41)
Refuse Pile Sampling Plan

Dear Mr. Bird:

Enclosed you will find the Division of Reclamation, Mining and Safety's Decision Form for Minor Revision No. 41 at the King Coal Mine.

Documentation must be submitted to the Division demonstrating that a copy of the approved revision application was sent to the Office of Surface Mining and the Bureau of Land Management. The material should be sent within 15 days of final approval.

Please refer to the Performance Bond heading on the enclosed decision form. If the amount of Bond Held equals or exceeds the Revised Liability, you need not submit additional bond. However, if the Revised Liability exceeds the Bond Held, please submit additional bond or rider to your existing bond that equals or exceeds the Revised Liability. This Minor Revision must not be implemented until any required increase in bond is submitted to and approved by the Division.

If there are stipulations attached, please sign and return the decision form to the Division.

If you have any questions, please contact me.

Sincerely,

Robert D. Zuber, P.E.
Environmental Protection Specialist
Rob.zuber@state.co.us

Enclosure

cc: Alan Boehms, Office of Surface Mining, with enclosures

C-MR-06

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215, Denver, CO 80203 P 303.866.3567 F 303.832.8106 http://mining.state.co.us

COAL MINING PERMIT - MINOR REVISION DECISION

King Coal Mine, GCC Energy, LLC
Permit No. C-1981-035

The Division of Reclamation, Mining and Safety has issued the decision stated below. Any person who has an interest which is or may be adversely affected may request a formal hearing in accordance with Rule 2.08.4(6)(c)(iii).

Minor Revision No. 41

Decision: Approve

Submittal Date: September 17, 2016

Decision Date: September 22, 2016

Description of Revision: Refuse Pile Sampling Plan

DIVISION OF RECLAMATION, MINING AND SAFETY

PERMITTEE

Authorized Representative - Division
Date: September 22, 2016

Authorized Representative - Permittee (if applicable)
Date:

CHANGE IN ACREAGE		REVISED TOTAL ACREAGE		PERFORMANCE BOND	
Disturbed:	0.00	Disturbed:	48.59	Prior Liability:	$884,249.71
Affected:	0.00	Affected:	1,654.70	Change in Liability:	$0.00
Permit:	0.00	Permit:	2,705.40	Revised Liability:	$884,249.71
State:	0.00	State:	694.20	Bond Held:	$884,814.76
Federal:	0.00	Federal:	81.30		
Private:	0.00	Private:	1,929.90		
County:	0.00	County:	0.00		
Municipal:	0.00	Municipal:	0.00		

REVISED APPLICATION PAGES

King I Permit Cover Page, King I Permit Section 2.04.6 page 5
King II Permit Cover Page, King II Permit Table of Contents page ii

REVISED MAPS

NA

King II Permit Section 2.04.6 pages 6, 7, and 8
King II Permit Appendix 4(8)

DELETED APPLICATION PAGES	DELETED MAPS
NA	NA

C-MR-06

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

July 16, 2014

Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326-9633

Re: King Coal Mine (Permit No. C-1981-035)
Issuance - Technical Revision No. 22 (TR-22)
Exploration Drill Holes (9)

Dear Mr. Bird:

The Division of Reclamation, Mining and Safety's Proposed Decision to approve Technical Revision No. 22 at the King Coal Mine became final on July 16, 2014. Notice of the proposed decision was published in the *Durango Herald* on July 5, 2014, initiating the ten (10) day public comment period for the Division's decision. No requests for a formal hearing were received during the comment period.

If you have any questions, please contact me.

Sincerely,

Marcia L. Talvitie, P.E.
Environmental Protection Specialist
Marcia.talvitie@state.co.us

cc: Alan Boehms, Office of Surface Mining

C-TR-12

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567

APPLICATION FORM FOR A REVISION TO A COAL MINING AND RECLAMATION PERMIT

This form must be completed and submitted with all requests for minor revisions, as defined in Rule 1.04(73), technical revisions, as defined in Rule 1.04(136), and permit revisions, as defined in Rule 1.04(90). All revisions are to address the requirements of Rule 2.08.4. Three (3) copies of the revision, including maps, must be submitted in order for it to be complete.

All revisions are to be formatted so they can be inserted into the permit to replace the revised sections, maps, tables and/or figures, with a revised table of contents, if necessary. The revision submittal date should be printed in the lower right corner of each revision page. A cover letter to the revision should explain the nature of the revision and reference the specific permit sections being revised.

For federal mines, a copy of the revision application must be submitted to all agencies on the federal mailing list (except OSM) at the same time the application is submitted to the Division, and proof of distribution must be submitted to the Division along with the application. Copies of revision pages modified during the review process must be distributed in the same manner, along with proof of distribution. Proof of distribution must be submitted prior to implementation of the revision.

Permit No.: C - 1981 - 035 Date: 05 / 07 / 2014

Permittee: GCC Energy, LLC

Street: 6473 County Road 120

City: Hesperus

State: CO Zip Code: 81326 -

Brief Description of Revision: Technical Revision 22: Exploration core drilling program on Colorado Coal Lease CO-3388.

Public Notice Attached: Yes __ No X *(Required for PRs and TRs)*

Bond Increase: Yes __ No X **Federal** X **Non-Federal** __ **Mine**

Proposed Change in:

Permit Area -

Disturbed	(+/-)	2.1 Acres
Permit	(+/-)	0.0 Acres
Affected	(+/-)	0.0 Acres

Surface Ownership -

Private Land	(+/-)	0.0 Acres
Federal Land	(+/-)	0.0 Acres
State Land	(+/-)	0.0 Acres

Mineral Ownership -

Mineral Private	(+/-)	0.0 Acres
Mineral Federal	(+/-)	0.0 Acres
Mineral State	(+/-)	0.0 Acres

PUBLIC NOTICE

GCC Energy, LLC, 6473 County Road 120, Hesperus, Colorado 81326, phone (970) 385-4528, has filed an application for a technical revision (TR-22) to a valid existing permit for the King II Mine (permit C-81-035) with the Colorado Division of Reclamation, Mining & Safety. The subject of the revision is to propose the drilling of up to 9 exploration boreholes to determine coal quality and quantity within the current permit area.

The entire permit area is described as follows: T34N, R11W, N.M.P.M: Section 5: SW/4, W/2 SE/4, S/2 SW/4 NW/4; Section 6: Lots 1-5 (inclusive), E/2 NW/4, NE/4, N/2 SE/4, SE/4 SE/4, SE/4 SW/4 SE/4; Section 7: NE/4 NE/4, NE/4 NW/4 NE/4; Section 8: N/2 NW/4. T35N, R11W, N.M.P.M.: Section 28: SW/4 SW/4; Section 29: S/2 SE/4; Section 31: Lot 4, SE/4 SW/4, SE/4, S/2 NE/4; Section 32: W/2, NE/4. A tract in Sections 29 and 30, Beginning at a point on the South line in said Section 29, Whence SW corner of said Section 29 bears West, 9.16 feet; Thence N 22 37' W, 551.30 feet, more or less to south right-of-way in Co. Rd. 120; Thence N 84 23' E, 82.09 feet, to West right-of-way in Wright Coal Mine Road; Thence S 22 37' E, along said line, 560.0 feet to South line of said Section 29; Thence West along said South line 85.04 feet to point of beginning. T35N, R12W, N.M.P.M.: Section 36, Section 35: N/2 SE/4.

The area affected for this revision is located in Section 36; T35N, R12W, N.M.P.M., La Plata County, Colorado. The surface of the affected area is owned by the State of Colorado. All active mining activities of the mine lie to the north side of Hay Gulch, approximately 6.5 miles southwest of Hesperus, CO, as identified on U.S.G.S. 7.5-minute quadrangles of Hesperus, Kline, Thompson Park & Mormon Reservoir. The proposed land use at the completion of mining is rangeland.

A copy of the application is available for public review at the La Plata County Clerk and Recorder's Office, 98 Everett St., Suite C, Durango, CO, and at the Colorado Division of Reclamation, Mining & Safety, 1313 Sherman St., Room 215, Denver, Colorado 80203, phone (303) 866-3567. Anyone with a valid interest may submit written comments or objections within 30 days of the last publication of this notice. All comments, objections, and requests must be submitted in writing to the Colorado Division of Reclamation, Mining & Safety at the above address. Published in The Durango Herald, _____, 2014.

RECEIVED JUN 0 5 2014

PROOF OF PUBLICATION

County of La Plata, State of Colorado } ss.

the Durango Herald

Drawer A, Durango, Colorado 81302

I, Jacqueline LaFortune, do solemnly swear that I am the Classified Advertising Representative of the Durango Herald, and that I have personal knowledge of the essential facts stated herein; that the same is a daily newspaper printed in whole, and published in the County of La Plata, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said County of La Plata for a period of more than twelve months next prior to the first publication of the annexed Legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under a provision of the Act of March 3, 1879, or any amendments thereof, and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

That the annexed legal notice or advertisement was published in the regular and entire editions of said daily newspaper **one time(s) only**.

Once each day for XX consecutive issue days; once each week on the same day of each week for the period of **XX consecutive insertions;** and that the **first publication of said notice** was in the issue of said newspaper dated May 10th A.D., ***2014***, and that **the last publication of said notice** was in the issue of said newspaper dated May 10th A.D., ***2014***.

In witness whereof I have hereunto set my hand this 20th day of May, A.D., ***2014.***

Jacque LaFortune

Subscribed and sworn before me, a notary public in and for the County of La Plata, State of Colorado this 20th day of May, A.D., ***2014***.

Teri Smith
Notary Public

TERI S NOTA PUBLI STATE OF COLO

My Commission expires February 2nd, 2015

163424

PUBLIC NOTICE

GCC Energy, LLC, 6473 County Road 120, Hesperus, Colorado 81326, phone (970) 385-4528, has filed an application for a technical revision (TR-22) to a valid existing permit for the King II Mine (permit C-81-035) with the Colorado Division of Reclamation, Mining & Safety. The subject of the revision is to propose the drilling of up to 9 exploration boreholes to determine coal quality and quantity within the current permit area.

The entire permit area is described as follows: T34N, R11W, N.M.P.M: Section 5: SW/4, W/2 SE/4, S/2 SW/4 NW/4; Section 6: Lots 1-5 (inclusive), E/2 NW/4, NE/4, N/2 SE/4, SE/4 SE/4, SE/4 SW/4 SE/4; Section 7: NE/4 NE/4, NE/4 NW/4 NE/4; Section 8: N/2 NW/4. T35N, R11W, N.M.P.M.: Section 28: SW/4 SW/4; Section 29: S/2 SE/4; Section 31: Lot 4, SE/4 SW/4, SE/4, S/2 NE/4; Section 32: W/2, NE/4. A tract in Sections 29 and 30, Beginning at a point on the South line in said Section 29, Whence SW corner of said Section 29 bears West, 9.16 feet; Thence N 22 37' W, 551.30 feet, more or less to south right-of-way in Co. Rd. 120; Thence N 84 23' E, 82.09 feet, to West right-of-way in Wright Coal Mine Road; Thence S 22 37' E, along said line, 560.0 feet to South line of said Section 29; Thence West along said South line 85.04 feet to point of beginning. T35N, R12W, N.M.P.M.: Section 36, Section 35: N/2 SE/4.

The area affected for this revision is located in Section 36; T35N, R12W, N.M.P.M., La Plata County, Colorado. The surface of the affected area is owned by the State of Colorado. All active mining activities of the mine lie to the north side of Hay Gulch, approximately 6.5 miles southwest of Hesperus, CO, as identified on U.S.G.S. 7.5-minute quadrangles of Hesperus, Kline, Thompson Park & Mormon Reservoir. The proposed land use at the completion of mining is rangeland.

A copy of the application is available for public review at the La Plata County Clerk and Recorder's Office, 98 Everett St., Suite C, Durango, CO, and at the Colorado Division of Reclamation, Mining & Safety, 1313 Sherman St., Room 215, Denver, Colorado 80203, phone (303) 866-3567. Anyone with a valid interest may submit written comments or objections within 30 days of the last publication of this notice. All comments, objections, and requests must be submitted in writing to the Colorado Division of Reclamation, Mining & Safety at the above address.
Published in The Durango Herald, May 10th, 2014.

TABLE OF CONTENTS
APPENDICES

TOPIC	TAB
Right of Entry Information	**1**
(1) State of Colorado Lease CO-3388	
(2) Bureau of Land Management Lease COC-62920	
Licenses and Permits	**2**
(1) Zoning Compliance (La Plata County)	
(2) Air Emission Permit (Co. Dept. of Health)	
(3) Wastewater Discharge Permit (Co. Dept. of Health)	
(4) Monitoring Well Permit	
(5) Water Augmentation Plan	
Cultural and Historic Resource Survey	**3**
(1) SHPO Concurrence letter	
(2) Cultural Resource Inventory, Hay Gulch Area, Complete Archaeological Service Associates. August 2005	
(3) Cultural Resource Survey, TR-22 Drill Sites, SWCA February 19, 2014	
Geological and Hydrologic Data	**4**
(1) Excerpts from NEDO Project Geological Report, Corte, Jan. 1999	
(2) Hydrologic Water Data: Groundwater Wells and Irrigation Ditch	
(3) Roof & Floor Chemical Analysis	
(4) TR-22 Drill Sites: Location & Topography, Drill Hole Abandonment Drawing, Typical Drill Site Drawing	
Climatological Data Summaries	**5**
Soil Resource Data and Analysis	**6**
(1) Field Data Sheet	
(2) Colorado State University Soil, Water and Plant Testing Laboratory Analysis	
(3) Soil Horizon Suitability Criteria for Reclamation	
Baseline Vegetation Report	**7**
(1) Baseline Vegetation Report, National King Coal, LLC, King II Mine, Hay Gulch, Colorado, August 2005	
Fish and Wildlife Information	**8**
(1) La Plata County Wildlife: Known or Likely Species Occurrence	
(2) Natural Diversity Information Source Sample Maps	
(3) Colorado Natural Heritage Program Database Survey results	
(4) Colorado Div. of Wildlife Density Standard Approval	
(5) Natural Resource Survey, TR-22 Drill Sites, SWCA April 11, 2014	
USDA Important Farmlands of La Plata County, Colorado	**9**
Structure Designs	**10**
(1) Haul Roads; Description and Certifications	
(2) Access Roads; Certification	

Hydrologic Designs – Fleming Engineering, Inc. Introduction	**11**
(1) Sediment Pond "As-Built", J.T. Paluso, P.E.	
(2) On Site Basin Flows, Fleming Engineering, Inc.	
(3) On Site Culvert and Ditch Capacities, Fleming Engineering, Inc.	
(4) East and West Clean Water Ditch Verification, J.T. Paluso, P.E.	
(5) Safety Factor Analysis for Sediment Pond, J.T. Paluso, P.E.	
(6) Sediment Pond Certification by Fleming Engineering, Inc., - Sediment Pond "As Built" and Runoff Control Structures. Verification for Drainages; Basin A and Basin B, EIS Environmental & Engineering Consulting. - Retention Pond (sic) Compaction Test Results, Trautner Geotechnical Services.	
Reclamation Bond Estimate	**12**
(1) Prepared by GCC Energy, LLC	
(2) Prepared by Colorado Division of Reclamation, Mining & Safety	

2.03.5 - COMPLIANCE INFORMATION

Neither GCC Energy, LLC nor persons controlled or under common control has had a Federal or State mining permit for surface or underground mining operations suspended or revoked in the last five year period since date of issuance of CDRMS Mining Permit C-81-035.

Neither GCC Energy, LLC nor persons controlled or under common control has forfeited a mining bond or similar security deposited in lieu of bond.

One violation has been issued to GCC Energy, LLC during the three years prior to this application.

CV-2012-003 was issued by the Colorado Division Mining, Reclamation and Safety, on April 11, 2012, for using of coal mine waste to backfill the highwall at King I as was approved in the King I permit document. CV-2012-003 was terminated on December 11, 2012.

2.04.4 - CULTURAL AND HISTORIC RESOURCE INFORMATION

Complete Archaeological Service Associates of Cortez, Colorado has prepared a cultural resource inventory documenting the results of a pedestrian survey of those areas that may be affected by surface disturbance within the permit area (see Appendix 3(2)). No cultural or historic resources eligible for listing on the National Register of Historic Places or significant archeological sites that may be affected by surface disturbance (including subsidence) were identified in the survey.

SWCA Environmental Consultants of Durango, Colorado performed a cultural resource survey of the 9 core drill sites addressed in Technical Revision TR-22 (see Appendix 3(3). No cultural or historic resources eligible for listing on the National Register of Historic Places or significant archeological sites that may be affected by surface disturbance were identified in the survey.

Cliff House Sandstone

The Cliff House Formation is the upper member of the Mesa Verde Group in the Hesperus area and is of marine origin. It generally consists of irregular to lenticular ledges of hard, fine to medium-grained calcareous sandstone enclosed in softer argillaceous fine sandstone, mudstone, and silty shale.

Like the Point Lookout sandstone, the Cliff House sandstone is reported to decrease in grain size in an eastward direction. Ten to fifteen miles east of the project area, the formation is composed of soft dark-gray mudstone and fine sandy silt-shale with an occasional very thin lentil of fine sandstone in the lower part.

The Cliff House sandstone has an average thickness of 350 feet throughout most of the project area. It shows a slight eastward thinning, probably due to the decrease in coarse clastics and the increase in compactable fine sediments.

Lewis Shale

The Lewis Shale conformably overlies the Cliff House sandstone and consists of dark gray to black homogeneous clay shale with scattered concretions of dense argillaceous limestone and with a few thin seams of bentonite in the upper part. The formation is reported to be about 1,825 feet thick with the basal contact being very sharp with black flaky clay-shale resting on gray mudstone or sandy shale of the Cliff House sandstone.

STRUCTURE

The geologic structure of the Hesperus area is characterized by gentle southward dips ranging from seven to two degrees away from the structurally high La Plata Mountains to the north. It is probable that a small amount of faulting is present in the vicinity of the town of Hesperus. A fault with a displacement of 33 feet has been reported in the Monarch mine about one mile northeast of Hesperus. While results of exploration drilling conducted in the area have not revealed significant faulting, it is probable that faulting is present given the relationship between the structure and stratigraphic deposition.

GEOLOGY DESCRIPTION: UNDERGROUND MINING

SURFACE GEOLOGY

Only the upper two members of the Mesa Verde Group are exposed on the property. The King II Mine is located on the north side of Hay Gulch with entries to be driven into the coal bearing Menefee Formation. The Cliff House Formation caps the higher ground on both sides of the gulch.

COAL GEOLOGY

Exploration drilling reports and analysis reports obtained by National King Coal concluded that the two coal seams exposed at the current mine coalesce into one "A" seam pod to the northwest of the current operation. These reports state that holes were drilled approximately 300-400 feet deep and no ground water encounters were reported. None of these holes were located within the CDRMS permit boundary. At the location of the King II Mine there is one "A" coal seam pod with a thickness ranging from 5.9 to 11.7 feet, with an average of 9.9 feet.

Bedding at the project site dips 3-6° in a south-southwesterly direction.

COAL QUALITY

The coal within the "A" seam pod of the King II Mine is low ash, low sulfur, and bituminous coal with a 5.0 free swelling index (blending metallurgical coal). An average analysis of six samples as received follows:

BTU	Moisture	Ash	Sulfur
12,743	5.6%	7.5%	0.68%

Additional coal analysis as well as analysis of the immediate floor and roof for the upper seam is included in Appendix 4.

GEOLOGIC HAZARDS

Geologist, David L. Gaskill, of the Conservation Division of the U.S.G.S. reported no unusual geologic hazards are known that might adversely affect mining in the upper or lower Menefee coal seams. He noted that ground water tables were below the seams (See King I Mine existing permit **Appendix 4(3)**). Mr. Gaskill's report was prepared in February, 1980, for the survey's consideration of National King Coal's application for a new Federal Lease adjacent to the current lease holdings at the current mine.
An inspection of the current King I Mine workings shows no significant

faults or strata displacements. The coal is strong and pillars are structurally competent showing a lack of squeezing (crushing) or rib spalling. The mine floor does not buckle due to stress from the overburden and because the water table is lower than the seams, pore water pressure is non-existent. The immediate mine roof consists of thinly laminated shales and sandstones. These beds rise up to the base of the Cliff House sandstone an average of twenty feet above the coal seam. The thick Cliff House sandstone provides a great deal of ground stability and generally prevents subsidence from reaching the surface after pillars are extracted during second mining.

STRATIGRAPHIC CROSS-SECTION

Regional and project area cross sections are shown on Map King II-004 and King II-008, and contained in the NEDO Project Geologic Report excerpts (Appendix 4).

EXPLORATION CORE DRILLING

GCC proposes to drill up to 9 exploration holes, numbered CO-14-01 thru CO-14-09 as shown in Appendix 4 (4), within the existing permit area. Holes will be rotary-drilled, nominally 5 to 6 inches in diameter, to predetermined core points. The total depth of each borehole is anticipated to be about 320 feet. This predetermined core zone will be cored by PQ wireline methods. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4). Cuttings pits are excavated by a back-hoe and are approximately 6 feet wide by approximately 10 feet long. The pits are unlined and construction is the same for all drilling methods used. Locations of proposed holes and existing access roads are shown on the attached topography and drill hole locations map.

All 9 boreholes will utilize the already disturbed area of the existing roadway minimizing the foot print. A small cutting pit will be constructed to capture the cuttings for replacement into the completed borehole prior to plugging the hole. Drill holes will be sealed by filling with cement to an elevation above the coal seam encounter, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug will be covered with like material as in road base or topsoil depending which is present. Tracks will be raked or brushed to remove obvious signs of activity.

Drilling will be accomplished with a truck-mounted core rig accompanied by a water truck typically of 3,000 gallon capacity; a flat-bed service truck; and smaller pickup trucks as necessary for service and transportation to and from the drilling sites. Water will be provided to drill sites CO-14-01 through CO-14-09 from the mine supply at the main plant.

Some or all of the holes may be geophysically logged. The equipment necessary for such work is typically mounted in a full-size Suburban-type 4X4. Under this program no roads are proposed for construction and no blasting will be performed.

The moderately rugged terrain of the proposed exploration area consists primarily of the mesas drained by Hay Gulch. Elevations vary from approximately 7,200 feet to 7,800 feet on the mesa top. The major changes in elevation are predominantly along the edges of the flat top mesas with relatively little elevation change on the mesa tops. All 9 of the exploratory boreholes will be drilled on the mesa top. Topography is shown on attached map Topography & Drill Hole Locations (Appendix 4 (4) page 1).

The proposed exploration area is accessed by dirt roads and well defined jeep trails controlled and maintained by the Ute Mountain Ute Tribe and the State of Colorado. The weather can drastically affect mobility and as such severely limit exploration efforts, especially in winter months

The exploration borehole drilling is anticipated to be completed, weather permitting, by the end of December, 2014.

Water bearing strata is not expected to be encountered in the 9 proposed drill holes. Water has not been encountered in previously drilling projects in the area or in the active workings of the King II mine. Small amounts of water were encountered occasionally at the King I mine. These were believed to be small “perched” aquifers that dried up quickly once the coal had been removed below them. Unlike the King II mine, the King I mine strata dipped below the coal outcrop. King II outcrops on practically all sides of the surrounding mesas, effectively draining any perched aquifers to the outcrop.

The Umbarg 2 and 3 samples showed aluminum concentrations (4.9-5.6 ppm) at or slightly above the Munshower suspect levels. As with iron, no metal symptoms were apparent in the vegetation.

The Lazear samples contained 44-45 percent clay in their textural analysis. This percentage exceeds the suspect level for Montana and is borderline suspect for New Mexico (the only other state to specify a numerical suspect level for clay). For this reason, and the variability of depth and likelihood of encountering undesirable rock fragments, the applicant proposes to exclude the Lazear soils from salvage for reclamation.

Based on the results of soil sampling and field identification and mapping, the Umbarg soils appear suitable for use in reclamation. If disturbed, the Sanchez series soils can provide limited amounts of suitable soil for reclamation. Lazear series soils, given their concentration of clay and relative shallow and stony nature are not particularly suited for reclamation. The depth and extent of the Umbarg soils within the area for surface disturbance, make salvage of these soils in sufficient amounts for reclamation preferable.

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consists of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involves completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further define coal reserves for future mine planning. All of the proposed boreholes will be drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consists of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involves completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further define coal reserves for future mine planning. All of the proposed boreholes will be drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

Permanent reclamation of the site will entail grading, re-spreading topsoil, and seeding and planting perennial native species that will support wildlife species. The mining and reclamation will create a more diverse habitat than is currently present. With the planting of desirable native forage shrubs, additional strata and vegetation layers will be added to the site, creating improved cover, foraging, roosting, and nesting areas for wildlife. With control and/or removal of noxious species during the project, and the replacement of desirable graminoid, forb, shrub, and tree species, mining and reclamation will result in enhancement of wildlife habitat on site.

Threatened and Endangered Wildlife Species

The Colorado Natural Areas Program (CNAP) at Colorado State University was contacted to undertake a search of their database of natural heritage elements ("occurrences of significant natural communities and rare, threatened or endangered plants and animals") for the area within and 1.5 miles outside the permit area. The results of that search identified the wolverine (presumed extirpated in Colorado since 1979) and the Townsend's big-eared bat (a species of concern for the BLM and Forest Service). No candidate or federally listed species were identified within or adjacent to the permit area. The CNAP report can be found in Appendix 8.

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consists of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involves completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further define coal reserves for future mine planning. All of the proposed boreholes will be drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

TOPSOIL, EXPLORATION CORE DRILLING

Topsoil will be salvaged and replaced at all areas of new disturbance caused by exploration core drilling that may damage existing topsoil, such as “cuttings pits”, used to collect drill cuttings. Existing topsoil will be removed from these areas and stockpiled in a nearby area where it can be accessed without causing damage to the stockpile location. The topsoil stockpile will be “bermed”, tarped, or otherwise protected to help prevent loss of topsoil due to rain and wind events. Once the cuttings pits have been re-filled with sub-soil material, the topsoil will be returned to its original location, spread evenly, and re-seeded as detailed in Section 2.05.4 of this document.

Within the overall disturbance of 22.36 acres, approximately three (3) acres of pinyon-juniper woodland is proposed for disturbance. When revegetating within the area identified as the pinyon-juniper woodland community pre-mine, additional shrub species will be added to the reclamation seed mix as depicted on the seed mix table to facilitate achieving the designated post-mining land use of wildlife habitat.

In the area identified pre-mine as pinyon-juniper woodland, a woody plant density standard of 200 stems/acre is proposed. Achievement of woody plant density will have occurred, in the area identified pre-mine as pinyon-juniper woodland, when the sampled density is statistically equal to 200 stems/acre. This standard achieves an average woody density of one stem per 218 square feet (or one stem on fifteen foot centers).

Soil Testing Plan

Fertilization immediately after topsoil replacement or coincident with initial revegetation has been shown to promote weed and annual growth on reclaimed areas. For this reason, evaluation of major plant nutrient (N, P, K) concentrations will be undertaken during the second or third growing season after initial seeding. At that time, soil testing will be undertaken to evaluate the concentrations of the major and minor plant nutrients. If sampling reveals a deficiency, fertilizer will be applied at a rate based on recommendations of the NRCS or soil conservation agent. Application can be through aerial means or dry application between the rows of seedlings.

DEBRIS DISPOSAL

Non-coal non-toxic debris and trash will be used as backfill in the portals. Salvageable steel, concrete and other construction materials will be removed from the mine site to a salvage yard or regulated landfill, if not needed for portal backfill. Any remaining liquid waste will be removed to the appropriate regulated disposal facility.

Coal stockpiles will be sold. Any coal residue will be collected with a front-end loader, motor grader, or bulldozer. The residue would be shale and sandstone rock mixed with small amounts of coal. This residue would be ideal for the use of backfilling the portals.

SEALING MINE OPENINGS

In accordance with the requirements of our mine plan, 211.41 (c) 30 CFR, the portals (mine openings or entrances into the King I Mine) will be backfilled and sealed against inflows of surface water and access by animals or people. Coal stockpile residue on the permit area will be scraped from the surface and used for backfill inside the portals. This will limit the presence of any potential acid-forming or toxic materials in backfilled and re-graded area and minimize potential contamination of topsoil and revegetation. The four portals are each approximately 10 feet wide by 8 feet high. To fill them to a depth of 25 feet will require about 296 cubic yards of material plus a small amount to account for sloughing at the inby end. Total portal backfill will require approximately 400 cubic yards of material. After back-filling to a depth of 25 feet from the portal, the mouth of the portals will be caved to completely seal them. The area will then be backfilled, graded and smoothed over to closely approximate the original contour of the hill into which the portals have been opened.

SEALING EXPLORATION DRILL HOLES

Any coal exploration drill holes, vent holes, and groundwater monitoring wells (not transferred to the landowner) in the permit area will be backfilled, sealed at water bearing zones, and capped with concrete plugs to meet reclamation requirements.

GCC proposes to up to drill 9 exploration holes (TR-22), numbered CO-14-01 thru CO-14-09 as shown on Appendix 4 (4) page 1, within the existing permit area. Holes will be rotary-drilled, nominally 5 to 6 inches in diameter, to predetermined core points. The total depth of each borehole is anticipated to be about 320 feet. This predetermined core zone will be cored by PQ wireline methods. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4). Locations of proposed holes and existing access roads are shown on the attached topography and drill hole locations map.

All 9 boreholes will utilize the already disturbed area of the existing roadway minimizing the foot print. A cutting pit will be constructed to capture the cuttings for replacement into the completed borehole prior to plugging the hole. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4). Cuttings pits are excavated by a back-hoe and are approximately 6 feet wide by approximately 10 feet long. The pits are unlined and construction is the same for all drilling methods used. Drill holes will be sealed by filling with cement to an elevation above the coal seam encounter and any water-bearing intervals encountered, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug will be covered with like material as in road base or topsoil depending which is present. Tracks will be raked or brushed to remove obvious signs of activity.

The 9 drill sites will be reseeded (unless disturbance is confined to areas previously disturbed such as preexisting roads, drill pads, etc.) once topsoil has been replaced to pre-disturbance depth using the seed mixes for Rangeland and, if applicable, Pinyon-Juniper as listed in Section 2.05.4, page 12 of this document. Broadcast seeding will be employed due to the very limited size of the disturbed areas. Whenever broadcast methods are employed it is critical to ensure that the seed is subsequently covered through raking, harrowing, or mulching. Seeding rates for broadcast seeding are twice those employed for drill seeding. In addition, applicable sections of the part of this document entitled "REVEGETATION" beginning in Section 2.05.4, page 9 will be adhered to.

COMPLIANCE WITH THE CLEAN AIR ACT AND CLEAN WATER ACT

GCC Energy, LLC has obtained permits for air emissions and point source discharges from the Colorado Department of Public Health and Environment, delegated agency for enforcement of the Clean Air act and Clean Water Act. There are no waters of the United States requiring a permit from the U.S. Army Corps of Engineers. There are no federally listed or candidate species that require a take permit, habitat conservation plan, or mitigation plan from the U.S. Fish and Wildlife Service.

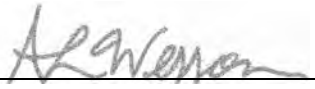
Appendix 3 (3)

History Colorado- Office of Archaeology and Historic Preservation
COLORADO CULTURAL RESOURCE SURVEY
LIMITED-RESULTS CULTURAL RESOURCE SURVEY FORM
(Page 1 of 3)

OAHP 1420
Revised 9/98

This form (#1420) is for small scale limited results projects - block surveys less than 160 acres with linear surveys under four miles. Additionally, there should be no sites and a maximum of four Isolated Finds. This form must be typed.

I. IDENTIFICATION

1. Report Title (include County): A Class III Cultural Resources Inventory for King II Mine 2014 Exploration Core Drilling, La Plata County, Colorado
2. Date of Field Work: 01/29/2014
3. Form completed by: Kathy Mowrer Date: 02/19/2014
4. Survey Organization/Agency: SWCA Environmental Consultants (SWCA)
   Principal Investigator: Alex Wesson
   Principal Investigator's Signature: 
   Other Crew: Kathy Mowrer
   Address: 130 Rock Point Dr., Suite A, Durango, CO 81301
5. Lead Agency / Land Owner: Colorado State Land Board
   Contact: Tobin Follenweider
   Address: 1127 Sherman Street, #300, Denver, Colorado 80203
6. Client: GCC Energy LLC
7. Permit Type and Number: CO State 2013-57
8. Report / Contract Number: SWCA Report No. 14-56
9. Comments: The proposed project area is on state land.

II. DESCRIPTION OF UNDERTAKING / PROJECT

10. Type of Undertaking: SWCA was contracted by GCC Energy, LLC, to conduct an intensive pedestrian survey for nine proposed exploration core drilling sites.

11. Size of Undertaking (acres): 2.07 Size of Project (if different)

12. Nature of the Anticipated Disturbance: The exploration drilling program will be implemented using a truck-mounted drill rig utilizing existing graded roads to access the drill hole locations. No grading or other ground-disturbing activity is proposed for the existing access roads.

13. Comments: GCC will require an area of approximately 100 feet X 100 feet (10,000 square feet or 0.23 acre) at each proposed drill hole location.

III. PROJECT LOCATION

Please attach a photocopy of USGS Quad. clearly showing the project location. The Quad. should be clearly labeled with the Prime Meridian, Township, Range, Section(s), Quad. map name, size, and date. Please do not reduce or enlarge the photocopy.

14. Description: The proposed project is in Section 36, Township 35 North, and Range 12 West, west of the town of Durango in La Plata County, Colorado.

15. Legal Location: Quad. Map: Hesperus 37108-C1 Date(s): 1968
Principal Meridian: 6th __ NM X Ute __

NOTE: Only generalized subdivision ("quarter quarters") within each section is needed

Township: 35N Range: 12W Sec.: 36 1/4s NW,
Township: 35N Range: 12W Sec.: 36 1/4s NE,
Township: 35N Range: 12W Sec.: 36 1/4s SW

If section(s) is irregular, explain alignment method: _____

16. Total number of acres surveyed: 9

17. Comments: Although the current project is not located on Bureau of Land Management (BLM) land, SWCA surveyed a 1-square-acre area at each proposed drill hole location following BLM guidelines for coal drilling projects (BLM Colorado Handbook of Guidelines and Procedures for Inventory, Evacuation and Mitigation of Cultural Resources). This allows for an approximately 100-foot cultural resource survey buffer around the proposed 0.23-acre area of disturbance at each location.

IV. ENVIRONMENT

18. General Topographic Setting: The project area is characterized by forested, south-facing ridges surrounded by steep canyons and mountainous terrain. Most of the proposed drill hole locations sit on ridge tops along graded roads.

Current Land Use: Although the project area is within the State Permit Boundary for the King II Mine, the area does not appear to have been used recently.

19. Flora: Natural vegetation varies slightly at each of the proposed drill hole locations but is generally characterized by piñon and juniper trees, with a few ponderosa pine and sagebrush, cottonwood, Gambel oak, rabbitbrush, yucca, and various grasses and forbs.

20. Soils/Geology: The primary types of soil in the project area are approximately 50 percent Zyme soils, 20 percent rock outcrops, 15 percent Ustic Torriorthent soils, and 15 percent other minor soil components (Natural Resources Conservation Service 2012). The soil observed in the field was a loose to moderately compacted, brownish orange sandy clay loam.

21. Ground Visibility: Surface visibility was good, ranging between 80 and 100 percent.

22. Comments: Small patches of snow were present within the survey area at most of the nine drill holes.

V. LITERATURE REVIEW

23. Location of File Search: Online Compass database Date: January 30, 2014

24. Previous Survey Activity - In the project area: Two previous surveys have been conducted within Section 36. Survey LP.CO.R4 consisted of a Cultural Resource Inventory of East Alkali Mine, Hay Gulch Area, La Plata County, Colorado, conducted in 2005. Survey LP.NP.R1 was conducted for Archaeological Resources for the Animas La Plata Project for the 1975 Season.

III. LITERATURE REVIEW (continued)

25. Known Cultural Resources - In the project area: None

    In the general region (summarize): Two sites, one isolated find (IF), and one isolated feature, were previously recorded within Section 36 (outside of the current project area). The sites consist of 5LP.1418, the Tipotsch Mine recorded in 1985, and 5LP.197, a possible multicomponent site recorded in 1976. The Tipotsch Mine was determined not eligible for the National Register of Historical Places (NRHP) and no determination of eligibility is listed for 5LP.197, the multicomponent site. The isolated feature, 5LP.7831, consists of a historic trash dump recorded in 1985. The site is considered not eligible for the NRHP. The isolated find, 5LP.7830, consists of two prehistoric stone tools and is also considered not eligible for the NRHP.

26. Expected Results: Results were expected to be limited, based on the file search.

VI. STATEMENT OF OBJECTIVES

27. To locate, record, and evaluate any prehistoric and historic cultural resources in the proposed project area.

VII. FIELD METHODS

28. Definitions: Site A discrete locus of patterned human activity greater than 50 years of age and consisting of 10 or more artifacts, with or without features.

    IF One artifact, or very few artifacts, that do not represent patterned behavior.

29. Describe Survey Method: This investigation was a Class III, 100 percent, pedestrian survey of the project area. Two SWCA archaeologists completed the pedestrian survey by walking parallel transects spaced approximately 15 m (50 feet) apart. The total surveyed area was 9 acres, which encompassed the nine proposed drill hole locations. Mapping was conducted with a handheld Trimble global positioning system (GPS) unit.

VIII. RESULTS

30. List IFs if applicable. Indicate IF locations on the map completed for Part III.

    A. Smithsonian Number: 5LP10542 Description: Isolated Find

    One IF was identified near proposed drill hole CO-14-4. The IF consists of two fragments of aqua bottle glass. The fragments measured 3.5 × 2.5 × 0.5 cm and 5 × 2 × 0.5 cm. The largest appears to be a bottle base with maker's mark "B57." See map below for location.

31. Using your professional knowledge of the region, why are there none or very limited cultural remains in the project area? The overall small area of the survey and the rugged terrain most likely account for the lack of cultural remains observed. Is there subsurface potential? Buried cultural remains are unlikely in this erosional environment.

Figure 1. Overview of proposed drill hole CO-14-8, view to the south.

Figure 2. Overview of proposed drill hole CO-14-3, view to the east.

Figure 3. Overview of project vegetation northeast of CO-14-9, La Plata Mountains in the background, view to the north.

Figure 4. Detail of aqua bottle glass bottle base, 5LP10542.

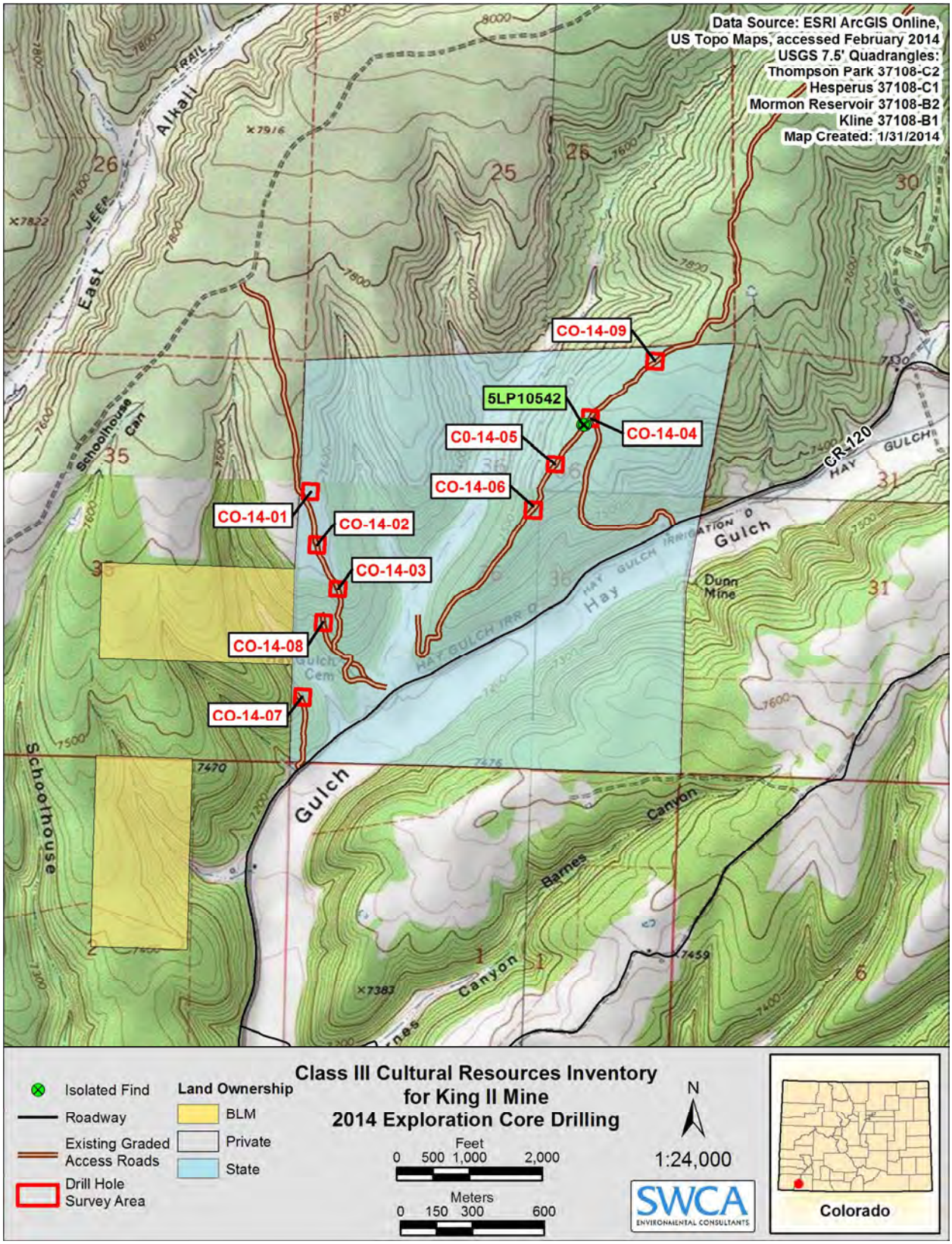
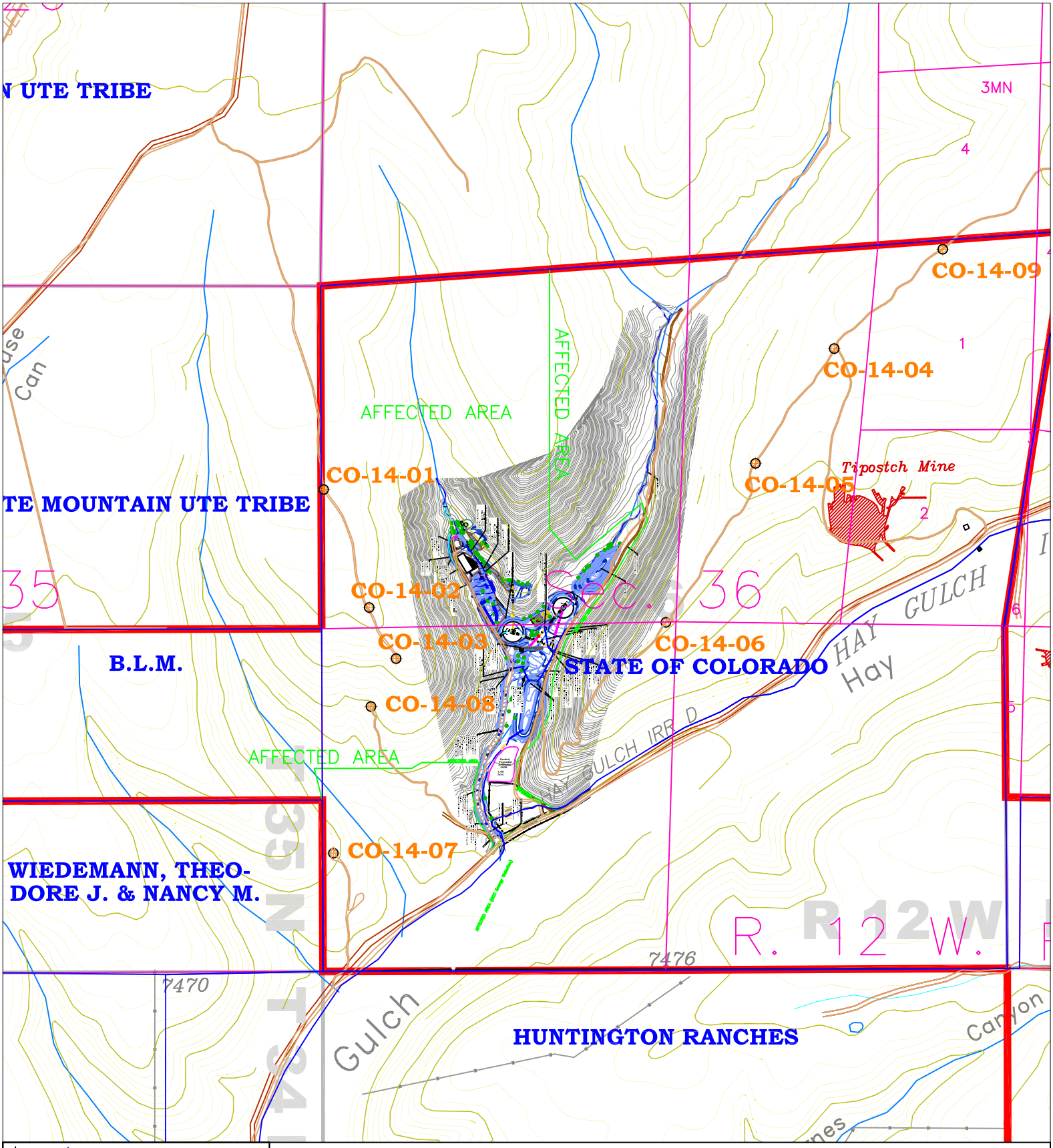


Figure 5. Project area.

Appendix 4 (4)



GCC Energy
6473 County Road 120
Hesperus, CO 81326
Colorado Mining Permit C-1981-035
MSHA ID# 05-04864

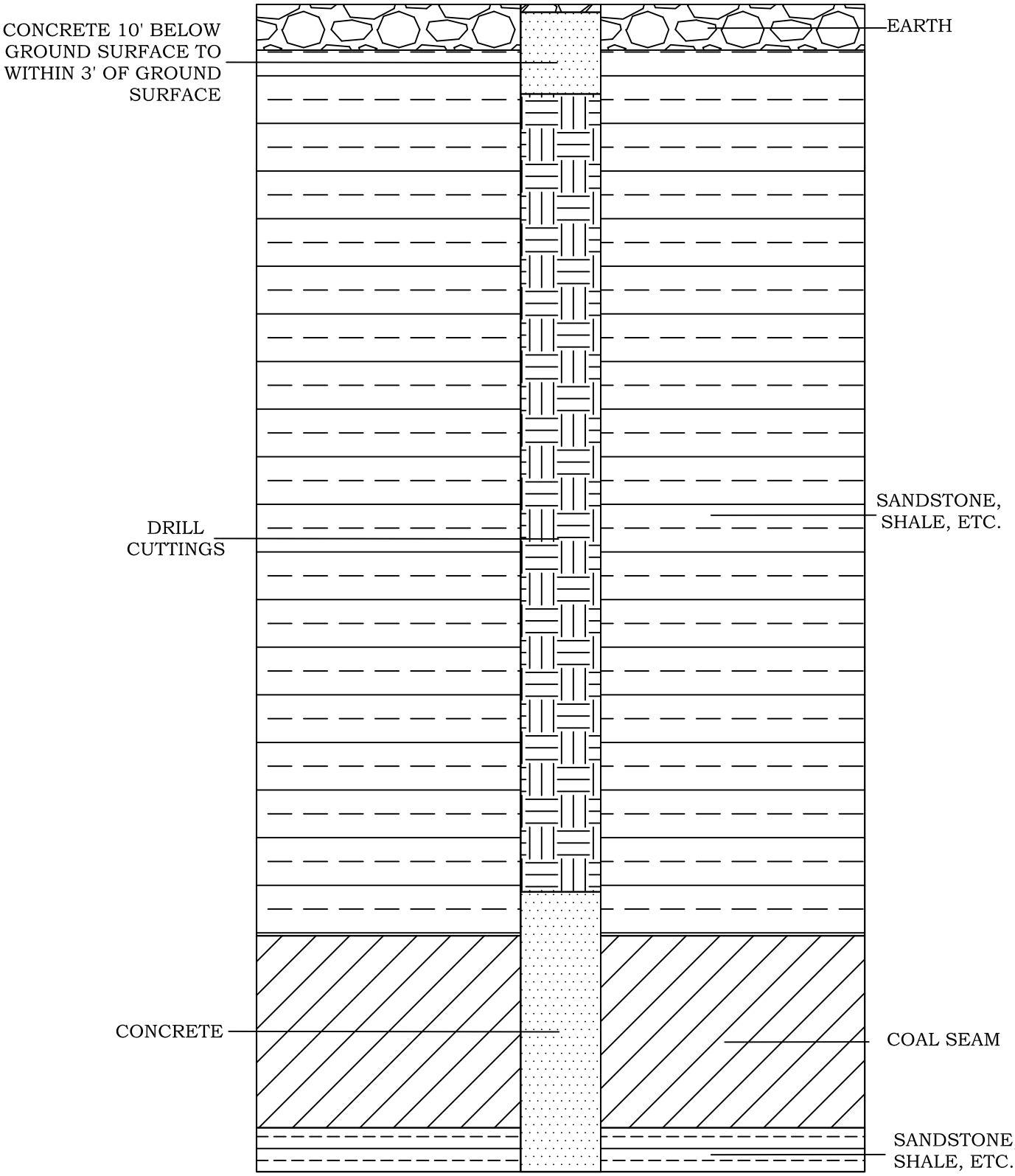
King II Mine
Appendix 4(4) Page 1
Map TR-22
Location & Topography Map

Date: May 7, 2014 | Scale: 1"=1,000' | Drawn By: Tom Bird

Technical Revision TR-22
Exploration Core Drilling on
Colorado Coal Lease CO-3388

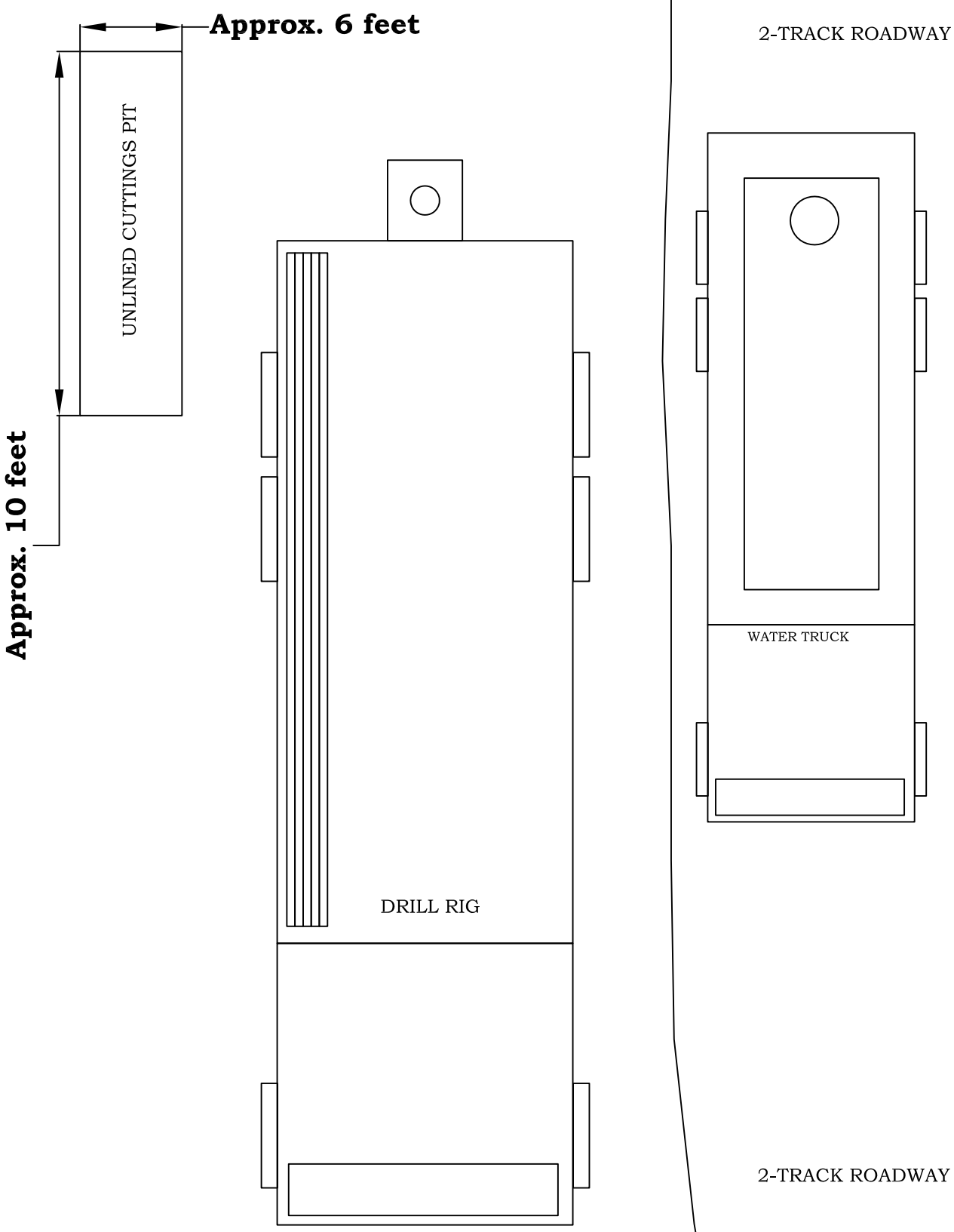
Map Legend
- Proposed Drill Holes
- State Permit Boundary
- Topography
- Roadways
- Surface Ownership

Figure 1
Exploration Drill Hole
After Abandonment



NOTE: CONCRETE WILL BE INSTALLED TO SEAL OFF ANY WATER BEARING STRATA ENCOUNTERED

Figure 2
Typical Drill Site



Appendix 8 (5)

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

Durango Office
130 Rock Point Drive, Suite A
Durango, Colorado 81301
Tel 970.385.8566 Fax 970.385.1938
www.swca.com

Technical Memorandum

To: Mr. Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, Colorado 81326

From: Eilene Lyon, SWCA Environmental Consultants

Date: April 11, 2014

Re: **Natural Resources Survey of Nine Proposed Drill Holes on State Land for the King II Mine, La Plata County, Colorado / SWCA Project No. 28487**

INTRODUCTION

GCC Energy, LLC (GCC), is proposing to conduct exploration core drilling for coal at nine locations on state land managed by the Colorado State Land Trust within the State Permit Boundary for the existing King II Mine. The overall project area is located approximately 9 km (5.5 miles) southwest of Hesperus, Colorado, in La Plata County (Figure 1). All of the proposed drill holes would be accessed via existing two-track roads. No ground-disturbing activity is planned or required for use of these existing roads. The survey area around each drill hole is 91 × 91 m (300 × 300 feet [2.07 acres]) centered on each drill hole, with the exception of the CO-14-01 and CO-14-07 holes, adjacent to land owned by the Ute Mountain Ute Tribe At CO-14-01 and CO-14-07, the survey area was thus shifted east to keep it within state land boundaries. The surveys are required by the Colorado Department of Reclamation, Mining, and Safety (CODRMS) in order for GCC to obtain approval for the exploration program. The drill holes are located in the U.S. Geological Survey Durango West, Colorado 7.5-minute quadrangle map.

GCC selected SWCA Environmental Consultants (SWCA) to conduct natural resource surveys of the drill hole locations to demonstrate compliance with the requirements of the CODRMS. The objectives of this technical memorandum are to 1) describe vegetation communities in the project areas, 2) evaluate habitat suitability for both federal and state listed special status species, and 3) conduct an assessment for potential jurisdictional water of the U.S. in the proposed project areas to determine if Clean Water Act Section 404/401 permit compliance is necessary.

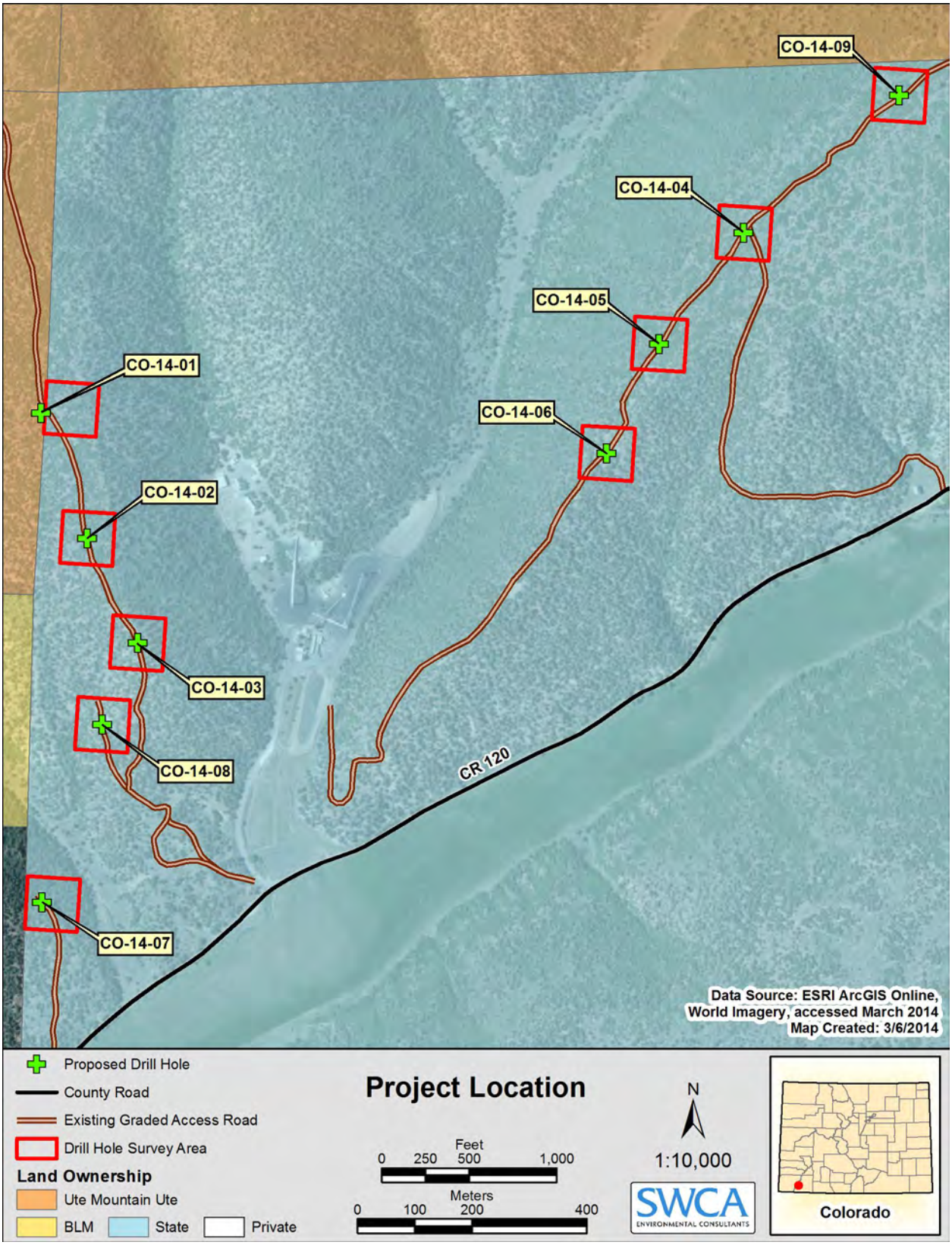


Figure 1. Project areas and vicinity.

METHODS

Prior to the field surveys, U.S. Geological Survey topographic maps were reviewed to determine the location, elevation, soil types, and potential habitat types within the project areas. Wetland and drainage data were evaluated using National Hydrography Dataset maps and geographic information system (GIS) data. SWCA biologist Eilene Lyon conducted the surveys on February 26 and 27, 2014. Coordinates provided by GCC were used to locate the proposed drill hole sites. The field surveys consisted of a pedestrian survey of the project areas to assess general vegetation and habitat as they relate to Colorado special status species. All plant species were identified, with the exception of some dormant, dead, or newly emergent plants. A list of wildlife species and sign observed was compiled.

U.S. Fish and Wildlife Service (USFWS) and Colorado Parks and Wildlife (CPW) lists of threatened, endangered, proposed, and candidate species, as well as species of special concern, for La Plata County were obtained for review prior to the site visit.

RESULTS

General Characteristics

The average elevation of the nine project areas is 2,311 m (7,583 feet) above mean sea level, ranging from 2,228 to 2,368 m (7,310–7,768 feet). According to the Western Regional Climate Center[1] for the period of 1996 to 2008, normal annual precipitation for the general project area averaged 32.08 cm (12.63 inches), based on information for Durango, Colorado. The precipitation falls close to evenly throughout the year, with the exception of the driest months of May and June. Average annual snowfall was 178.6 cm (70.3 inches) based on data from 1948 to 1991. The average annual temperature for the area is 8.17°C (46.7°F), with an average annual maximum temperature of 17.0°C (62.6°F) and an average annual minimum temperature of -0.67°C (30.8°F).[2] The weather during the surveys was sunny and cool with a slight breeze on the first day, and overcast with nearby thunderstorms on the second day. Noise from mining activity was low to moderately high, depending on the slope of each site. The noise level was highest at CO-14-03. Photographs of the project areas are at the end of this technical memorandum.

Soils

Soils in five of the project areas are Pulpit loam, which is found on mesas with slopes ranging from 3% to 12%. Pulpit loam is a well-drained sandy to clay or silty clay loam derived from loess. It has a typical profile of loam to clay loam and silty clay loam to fine sandy loam, 0 to 88.9 cm (0–35 inches). Soils in four of the project areas are Lazear-Rock outcrop complex, which is found on side slopes of mesas and land breaks with 12% to 65% slopes. This complex is a well-drained, very stony to clay loam residuum or slope alluvium derived from sandstone and shale. The profile of Lazear-Rock outcrop complex is very stony loam to stony loam, loam and clay loam, 0 to 38.1 cm (0–15 inches). One other soil type is present at one project site: Archuleta-Sanchez complex. This complex is found on mountainsides, hillsides, and ridges with 12% to 65% slopes. This complex is a well-drained loam to gravelly clay loam with interbedded sandstone and shale. The profile of Archuleta-Sanchez complex is loam, clay loam, loam to gravelly clay loam, 0 to 30.48 cm (0–12 inches).[3] Table 1 lists the soils at each of the well pad sites. Some cryptobiotic soils were found in the CO-14-02 and CO-14-09 project areas.

---

[1] Western Regional Climate Center. 2014. Colorado Climate Summaries. Available at: http://www.wrcc.dri.edu/COMPARATIVE.html and http://www.wrcc.dri.edu/summary/lcdus08.html. Accessed March 2014.

[2] Ibid.

[3] Natural Resources Conservation Service. 2014. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed February 2014.

Table 1. Soil Types at Nine Drill Hole Sites

Drill Site	Soil Type
CO-14-01	Pulpit loam, 3%–12% slopes
CO-14-02	Pulpit loam, 3%–12% percent slopes
CO-14-03	Lazear-Rock outcrop complex, 12%–65% percent slopes
CO-14-04	Pulpit loam, 3%–12% percent slopes
CO-14-05	Pulpit loam, 3%–12% percent slopes
CO-14-06	Archuleta-Sanchez complex, 12%–65% slopes (west side); Lazear-Rock outcrop complex, 12%–65% slopes (east side)
CO-14-07	Lazear-Rock outcrop complex, 12%–65%slopes
CO-14-08	Lazear-Rock outcrop complex, 12%–65%slopes
CO-14-09	Pulpit loam, 3%–12%percent slopes

Source: Natural Resources Conservation Service.[4]

Vegetation

The project areas are located in the Colorado Plateau pinyon-juniper woodlands landcover type at the lower elevations and transition into the Rocky Mountain Gambel oak–mixed montane shrubland at the higher elevations. The landform is eroded sandstone/shale mesas and foothills. The dominant species in the pinyon-juniper woodland are twoneedle pinyon (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*) with co-dominant Rocky Mountain juniper (*J. scopulorum*) at higher elevations. The understory ranges from absent to shrubs or graminoids.[5] The understory contained predominantly Gambel oak (*Quercus gambelii*), big sagebrush (*Artemisia tridentata*), mountain mahogany (*Cercocarpus montanus*), banana yucca (*Yucca baccata*), Indian ricegrass (*Achnatherum hymenoides*), and toadflax penstemon (*Penstemon linarioides*). Vegetation cover in this plant community ranges from 50% to 85%.

The dominant species in the Rocky Mountain Gambel oak–mixed montane shrubland are Gambel oak, either alone or co-dominant, with a variety of mesic montane shrubs such as serviceberry (*Amelanchier* sp.), snowberry (*Symphoricarpos* sp.), and bitterbrush (*Purshia tridentata*).[6] Other dominant species include scattered twoneedle pinyon and juniper, along with Utah serviceberry (*Amelanchier utahensis*), roundleaf snowberry (*Symphoricarpos rotundifolius*), sagebrush, mountain mahogany, and cliff fendlerbush (*Fendlera rupicola*). Herbaceous plants include blue grama (*Bouteloua gracilis*), toadflax penstemon, Ives' fournerved daisy (*Tetraneuris ivesiana*), and sulphur-flower buckwheat (*Eriogonum umbellatum*). Vegetation cover in this plant community ranged from 70% to 85%. Smooth brome (*Bromus inermis*) was found in some of the previously disturbed areas, particularly the clearing around CO-14-01, probably as a result of reseeding efforts. Table 2 lists the plant species identified in the project areas. Figure 2 shows the map of vegetation communities in the project areas.

Soil surface in the general project area is largely undisturbed aside from the two-track roads and old sections of barbed wire fencing. During the survey, there were a few weedy species found in or near these disturbances: pale madwort (*Alyssum alyssoides*), horehound (*Marrubium vulgare*), common mullein (*Verbascum thapsus*), and redstem stork's bill (*Erodium cicutarium*). None of these were found over extensive areas; however, redstem stork's bill is a Class B noxious weed and common mullein is a Class C noxious weed in the state of Colorado.[7] List B species have populations of varying densities throughout the state and control measures are determined on a local basis. List C species are widespread and may be

[4] Ibid.

[5] NatureServe. 2003. Landcover Descriptions for the Southwest Regional GAP Analysis Project. Available at: http://www.slco.org/watershed/pdfWLibr/landcoverSWRegionalGapAnalProj2004.pdf.

[6] Ibid.

[7] U.S. Department of Agriculture. 2014. Colorado State-listed Noxious Weeds. Available at: http://plants.usda.gov/java/noxious?rptType=State&statefips=08. Accessed March 2014.

subject to control if they threaten agricultural land.[8] Additional disturbance could expand the presence of these two species. There was no evidence of recent grazing by domestic livestock.

Table 2. Plants Observed at the GCC Proposed Drill Hole Areas in La Plata County, Colorado, on February 26–27, 2014

Common Name	Scientific Name
Banana yucca	*Yucca baccata*
Big sagebrush	*Artemisia tridentata*
Bird's-beak	*Cordylanthus* sp.
Blue grama	*Bouteloua gracilis*
Broom snakeweed	*Gutierrezia sarothrae*
Cliff fendlerbush	*Fendlera rupicola*
False goldenaster	*Heterotheca* sp.
Fineleaf hymenopappus	*Hymenopappus filifolius*
Gambel oak	*Quercus gambelii*
Horehound	*Marrubium vulgare*
Indian ricegrass	*Achnatherum hymenoides*
Ive's fournerved daisy	*Tetraneuris ivesiana*
Milkvetch	*Astragalus* sp.
Mountain mahogany	*Cercocarpus montanus*
Mullein	*Verbascum thapsus*
Oregon grape	*Berberis repens*
Pale madwort	*Alyssum allyssoides*
Pinyon pine	*Pinus edulis*
Prairie sagewort	*Artemisia frigida*
Redroot buckwheat	*Eriogonum racemosum*
Redstem stork's bill	*Erodium cicutarium*
Rock goldenrod	*Petradoria pumila*
Rocky Mountain juniper	*Juniperus scopulorum*
Rocky Mountain penstemon	*Penstemon strictus*
Rubber rabbitbrush	*Ericameria nauseosa*
Smooth brome	*Bromus inermis*
Snowberry	*Symphoricarpos rotundifolius*
Spanish bayonet	*Yucca harrimaniae*
Springparsley	*Cymopterus* sp.
Sulphur-flower buckwheat	*Eriogonum umbellatum*
Tansy mustard	*Descurainia pinnata*
Toadflax penstemon	*Penstemon linarioides*
Tulip prickly pear	*Opuntia phaeacantha*
Utah juniper	*Juniperus osteosperma*
Utah serviceberry	*Amelanchier utahensis*
Whipple's cholla	*Cylindropuntia whipplei*
Wild crab apple	*Peraphyllum ramossisimum*

[8] Colorado Weed Management Association. 2014. Noxious Weed Information. Available at: http://www.cwma.org/noxweeds.html#list. Accessed March 2014.

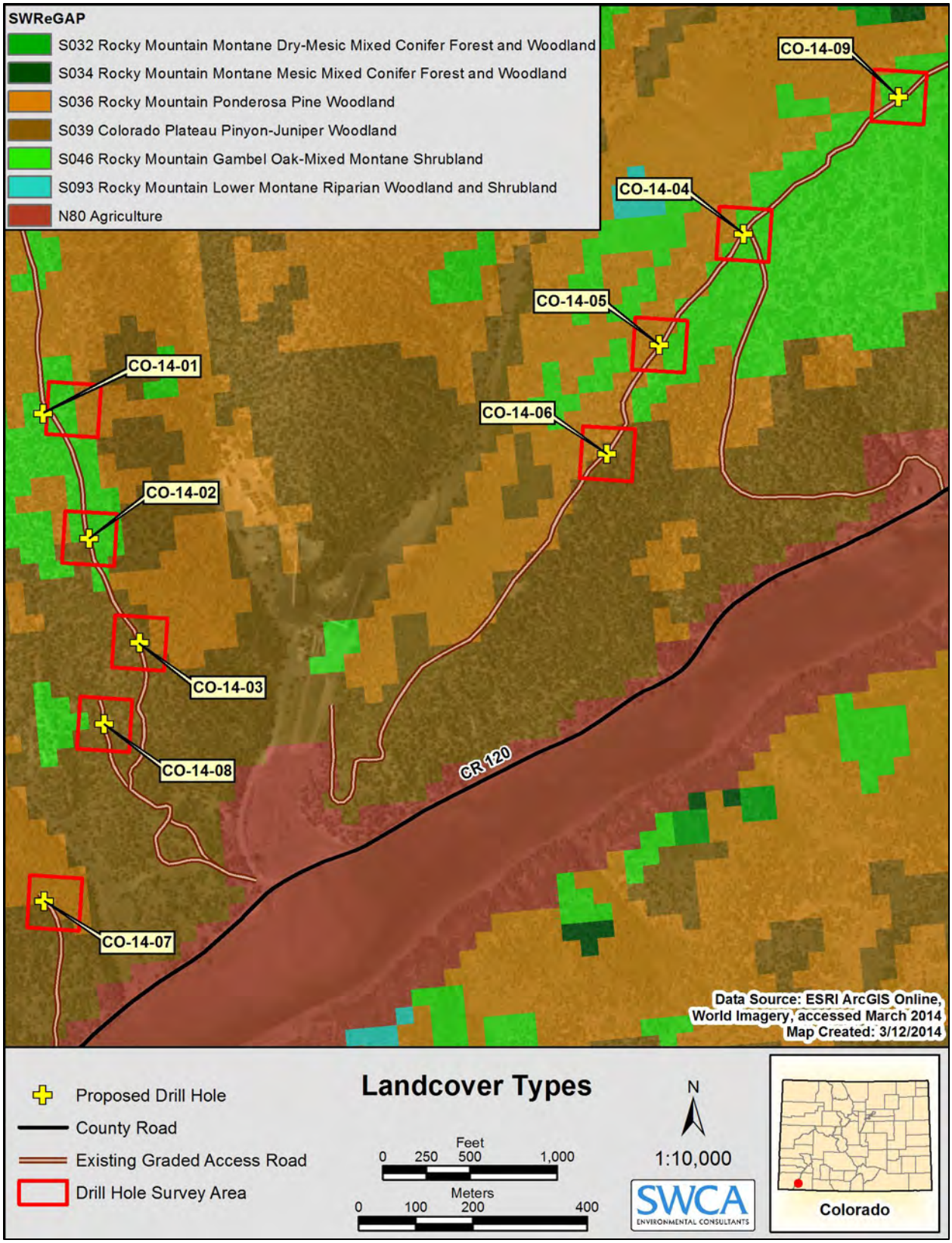


Figure 2. Southwest Regional Gap Analysis Project landcover types for the project areas.

Wetlands

No wetlands, surface waters, or potential jurisdictional waters of the U.S. were identified in the project areas.

General Wildlife

Visual observations of wildlife species at the project areas were minimal. Most observations consisted of scat and tracks. Table 3 lists the wildlife observations made during the surveys.

Table 3. Wildlife Observations at the GCC Proposed Drill Hole Sites in La Plata County, Colorado, on February 26–27, 2014

Common Name	Scientific Name	Sign
Birds		
American robin	*Turdus migratorius*	Audible
Bushtit	*Psaltriparus minimus*	Visual, audible
Mountain chickadee	*Poecile gambeli*	Visual, audible
Northern flicker	*Colaptes auratus*	Audible
White-breasted nuthatch	*Sitta carolinensis*	Audible
Mammals		
Black bear	*Ursus americanus*	Scat
Bobcat	*Lynx rufus*	Scat
Cottontail rabbit	*Sylvilagus* sp.	Scat
Coyote	*Canis latrans*	Scat
Elk	*Cervus canadensis*	Scat, tracks
Mule deer	*Odocoileus hemionus*	Scat, tracks
Raccoon	*Procyon lotor*	Scat
Woodrat	*Neotoma* sp.	Scat
Invertebrates		
Spider	Class Arachnida	Visual

Special Status Species

Of the 41 species listed for the state of Colorado by the USFWS, only eight have the potential to occur in La Plata County. These species are Schmoll's milkvetch (*Astragalus schmolliae*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), New Mexico meadow jumping mouse (*Zapus hudonius luteus*), and North American wolverine (*Gulo gulo luscus*). Schmoll's milkvetch is strictly endemic to Chapin Mesa in Mesa Verde National Park and does not occur in the project areas.[9] The project areas lack suitable habitat features for the other seven listed species. The USFWS list of threatened, endangered, proposed, and candidate species for La Plata County is provided in Appendix A.

Of the 67 special status species listed by the State of Colorado, only six have the potential to occur in La Plata County: burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), and Botta's pocket gopher (*Thomomys bottae rubidus*). The project areas lack suitable habitat elements for the breeding of any of these listed raptors. No potential hibernacula for Townsend's big-eared bat were located in the project areas. No gopher mounds were observed within the project areas. Table 4 lists the special status species for the State of Colorado.

In 2007, the CPW mapped ranges and migration corridors for species of concern and economic value. These maps indicated that the project area is 1) winter range for bald eagle, 2) overall range for black bear

[9] Heil, K.D., S.L. O'Kane, Jr., L.M. Reeves, and A. Clifford. 2013. *Flora of the Four Corners Region – Vascular Plants of the San Juan River Drainage*. St. Louis: Missouri Botanical Garden Press.

(*Ursus americanus*), 3) winter range and resident population area for elk (*Cervus canadensis*), 4) overall range for mountain lion (*Puma concolor*), 5) summer and winter range for mule deer (*Odocoileus hemionus*), and 6) overall range for wild turkey (*Meleagris gallopavo*). The CPW did not observe or map any migration corridors for these species within the project boundary. No peregrine falcon activity was located in the project vicinity at the time the maps were created.[10]

Table 4. Federal and State Special Status Species for Colorado

Common Name	Scientific Name	Status	
		Federal	Colorado
Plants			
Parachute beardtongue	*Penstemon debilis*	T	--
Penland beardtongue	*Penstemon penlandii*	E	--
Dudley Bluffs bladderpod	*Lesquerella congesta*	T	--
Colorado butterfly plant	*Gaura neomexicana* var. *coloradensis*	T	--
Colorado hookless cactus	*Sclerocactus glaucus*	T	--
Knowlton's cactus	*Pediocactus knowltonii*	E	--
Mesa Verde cactus	*Sclerocactus mesae-verdae*	T	--
Ute ladies'-tresses	*Spiranthes diluvialis*	T	--
Mancos milkvetch	*Astragalus humillimus*	E	--
Osterhout milkvetch	*Astragalus osterhoutii*	E	--
Penland alpine fen mustard	*Eutrema penlandii*	T	--
DeBeque phacelia	*Phacelia submutica*	T	--
North Park phacelia	*Phacelia formosula*	E	--
Pagosa skyrocket	*Ipomopsis polyantha*	E	--
Dudley Bluffs twinpod	*Physaria obcordata*	T	--
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	E	--
Sleeping Ute milkvetch	*Astragalus tortipes*	C	--
White River beardtongue	*Penstemon scariosus* var. *albifluvis*	C	--
Schmoll's milkvetch	*Astragalus schmolliae*	C	--
Invertebrates			
Uncompahgre fritillary butterfly	*Boloria acrocnema*	E	—
Pawnee montane skipper	*Hesperia leonardus Montana*	T	--
Fish			
Bonytail chub	*Gila elegans*	E	E
Humpback chub	*Gila cypha*	E	T
Pikeminnow	*Ptychocheilus lucius*	E	T
Razorback sucker	*Xyrauchen texanus*	E	E
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	E	T
Arkansas darter	*Ethostoma cragini*	C	T
Mountain sucker	*Catostomus platyrhynchus*	--	SC
Rio Grande sucker	*Catostomus plebeius*	--	E
Lake chub	*Couesius plumbeus*	--	E
Iowa darter	*Etheostoma exile*	--	SC
Orangethroat darter	*Etheostoma spectabile*	--	SC
Rio Grande chub	*Gila pandora*	--	SC
Roundtail chub	*Gila robusta*	--	SC
Brassy minnow	*Hybognathus hankinsoni*	--	T
Plains minnow	*Hybognathus placitus*	--	E
Common shiner	*Notropis cornutus*	--	T
Stonecat	*Noturus flavus*	--	SC
Colorado River cutthroat trout	*Oncorhynchus clarki pleuriticus*	--	SC
Rio Grande cutthroat trout	*Oncorhynchus clarki virginalis*	--	SC
Suckermouth minnow	*Phenacobius mirabilis*	--	E
Northern redbelly dace	*Phoxinus eos*	--	E
Southern redbelly dace	*Phoxinus erythrogaster*	--	E
Flathead chub	*Playgobio gracilis*	--	SC
Birds			
Whooping crane	*Grus americana*	E	E
Mexican spotted owl	*Strix occidentalis lucida*	T	T
Southwestern willow flycatcher	*Empidonax traillii extimus*	E	E

[10] Colorado Parks and Wildlife. 2007. District 326 Wildlife GIS Maps.

Common Name	Scientific Name	Status	
		Federal	Colorado
Least tern	*Sterna antillarum*	E	E
Piping plover	*Charadrius melodus*	T	T
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	PT	SC
Lesser prairie-chicken	*Tympanuchus pallidicinctus*	PT	T
Burrowing owl	*Athene cunicularia*	—	T
Ferruginous hawk	*Buteo regalis*	—	SC
Gunnison sage grouse	*Centrocercus minimus*	—	SC
Sage grouse	*Centrocercus urophasianus*	—	SC
Western snowy plover	*Charadrius alexandrinus nivosus*	—	SC
Mountain plover	*Charadrius montanus*	—	SC
American peregrine falcon	*Falco peregrinus anatum*	—	SC
Greater sandhill crane	*Grus canadensis tabida*	—	SC
Bald eagle	*Haliaeetus leucocephalus*	—	T
Long-billed curlew	*Numenius americanus*	--	SC
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*	--	SC
Plains sharp-tailed grouse	*Tympanuchus phasianellus jamesi*	--	SC
Amphibians			
Northern cricket frog	*Acris blanchardi*	--	SC
Boreal toad	*Anaxyrus boreas*	—	E
Western narrow-mouthed frog	*Gastrophryne olivacea*	—	SC
Plains leopard frog	*Lithobates blairi*	--	SC
Northern leopard frog	*Lithobates pipiens*	--	SC
Wood frog	*Lithobates sylvatica*	--	SC
Couch's spadefoot	*Scaphiopus couchii*	--	SC
Reptiles			
Colorado checkered whiptail	*Aspidoscelis neotesselata*	--	SC
Midget faded rattlesnake	*Crotalus oreganus concolor*	--	SC
Long-nosed leopard lizard	*Gambelia wislizenii*	--	SC
Yellow mud turtle	*Kinosternon flavescens*	--	SC
Common kingsnake	*Lampropeltis getula*	--	SC
New Mexico threadsnake	*Leptotyphlops dissectus*	--	SC
Texas horned lizard	*Phrynosoma cornutum*	--	SC
Round-tailed horned lizard	*Phrynosoma modestum*	--	SC
Mammals			
Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	—	SC
New Mexico meadow jumping mouse	*Zapus hudsonius luteus*	PE	--
Black-tailed prairie dog	*Cynomys ludovicianus*	—	SC
Gunnison's prairie dog	*Cynomys gunnisoni*	C	--
Black-footed ferret	*Mustela nigripes*	E	E
Canada lynx	*Lynx canadensis*	T	E
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	T	T
Gray wolf	*Canis lupus*	E	--
Wolverine	*Gulo gulo luscus*	PT	E
Botta's pocket gopher	*Thomomys bottae rubidus*	--	SC
Northern pocket gopher	*Thomomys talpoides macrotis*	--	SC
Kit fox	*Vulpes macrotis*	--	E
Swift fox	*Vulpes velox*	--	SC

Note: C = Candidate; E = Endangered; SC = Species of Concern; T = Threatened; PT = Proposed Threatened; PE = Proposed Endangered
Sources: Bureau of Land Management,[11] Colorado Parks and Wildlife,[12] U.S. Fish and Wildlife Service,[13] Colorado Natural Heritage Program,[14] and U.S. Fish and Wildlife Service.[15]

[11] Bureau of Land Management. 2009. Colorado Director's State Sensitive Species List.

[12] Colorado Parks and Wildlife. 2014. List of Threatened and Endangered Species. Available at: http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/Pages/ListOfThreatenedAndEndangeredSpecies.aspx. Accessed February 2014.

[13] U.S. Fish and Wildlife Service. 2014. Natural Resources of Concern. Available at: http://ecos.fws.gov/ipac/wizard/chooseLocation!prepare.action. Accessed January 2014.

[14] Colorado Natural Heritage Program. 2014. CNHP Conservation Status Handbook (Tracking Lists). Available at: http://www.cnhp.colostate.edu/download/list.asp. Accessed March 2014.

DISCUSSION

At this time, no federally listed species are known to regularly occur in the project areas, thus no effects on any federally listed species or habitat are expected to occur in the project areas. The project areas are clearly beyond the known geographic or elevational range of the federally listed species, do not contain vegetation or landscape features known to support these species, or both. However, the lead permitting agency has the authority and final decision regarding what effect this project would have on any federally listed species and whether to require species-specific surveys for any protected species. The method of drilling proposed by GCC does not include new surface disturbance, but access to some of the sites would require some clearance of vegetation that has encroached on the existing two-track roads. This largely undisturbed forest and shrub habitat is likely to be a desirable area for breeding birds. Because this project is expected to occur during the breeding season for migratory birds (May–September), SWCA recommends that breeding bird surveys be conducted within 15 m (50 feet) of the drilling sites prior to vegetation disturbance and drilling.

[15] U.S. Fish and Wildlife Service. 2014. Listings and Occurrences for Colorado. Available at http://www.fws.gov/Endangered. Accessed March 2014.

Photo 1. Drill site CO-14-01, view from the center stake facing east

Photo 2. Drill site CO-14-02, view from the center stake facing west

Photo 3. Drill site CO-14-03, view from the center stake facing north

Photo 4. Drill site CO-14-04, view from the center stake facing east

Photo 5. Drill site CO-14-05, view from the center stake facing west

Photo 6. Drill site CO-14-06, view from the center stake facing south

Photo 7. Drill site CO-14-07, view from the center stake facing north

Photo 8. Drill site CO-14-08, view from the center stake facing west

Photo 9. Drill site CO-14-09, view from the center stake facing south

APPENDIX A

U.S. Fish and Wildlife Service
Natural Resources of Concern

U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

Western Colorado Ecological Services Field Office
764 HORIZON DRIVE, BUILDING B
GRAND JUNCTION, CO 81506
(970) 243-2778
http://www.fws.gov/mountain-prairie/es/Colorado/
http://www.fws.gov/platteriver/

Project Name:

Hay Gulch

U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:

Project Location Measurements:

Area : 0.0 ac.

Length : 0.1 mi.

Project Counties:

La Plata, CO

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-108.1369625 37.2497278, -108.1365599 37.2497298, -108.1365591 37.2494269, -108.1369553 37.2494268, -108.1369625 37.2497278)))

U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Type:

Mining

Endangered Species Act Species List (USFWS Endangered Species Program).

There are a total of 8 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section below for critical habitat that lies within your project area. Please contact the designated FWS office if you have questions.

Species that should be considered in an effects analysis for your project:

Birds	Status		Has Critical Habitat	Contact
Mexican Spotted owl (*Strix occidentalis lucida*) Population: Entire	Threatened	species info	Final designated critical habitat	Western Colorado Ecological Services Field Office
Southwestern Willow flycatcher (*Empidonax traillii extimus*) Population: Entire	Endangered	species info	Final designated critical habitat	Western Colorado Ecological Services Field Office
Yellow-Billed Cuckoo (*Coccyzus americanus*) Population: Western U.S. DPS	Proposed Threatened	species info		Western Colorado Ecological Services Field Office
Fishes				
Colorado pikeminnow (*Ptychocheilus lucius*) Population: except Salt and Verde R. drainages, AZ	Endangered	species info	Final designated critical habitat	Western Colorado Ecological Services Field Office

U.S. Fish and Wildlife Service

Natural Resources of Concern

Razorback sucker (*Xyrauchen texanus*) Population: Entire	Endangered	species info	Final designated critical habitat	Western Colorado Ecological Services Field Office
Flowering Plants				
Schmoll milk-vetch (*Astragalus schmolliae*)	Candidate	species info		Western Colorado Ecological Services Field Office
Mammals				
New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) Population:	Proposed Endangered	species info		Western Colorado Ecological Services Field Office
North American wolverine (*Gulo gulo luscus*) Population:	Proposed Threatened	species info		Western Colorado Ecological Services Field Office

Critical habitats within your project area:

There are no critical habitats within your project area.

FWS National Wildlife Refuges (USFWS National Wildlife Refuges Program).

There are no refuges found within the vicinity of your project.

U.S. Fish and Wildlife Service

Natural Resources of Concern

FWS Migratory Birds (USFWS Migratory Bird Program).

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668). The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

Migratory bird information is not available for your project location.

NWI Wetlands (USFWS National Wetlands Inventory).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

There are no wetlands found within the vicinity of your project.

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman St. Room 215
Denver, CO 80203

September 15, 2016

Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326-9633

Re: King Coal Mine (Permit No. C-1981-035)
Issuance - Technical Revision No. 24 (TR-24)
Response to Midterm Review

Dear Mr. Bird:

The Division of Reclamation, Mining and Safety's Proposed Decision to approve Technical Revision No. 24 at the King Coal Mine became final on September 13, 2016. Notice of the proposed decision was published in the *Durango Herald* on August 31, 2016, initiating the ten (10) day public comment period for the Division's decision. No requests for a formal hearing were received during the comment period.

If you have any questions, please contact me.

Sincerely,

Robert D. Zuber, P.E.
Environmental Protection Specialist
Rob.zuber@state.co.us

cc: Alan Boehms, Office of Surface Mining

C-TR-12

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman St. Room 215
Denver, CO 80203

December 30, 2015

Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326-9633

Re: King Coal Mine (Permit No. C-1981-035)
Issuance - Technical Revision No. 25 (TR-25)
Surface Water Hydrology As-Built Update

Dear Mr. Bird:

The Division of Reclamation, Mining and Safety's Proposed Decision to approve Technical Revision No. 25 at the King Coal Mine became final on December 30, 2015. Notice of the proposed decision was published in the *Durango Herald* on December 19, 2015, initiating the ten (10) day public comment period for the Division's decision. No requests for a formal hearing were received during the comment period.

If you have any questions, please contact me.

Sincerely,

Robin A. Reilley, GISP
Environmental Protection Specialist
Robin.reilley@state.co.us

cc: Alan Boehms, Office of Surface Mining

C-TR-12

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

1313 Sherman Street, Room 215
Denver, CO 80203

October 20, 2016

Tom Bird
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326-9633

Re: King Coal Mine (Permit No. C-1981-035)
Proposed Decision - Technical Revision No. 26 (TR-26)
Add hydrologic monitoring locations and update protocol

Dear Mr. Bird:

Enclosed you will find the Division of Reclamation, Mining and Safety's Proposed Decision for Technical Revision No. 26 at the King Coal Mine. Notice of the proposed decision will be published in the *Durango Herald* as soon as possible. The first publication will initiate the ten (10) day public comment period for the Division's decision.

Documentation must be submitted to the Division demonstrating that a copy of the approved revision application was sent to the Office of Surface Mining and the Bureau of Land Management. The material should be sent within 15 days of final approval.

Please refer to the Performance Bond heading on the enclosed proposed decision form. If the amount of Bond Held equals or exceeds the Revised Liability, you need not submit additional bond. However, if the Revised Liability exceeds the Bond Held, please submit additional bond or rider to your existing bond that equals or exceeds the Revised Liability. This Technical Revision must not be implemented until this proposed decision becomes final and until any required increase in bond is submitted to and approved by the Division.

If there are stipulations attached, please sign and return the proposed decision form to the Division.

If you have any questions, please contact me.

Sincerely,

Robert D. Zuber, P.E.
Environmental Protection Specialist
Rob.zuber@state.co.us

Enclosure

cc: Alan Boehms, Office of Surface Mining, with enclosures

C-TR-06

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215, Denver, CO 80203 P 303.866.3567 F 303.832.8106 http://mining.state.co.us

COAL MINING PERMIT - TECHNICAL REVISION DECISION

King Coal Mine, GCC Energy, LLC
Permit No. C-1981-035

The Division of Reclamation, Mining and Safety has proposed the decision stated below. Provided there are no objections, the decision will become effective upon the termination of the ten (10) day public comment period, in accordance with Rule 2.08.4(6)(b)(iii).

Technical Revision No. 26 — Decision: Approve with conditions

Submittal Date: October 22, 2015 — Decision Date: October 20, 2016

Description of Revision: Add hydrologic monitoring locations and update protocol

Stipulation(s) attached; Provide authorized signature and return the form to the Division

DIVISION OF RECLAMATION, MINING AND SAFETY — PERMITTEE

Authorized Representative - Division — Authorized Representative - Permittee (if applicable)

Date: October 20, 2016 — Date:

CHANGE IN ACREAGE		REVISED TOTAL ACREAGE		PERFORMANCE BOND	
Disturbed:	1.00	Disturbed:	49.59	Prior Liability:	$884,249.71
Affected:	0.00	Affected:	1,654.70	Change in Liability:	$23,858.00
Permit:	0.00	Permit:	2,705.40	Revised Liability:	$908,107.71
State:	0.00	State:	694.20	Bond Held:	$884,814.76
Federal:	0.00	Federal:	81.30		
Private:	0.00	Private:	1,929.90		
County:	0.00	County:	0.00		

REVISED APPLICATION PAGES

King I: Permit Cover Page; 2.03.5 page 1; 2.04.7 page 1; 2.05.6 pages 6 – 11.

King II: Permit Cover Page; Pages ii – iv; 2.03.5 page 1; 2.03.6 page 1; 2.04.4 pages 1, 9, and 10; 2.04.9 pages 3 – 6; 2.04.10 pages 1 – 2; 2.04.11 page

REVISED MAPS

Map King II-006A, Map King II-012

3; 2.05.3 page 6a and page 7; 2.05.4 page 20; 2.05.6 pages 2 – 12; Appendix 1(3); Appendix 3(4) [pending per stipulation]; Appendix 4(4); Appendix 4(9); Appendix 4(10); Appendix 4(11); Appendix 4(12); Appendix 4(13); Appendix 8(6) [pending per stipulation].

DELETED APPLICATION PAGES	DELETED MAPS
NA	NA

King Coal Mine (Permit No. C1981035)Technical Revision No. 26

Stipulations

18 - GCC MUST SUBMIT “NATURAL RESOURCES SURVEY” FOR THE MONITORING WELL SITES IN TR-26.

19 - GCC MUST SUBMIT “CULTURAL RESOURCES SURVEY” FOR THE MONITORING WELL SITES IN TR-26.

GCC ENERGY, LLC
KING II MINE
PERMIT DOCUMENT
CDRMS PERMIT # C-1981-035

Minor Revision MR-43

November 14, 2016

GCC Energy, LLC
King II Mine
6473 County Road 120
Hesperus, CO 81326

TABLE OF CONTENTS

TEXT SECTIONS

Section	Topic	Tab
2.03.4	Identification of Interests	**A**
2.03.5	Compliance Information	**B**
2.03.6	Right of Entry and Operation Information	**C**
2.03.7	Relationship to Areas Designated Unsuitable for Mining	**D**
2.03.8	Permit Term Information	**E**
2.03.9	Personal Injury and Property Damage Insurance Information	**F**
2.03.10	Identification of Other Licenses and Permits	**G**
2.03.11	Identification of Location of Public Office for Filing of Application	**H**
2.03.12	Newspaper Advertisement & Proof of Publication	**I**
2.04.3	Site Description and Land Use Information	**J**
2.04.4	Cultural and Historic Resource Information	**K**
2.04.5	General Description of Hydrology and Geology	**L**
2.04.6	Geology Description	**M**
2.04.7	Hydrology Description	**N**
2.04.8	Climatological Information	**O**
2.04.9	Soils Resource Information	**P**
2.04.10	Vegetation Information	**Q**
2.04.11	Fish and Wildlife Resources Information	**R**
2.04.12	Prime Farmland Investigation	**S**
2.04.13	Annual Reclamation Report	**T**
2.05.2	Operation Plan: Estimated Area For Life-Of-Mine Operations	**U**
2.05.3	Operation Plan: Mine Permit Area	**U**
2.05.4	Reclamation Plan	**V**
2.05.5	Post-Mining Land Uses	**W**
2.05.6	Mitigation of the Impacts of Mining Operations	**X**
2.06	Special Categories of Mining	**Y**
2.06.8	Alluvial Valley Floors	**Z**

TABLE OF CONTENTS
APPENDICES

TOPIC	TAB
Right of Entry Information	**1**
(1) State of Colorado Lease CO-3388	
(2) Bureau of Land Management Lease COC0-62920	
(3) Landowner Surface Use Agreements, TR-26 Monitoring Wells	
Licenses and Permits	**2**
(1) Zoning Compliance (La Plata County)	
(2) Air Emission Permit (Co. Dept. of Health)	
(3) Wastewater Discharge Permit (Co. Dept. of Health)	
(4) Landowner Letters	
(5) Monitoring Well Permit	
(6) Water Augmentation Plan	
(7) U.S. Army Corps of Engineers: Section 404-No Permit Required Determination	
Cultural and Historic Resource Survey	**3**
(1) SHPO Concurrence letter	
(2) Cultural Resource Inventory, Hay Gulch Area, Complete Archaeological Service Associates. August 2005	
(3) Cultural Resource Survey, TR-22 Drill Sites, SWCA February 19, 2014	
(4) Cultural Resource Survey, TR-26 Drill Sites, Stratified Environmental and Archaeological Services (SEAS), October, 2016	
Geological and Hydrologic Data	**4**
(1) Excerpts from NEDO Project Geological Report, Corte, Jan. 1999	
(2) Hydrologic Water Data: Groundwater Wells and Irrigation Ditch	
(3) Roof & Floor Chemical Analysis	
(4) TR-22 Drill Sites: Location & Topography, Drill Hole Abandonment Drawing, Typical Drill Site Drawing	
(5) Water Well Completion Data – Colorado Division of Water Resources	
(6) GCC Energy King II Coal Mine Hydro Study, Norwest Corporation, February 11, 2014	
(7) Cumulative Hydrologic Impact Assessment for Hay Gulch, La Plata County, Colorado, Tom Kaldenbach, Colorado Division of Minerals and Geology, Revised October, 2006	
(8) King I Mine - Refuse Pile Sampling Plan, MR-41, September 14, 2016	
(9) Bedrock Cluster Monitor Well Specifications, Resource Hydrologic Services, 10/15/2015 (TR-26)	
(10) King I & II Coal Mine Area, Hydrologic Study, Resource Hydrologic Services, 01/31/2016	

(11) Water Balance Study for the King II Mine, CDS Environmental Services LLC 05/08/2014	
(12) GCC King I & II Water Quality Site & Analytical Recommendations, Resource Hydrogeologic Services, February 5, 2016	
(13) GCCE King I Upgradient Hay Gulch Alluvial Monitoring Well Specifications, Resource Hydrogeologic Services, April 28, 2016	
Climatological Data Summaries	**5**
Soil Resource Data and Analysis	**6**
(1) Field Data Sheet	
(2) Colorado State University Soil, Water and Plant Testing Laboratory Analysis	
(3) Soil Horizon Suitability Criteria for Reclamation	
Baseline Vegetation Report	**7**
(1) Baseline Vegetation Report, National King Coal, LLC, King II Mine, Hay Gulch, Colorado, August 2005	
Fish and Wildlife Information	**8**
(1) La Plata County Wildlife: Known or Likely Species Occurrence	
(2) Natural Diversity Information Source Sample Maps	
(3) Colorado Natural Heritage Program Database Survey results	
(4) Colorado Div. of Wildlife Density Standard Approval	
(5) Natural Resource Survey, TR-22 Drill Sites, SWCA April 11, 2014	
(6) Natural Resource Survey, TR-26 Drill Sites, Ecosphere Environmental Services, October, 2016	
USDA Important Farmlands of La Plata County, Colorado	**9**
Structure Designs	**10**
(1) Haul Roads; Description and Certifications	
(2) Access Roads; Certification	
Hydrologic Designs	**11**
(1) "As-Built" Hydrology Analysis, Stoner Engineering, June 30, 2015	
(5) Safety Factor Analysis for Sediment Pond, Environmental Industrial Services, November, 2009	
(6) "As-Built" Pond Certification, Fleming Engineering, September 15, 2009	
Reclamation Bond Estimate	**12**
(1) Prepared by GCC Energy, LLC	
(2) Prepared by Colorado Division of Reclamation, Mining & Safety	
Insurance: Personal Injury & Property Damage	**14**

TABLE OF CONTENTS
MAPS

NUMBER	TOPIC	TAB
King II-001	Permit and Adjacent Areas Map	**13**
King II-002	Surface Ownership Map	**14**
King II-003	Coal Ownership Map	**15**
King II-004	Regional Geologic and Groundwater Hydrologic Map	**16**
King II-005	Mine Plan Map	**17**
King II-006	Soils, Vegetation & Land Use Map	**18**
King II-006A	TR-26 Water Monitoring Wells, Soils & Vegetation	
King II-007	Operation Plan and Surface Features Map	**19**
King II-007 A	Stoner Engineering - Site Watershed Basins, Site Culvert Locations, Site Ditch Locations	**20**
King II-007 B	Stoner Engineering – Clearwater Ditch Details (As-Built)	**21**
King II-007 C	Stoner Engineering – Pond Details (As-Built)	**22**
King II-007 D	Fleming Engineering – As-Built Certification – Sediment Pond	**23**
King II-007 E	Fleming Engineering - As-Built Certification – Haul Road	**24**
King II-007 F	Fleming Engineering – Pond, Roadway, Drainage Details #1	**25**
King II-007 G	Fleming Engineering – Pond, Roadway, Drainage Details #2	**26**
King II-007 H	Tetra Tech Engineering – Upper Site Access Plan: Profile: Sheet 1 of 5	**26A**
King II-007 I	Tetra Tech Engineering – Upper Site Access Plan: Profile: Sheet 2 of 5	**26B**
King II-007 J	Tetra Tech Engineering – Upper Site Access Plan: Profile: Sheet 3 of 5	**26C**
King II-007 K	Tetra Tech Engineering – Upper Site Access Plan: Profile: Sheet 4 of 5	**26D**
King II-007 L	Tetra Tech Engineering – Upper Site Access Plan: Sections: Sheet 5 of 5	**26E**
King II-008	Cross Section Views – Geology (Confidential-See Separate Package)	**27**
King II-009	Aerial Photo (July 1, 2004)	**28**
King II-010 A	Site X-Section	**29**
King II-010 B	Site X-Section Profile I	**30**
King II-010 C	Site X-Section Profile II	**31**
King II-010 D	Site X-Section – Portal Area Cut/Fill Quantities	**32**
King II-011 A	Post-Mining X-Section Plan	**33**
King II-011 B	Post Mining X-Section Profiles	**34**
King II-011 C	Post Mining X-Section Profiles	**35**
King II-012	Water Monitoring	**36**

2.03.4 - IDENTIFICATION OF INTERESTS

GCC Energy, LLC is a corporation, incorporated under the laws of the State of Colorado. GCC Energy, LLC is the operator and permittee of the King I Mine (Formerly MSHA ID# 05-00266) and the King II Mine (MSHA ID# 05-04864), located in La Plata County, Colorado. The King I Mine ceased production and its portals were permanently sealed in January of 2009. GCC Energy, LLC is the entity responsible for payment of abandoned mine land reclamation fees. GCC Energy, LLC is a wholly owned subsidiary of GCC of America, Inc., P.O. Box 636, Wilmington, DE 19899.

GCC Energy, LLC
11783 Highway 337
Tijeras, New Mexico 87059
AVS Entity #247004

Phone: (970) 385-4528 Fax: (970) 385-4638
Employer ID #20-2812006

Formed: Colorado October 22, 2007

Resident Agent CO: Chris Dorenkamp
6473 County Road 120
Hesperus, Colorado 81326
Phone: (970) 385-4528
Fax: (970) 385-4638

Officers of GCC Energy, LLC

Name	Title	Effective Date	AVS #
Ron Henley	President	March 1, 2016	255179
Gina Marie Nance	Vice President of Environmental & Energy Affairs	March 1, 2016	259480
Cesar Conde	Secretary	March 1, 2016	252622
Luis Carlos Chavez	Assistant Secretary	March 1, 2016	259481
Jeff Benson	Assistant Secretary	July 25, 2011	252623
Martha Rodriguez	Treasurer	October 22, 2007	157895
Luis Carlos Arias	Assistant Treasurer	October 22, 2007	157896

GCC of America, Inc. was incorporated in the state of Delaware on June 16, 1994 and is qualified to do business in Delaware and New Mexico. GCC of America, Inc. (AVS #: 157897) is the sole shareholder and 100% owner of GCC Energy, LLC.

GCC of America, Inc. does not own or control any other surface coal mining operations in the United States. GCC of America, Inc. has not previously owned or controlled any other surface coal mining operations in the United States within the past five years.

GCC of America, Inc. is a wholly owned subsidiary of Grupo Cementos de Chihuahua, S.A. de C.V.

GCC of America, Inc.
P.O. Box 100
11783 Highway 337
Tijeras, New Mexico 87059
Phone: (505) 281-3311
AVS #:157897

Officers of GCC of America, Inc.

Name	Title	Effective Date	AVS #
Ron Henley	**President**	**March 1, 2016**	**255179**
Steve Ambrose	**VP, Sales & Logistics**	**March 20, 2014**	**255176**
Verne Stuessy	**VP, Operations**	**March 1, 2016**	**250273**
Andres Osuna	**VP, Planning & Administration**	**March 20, 2014**	**157894**
Gina Marie Nance	**VP, Environmental & Energy Affairs**	**March 1, 2016**	**259480**
Doug Roark	**VP, Ready Mix & Aggregates**	**March 20, 2014**	**255177**
Edward Hernandez	**VP, Human Resources**	**March 20, 2014**	**255178**
Sergio Saenz	**VP, Legal Affairs**	**March 1, 2016**	**157893**
Cesar Conde	**Secretary**	**March 1, 2016**	**252622**
Luis Carlos Chavez	**Assistant Secretary**	**March 1, 2016**	**259481**
Carlos Lopez	**Controller**	**March 1, 2016**	**255180**
Martha Rodriguez	**Treasurer**	**March 30, 2005**	**157895**
Luis Carlos Arias	**Assistant Treasurer**	**March 30, 2005**	**157896**

Grupo Cementos de Chihuahua, S.A. de C.V. is the sole shareholder and 100% owner of GCC of America, Inc.

Grupo Cementos de Chihuahua, S.A. de C.V.
P.O. Box 100
11783 Highway 337
Tijeras, New Mexico 87059
Phone: (505) 281-3311
AVS #: 157898

Officers of Cementos de Chihuahua, S.A. de C.V.

Name	Title	Effective Date	AVS #
Enrique Escalante	**Chief Executive Officer**	**March 1, 2016**	**157891**
Martha Rodriguez	**Chief Financial Officer**	**January 3, 2008**	**157895**
Sergio Saenz	**General Counsel**	**April 3, 2012**	**157893**

2.03.4 (6) – Surface & Coal Ownership within the Permit Area

Huntington Ranches, LLC, 7080 C.R. 120, Hesperus, CO 81326 (Surface & Coal)
Crawford Ranches, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Crawford, Marc A, Ronald H & Norris H, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Crawford, Norris H & Ronald H, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Bureau of Land Management, 2850 Youngfield St., Lakewood, CO 80215-7093 (Surface & Coal)
Colorado State Board of Land Commissioners, 1313 Sherman St., Room 620, Denver, CO 80203 (Surface & Coal)
GCC Energy, LLC, 6473 C.R. 120, Hesperus, CO, 81326 (Surface)
Ute Mountain Tribe, P.O. Box 248, Towaoc, CO 81334 (Surface)
Compton, Patricia Ann Rev. Trust, 1129 C.R. 123, Hesperus, CO 81326 (Surface)
Compton, Thomas Lee Rev. Trust, 1129 C.R. 123, Hesperus, CO 81326 (Surface)
Wiltse, Jack B., 2416 East 20th, Apt. J5, Farmington, NM 87401 (Surface)
Four Daughters Coal: P.O. Box 114, Caspar, CA 95420 (Coal)
Richard Tipotsch, et al: Deceased, no known address (Coal lease relinquished)
Blast & Cast, Inc.: P.O. Box 543, Silverton, CO 81433 (Surface)
Patterson, Bonnie Eileen, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Craig, Farmer, Compton Coal Lease:
Tom Compton - 1129 C.R. 123, Hesperus, CO 81326
Mary Ann Craig – P.O. Box 1047, Durango, CO 81302
Farmer Oil & Gas - 17235 N. 75th Ave., Suite C160, Glendale, AZ 85308
Kambe Coal Lease: Tom Kambe, Jr. - 899 Marina Dr., Napa, CA 94559

2.03.4 (7) – Surface Ownership Contiguous to the Permit Area

Compton, Patricia Ann Rev. Trust, 1129 C.R. 123, Hesperus, CO 81326 (Surface)
Compton, Thomas Lee Rev. Trust, 1129 C.R. 123, Hesperus, CO 81326 (Surface)
Crawford, Norris H & Ronald H, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Crawford, Mike, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Crescent Cross, Ltd. LLLP, 11951 C.R. 120, Hesperus, CO 81326 (Surface)
Wiedemann, Theodore J. & Nancy M., 5960 East Territory Ave., Tucson, AZ 85750 (Surface)
Ute Mountain Tribe, P.O. Box 248, Towaoc, CO 81334 (Surface)
Wiltse, Jack B., 2416 East 20th, Apt. J5, Farmington, NM 87401 (Surface)
Elaine J. Frazier, 2637 Dallas St. NE, Apt. #2, Albuquerque, NM 87110 (Surface)
GCC Energy, LLC, 6473 C.R. 120, Hesperus, CO, 81326 (Surface)
Colorado State Board of Land Commissioners, 1313 Sherman St., Room 620, Denver, CO 80203 (Surface & Coal)
Blast & Cast, Inc.: P.O. Box 543, Silverton, CO 81433 (Surface)
Patterson, Bonnie Eileen, 2161 C.R. 121, Hesperus, CO 81326 (Surface)
Craig, Farmer, Compton Coal Lease:
Tom Compton - 1129 C.R. 123, Hesperus, CO 81326
Mary Ann Craig – P.O. Box 1047, Durango, CO 81302
Farmer Oil & Gas - 17235 N. 75th Ave., Suite C160, Glendale, AZ 85308
Kambe Coal Lease: Tom Kambe, Jr. - 899 Marina Dr., Napa, CA 94559

2.03.4 (9) – Lands Contiguous to the Permit Area

OSMRE permit CO-0106A lies contiguous to the permit area and comprises much of the coal reserves currently being mined at the King II mine. This permit is described as follows:

Federal Coal Lease COC-62920:

T. 35 N., R. 11 W., N.M.P.M. North of Ute Line
Section 19, lots 4, 5, E2SW4, & SE4

T.35.N, R. 12 W., N.M.P.M., North of Ute Line
Section 24, lots 1, 2, and SW4SE4.
Section 25, lots 1, 2, W2NE4 and W2.
Section 26, SE4NE4, E2SE4, SW4SE4.
Section 35, NE4.

Containing approximately 1,224.51 acres.

OSMRE permit CO-0106A also includes a coal lease held in fee. This coal lease is owned in part by the Ute Mountain Ute Tribe (50%), Stephens (25%) and Dunn (25%). The Ute Mountain Tribe (Tribe) owns 100% of the surface rights to the property which overlies the coal lease assigned to GCC Energy, LLC and is described as follows:

T. 35 N., R. 12 W., N.M.P.M. North of Ute Line
Section 26, E2SW4, & NW4SE4, SW4NE4.

Containing approximately 160 acres.

A modification to Federal Coal Lease COC-62920 was submitted December 28, 2010 and is currently under review by the BLM. The acreage applied for in this modification is described as follows:

TRACT A

Township 35 North, Range 11 West, N.M.P.M.:
Section 19; NE/4, S/2 SE/4 NW/4
Section 20; NW/4 NW/4
Said parcel contains 214.44 acres, more or less.

TRACT B

Township 35 North, Range 11 West, N.M.P.M.:
Section 30; Lots 1-4, inclusive
E/2 NW/4
NW/4 NE/4, E/2 NW/4
Township 35 North, Range 12 West, N.M.P.M.:
Section 25; Lots 3-8 inclusive
Said parcel contains 354.85 acres, more or less.

TRACT C (Withdrawn due to coal quality & Timing)

TRACT D

Township 35 North, Range 12 West, N.M.P.M.:
Section 26; SE/4 NE/4 NE 1/4
Said parcel contains 10.10 acres, more or less.

TRACT E

Township 35 North, Range 12 West, N.M.P.M.:
Section 35; SW/4
S/2 SE/4
S/2 NW/4
NE/4 NW/4
Said parcel contains 370.46 acres, more or less.

Total acreage contained in the above tract equals, 952.21 acres, more or less.

2.03.5 - COMPLIANCE INFORMATION

Neither GCC Energy, LLC nor persons controlled or under common control has had a Federal or State mining permit for surface or underground mining operations suspended or revoked in the last five year period since date of issuance of CDRMS Mining Permit C-81-035.

Neither GCC Energy, LLC nor persons controlled or under common control has forfeited a mining bond or similar security deposited in lieu of bond.

One violation has been issued to GCC Energy, LLC during the three years prior to this application.

CV-2015-001 was issued by the Colorado Division Mining, Reclamation and Safety, on April 21, 2015.

"The northern margin of the Coal Storage Pile #2, processed coal stockpiled at Stack Tube #2 was found to have overrun both the designated pad area and the surrounding collection ditch. And to have encroached upon undisturbed ground from which topsoil had not been previously salvaged."

The condition was immediately corrected, and CV-2015-001 was terminated on May 18, 2015.

2.03.6 - RIGHT OF ENTRY AND OPERATION INFORMATION

The King II Mine is located within Sections 35 & 36; Township 35 N, Range 12 W, N.M.P.M., in La Plata County, Colorado. The surface and minerals of the area to be mined are owned by the State of Colorado and the Dept. of the Interior, Bureau of Land Management. All mining activities of the King II Mine lie to the north side of Hay Gulch, approximately 4.5 miles southwest of Hesperus, Colorado, as identified on U.S.G.S. 7.5 Minute Quadrangles for Thompson Park, Hesperus, Mormon Reservoir, and Kline. None of the leases or legal right to enter are the subject of pending litigation.

LEGAL DESCRIPTION OF PERMIT AREA

Section 36, T.35 N., R 12 W., N.M.P.M. comprising 640.00 acres. (State of Colorado, State Board of Land Commissioners Coal Mining Lease CO-3388)

Section 35, T.35 N., R 12 W., N.M.P.M. comprising 80.00 acres. (U.S. Dept. of the Interior, Bureau of Land Management Coal Mining Lease COC-62920)

SOURCE OF LEGAL RIGHT TO ENTER

GCC Energy, LLC holds coal lease CO-3388, applying to the permit area described above, which was issued by the State of Colorado, State Board of Land Commissioners on September 13, 2004. GCC Energy, LLC also holds coal lease COC-62920, applying to the permit area described above, which was issued by the Dept. of the Interior, Bureau of Land Management on November 1, 2002.

These leases grant GCC Energy, LLC rights to access and mine the property for coal, in addition granting the right to use as much of the surface of the property as necessary in support of coal mining. The right to subside the surface is also granted.

Copies of these leases are included in Appendix 1. Further terms and rights are contained within the lease documents.

These leases are not the subject of pending litigation.

The surface and mineral estate have not been severed for this property.

WATER MONITORING WELLS – SURFACE ACCESS

Agreements for surface access to water monitoring wells referred to in Technical Revision TR-26 can be found in Appendix 1(3).

2.03.7 - RELATIONSHIP TO AREAS DESIGNATED UNSUITABLE FOR MINING

No portion of the lands within the permit area are within an area designated unsuitable for surface coal mining operations under Rule 7 or 30 CFR 764 and 765, nor under study for designation in an administrative proceeding under Rule 7 or 30 CFR 764 and 765.

There are no occupied dwellings on or within 300 feet of the permit area.

2.03.8 - PERMIT TERM INFORMATION

The anticipated start of each phase of mining activities is discussed in Section 2.05.2 and 2.05.3 Operations Plan.

The term of the permit shall be for five (5) years from issuance, renewable under the terms of Rule 2.08.5.

The current extent of areas affected by this permit, the anticipated number of acres to be affected during the 5 year term of this permit, and the anticipated number of acres to be affected during the total life of the permit is listed in the following table:

Location	Approved Areas	5 Year Additional	Life of Operation Additional
King I Surface Facilities (Disturbed Area)	23.60 Acres	+ 0 Acres	+ 0 Acres
King II Surface Facilities (Disturbed Area)	22.89 Acres	+ 0 Acres	+ 0 Acres
TR-22 Drill Holes Disturbed Area	2.1 Acres	+ 0 Acres	+ 0 Acres
Total Disturbed Area	**48.59 Acres**	+ 0 Acres	+ 0 Acres
King I Affected Area	1392.9 Acres	+ 0 Acres	+ 0 Acres
King II Affected Area	260.7 Acres	+ 0 Acres	+ 0 Acres
TR-22 Drill Holes Affected Area	1.1 Acres	+ 0 Acres	+ 0 Acres
Total Affected Area	**1654.7 Acres**		
Total Permit Area (prior to TR-24)	2615.8 Acres	+ 0 Acres	+ 0 Acres
Total Permit Area (including TR-24 angle-of-draw adjustments)	**2705.4 Acres**	+ 0 Acres	+ 0 Acres

In January, 2009, the King I mine was permanently sealed. The final mine map revealed areas where the potential affected areas lie outside of the permit boundary (due to potential angle-of-draw) as shown at the time. To reflect that change, the permit boundary has been revised with the submittal of TR-24 to show an increased permit area of 89.60 acres. No actual disturbance due to subsidence has ever been noted outside of the previous extents of the permit boundary. The following table provides percentages of surface and mineral ownership with respect to the expanded 89.60 acre permit area.

	Surface Ownership	Mineral Ownership
Federal	0 %	63.76% (57.13 Acres)
State	0 %	0 %
Private	100 % (89.60 Acres)	36.24% (32.47 Acres)

2.03.9 - PERSONAL INJURY AND PROPERTY DAMAGE INSURANCE INFORMATION

A certificate certifying that GCC Energy, LLC has a public liability insurance policy in force which meets the minimum requirements as specified in 2.03.9(1) has been forwarded to:

Colorado Division of Reclamation, Mining & Safety
Mined Land Reclamation Division
1313 Sherman Street Room 215
Denver, Co. 80203

Renewals of this policy shall be forwarded to the above address.

The policy shall be maintained in full force during the life of the permit and any renewal thereof, including completion of all reclamation operations under Rule 4.

Copies of these certificates can be found in Appendix 14 of this permit.

2.03.10 - IDENTIFICATION OF OTHER LICENSES AND PERMITS

Attached are the following licenses and permits (See Appendix 2 for copies)

(1) Zoning Compliance
Class II Special Land Use Permit/Road Improvement Agreement
Permit Number: PL2012-0089
La Plata County, Colorado
Planning Department
211 Rock Point Drive, Durango, Co. 81301
Date Issued: July 8, 2016

(2) Air Emission Permit
Colorado Department of Health
Air Pollution Control Division
APCD-SS-B1
4300 Cherry Creek Drive South, Denver, Co. 80222
Permit Number:
09LP0202F - King I, II Facilities
Date Issued: 09/03/13, APEN's Expire: 01/13/2018

(3) Wastewater Discharge Permit
Colorado Department of Health
Water Quality Control Division
4210 East 11th Ave.
Denver, Co. 80220
Permit Number: CO-G-850001
Date Issued: June 18, 2008
Expires: June 30, 2013
Administrative Extension: Issued 7/1/2013

(4) Landowner Letters
Consent to Mine Beneath/Surface Right of Access; Crawford Ranches, January 31, 2010

Consent to Mine Beneath/Surface Right of Access; Huntington Ranches, January 30, 2010

(5) Monitoring Well Permit
Office of the State Engineer
Colorado Division of Water Resources
818 Centennial Building,
1313 Sherman St.
Denver, Co. 80203
Permit Number: 260656
Date Issued: December, 1, 2004

(6) Water Augmentation Plan
District Court
Water Division No. 7, Colorado
1060 East Second Ave.
Durango, CO 81301
970-247-2304
Water Decree Case Number: 07CW100
Date Issued: April 20, 2011

(7) U.S. Army Corps of Engineers:
Section 404 - No Permit Required Determination
Department of the Army
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, CA 95814-2922
Date Issued: May 4, 2015

2.03.11 - IDENTIFICATION OF LOCATION OF PUBLIC OFFICE FOR FILING OF APPLICATION

This application and all revisions to this application will be filed for public inspection as per 2.03.11 at:

La Plata County Clerk and Recorder
98 Everett Street, Suite C
Durango, CO 81303

2.03.12 - NEWSPAPER ADVERTISEMENT AND PROOF OF PUBLICATION

A copy of the newspaper advertisement of the application follows below. Proof of publication of the advertisement will be provided to CDRMS completion of the publication period.

PUBLIC NOTICE

GCC Energy, LLC, 4424 County Road 120, Hesperus, Colorado 81326, phone (970) 385-4528, has filed an application for a technical revision to a valid existing permit for the King II Mine (permit C-81-035) with the Colorado Division of Reclamation, Mining & Safety. The subject of the revision is the update of site drainage and other structures at the King II Mine. The mine is located in Sections 35 & 36; T35N, R12W, N.M.P.M., La Plata County, Colorado. The surface and minerals of the area to be mined is owned by the State of Colorado and Bureau of Land Management. All mining activities of the mine lie to the north side of Hay Gulch, approximately 6.5 miles southwest of Hesperus, as identified on U.S.G.S. 7.5-minute quadrangles of Thompson Park, Hesperus, Mormon Reservoir, and Kline. Underground mining methods are in use. The proposed land use at the completion of mining is rangeland.

A copy of the application is available for public review at the La Plata County Clerk and Recorder's Office, La Plata County Courthouse, 1060 Second Avenue, Durango, CO 81302, and at the Colorado Division of Reclamation, Mining & Safety, 1313 Sherman St., Room 215, Denver, Colorado 80203, phone (303) 866-3567. Anyone with a valid interest may submit written comments or objections within 10 days of the last publication of this notice. All comments, objections, and requests must be submitted in writing to the Colorado Division of Reclamation, Mining & Safety at the above address. Published in The Durango Herald, _____, 2008.

2.04.3 - SITE DESCRIPTION AND LAND USE

The areas of the King II Mine slated for surface disturbance lie within the confines of the bottom at the confluence of two dry drainage basins. This drainage basin valley bottom subsequently opens into Hay Gulch approximately 0.5 miles from the location of surface facilities and underground mine portals. The area has been historically used by European settlers for ranching and by Native Americans prior to that for hunting and gathering. There has been no change of land use during the last five years. Current land uses of the permit area include rangeland, fish and wildlife habitat, and undeveloped land. These will be the land uses to which the property is returned after completion of coal mining and reclamation.

The two vegetation communities found within the surface disturbance areas are pinyon juniper woodland found on the sideslopes of the drainage basins and a rabbitbrush/big sage mixed shrubland on the bottomland of the drainage basin.

The pinyon juniper woodland is dominated by the two tree species, a woody shrub understory below the canopy and sparse succulent and herbaceous vegetation. This community is found on rocky, shallow, xeric soils. Given the soils and xeric nature of this vegetation communities location, there is little palatable herbaceous forage produced (50-100 pounds/acre) for grazing or browsing animals. Wood production may be estimated at 10-50 full cords per acre; however access is a problem, with steep slopes and no roads. The overall ecologic condition of this community is fair to good, given the lack of intense use by livestock or humans. There is little opportunity for development of varied land uses other than range, wildlife habitat, and/or firewood production.

The rabbitbrush/big sage mixed shrubland is located on level colluvial bottomland between the sideslopes of the drainage basin. This community was quantitatively sampled and described for the vegetation baseline requirement of Rule 2.04.10. This vegetation community is in poor to fair condition, largely due to overgrazing and lack of management of undesirable plant species. Given the relatively small area of this community (~50 acres) within the permit area, and the lack of irrigation, the potential for production of large quantities of forage is limited. The existing land uses of range and wildlife habitat will be maintained, and enhanced through revegetation with predominantly native desirable species post-mining.

Though Hay Gulch lies within the permit area, no surface disturbance related to the mining operation is proposed, with the exception of the continued monitoring of an alluvial monitoring well. Hay Gulch is not identified as prime farmland by the Natural Resource Conservation

Service.

Evidence of local household mining of coal along the outcrop is found throughout the area, including the permit area. No permitted or large-scale coal mining operation has taken place within the permit area.

Map King II-006 depicts land uses and locations of the permit and adjacent areas.

2.04.4 - CULTURAL AND HISTORIC RESOURCE INFORMATION

Complete Archaeological Service Associates of Cortez, Colorado has prepared a cultural resource inventory documenting the results of a pedestrian survey of those areas that may be affected by surface disturbance within the permit area (see Appendix 3(2)). No cultural or historic resources eligible for listing on the National Register of Historic Places or significant archeological sites that may be affected by surface disturbance (including subsidence) were identified in the survey.

SWCA Environmental Consultants of Durango, Colorado performed a cultural resource survey of the 9 core drill sites addressed in Technical Revision TR-22 (see Appendix 3(3). No cultural or historic resources eligible for listing on the National Register of Historic Places or significant archeological sites that may be affected by surface disturbance were identified in the survey.

Stratified Environmental and Archaeological Services (SEAS) of Durango, Colorado has performed a cultural resource survey of the 5 monitoring well drill sites addressed in Technical Revision TR-26 (see Appendix 3(4).

2.04.5 - GENERAL DESCRIPTION OF GEOLOGY AND HYDROLOGY

All information required by this rule is provided in sections 2.04.6 Geology Description and 2.04.7 Hydrology Description. All exhibits referred to in these sections are included in Appendix 4. Maps King II-004 and King II-005 contain geologic and hydrologic information.

2.04.6 - GEOLOGY DESCRIPTION

REGIONAL GEOLOGY

The following description is excerpted from the NEDO Project Geological Report, contained in relevant part in Appendix 4. Additional detailed information regarding regional and project site geology is contained in that report.

The King I Mine and the King II Mine lie at the northwest edge of the San Juan Basin, covering approximately 26,000 square miles of northwestern New Mexico and southwestern Colorado. The sedimentary strata of the basin were deposited at the western margin of a vast epeirogenic sea occupying the central area of the North American continent during the late Cretaceous Epoch. Extensive deposition of coal forming materials occurred during a succession of regressive/transgressive migrations of the shoreline in northeast (seaward)/southwest (landward) direction. With each successive cycle the maximum transgressive cycle shifted to the northeast until the final disappearance of the sea. The ultimate result was a jagged wedge of non-marine sediments in the southwestern area of the basin, intermingling with marine strata to the northeast. With each transgressive cycle accumulated the transitional strata of barrier beach, marginal shore swamps (coal bearing), paludal (coal bearing), and other lower coastal plain deposits.

LOCAL GEOLOGY

The local area is characterized by southerly to southeasterly dipping; sedimentary rocks of late Cretaceous age which has been deeply eroded to the north.

The uppermost formation exposed locally is the Cliff House Formation, which is the upper member of the Mesa Verde Group. It is of marine origin and is composed of irregular to lenticular ledges of hard, fine to medium grained, calcareous sandstone in softer argillaceous fine sandstone, mudstone and silty shale. The top of this formation has been removed by erosion, leaving an average thickness of 350 feet. The Cliff House Formation overlies the Menefee Formation.

The Menefee Formation, which is the middle member of the Mesa Verde Group, is composed of a complex assemblage of cross-bedded sandstones, black shales and coal beds. Up to seven coal seams have been identified by the U. S. Geological Survey. The Menefee Formation has an average local thickness of 300 feet. The Menefee overlies the Point Lookout Formation.

The Point Lookout Formation, which is the basal member of the Mesa Verde Group, is divided into two parts. The upper member consists of thick, massive beds of even-textured, medium-grained sandstone. The lower member consists of thin sandstone beds with the Mancos Shale below. The Point Lookout Formation has an average local thickness of 400 feet.

The Mancos Shale, which is exposed approximately four miles north of the King I Mine, is of marine origin and composed of dark-gray to black shale and silty to fine sandy shale with small amounts of dark-gray argillaceous limestone in lenses. The Mancos Shale has an average local thickness of 2000 feet.

The bedding of the above sedimentary rocks dips 2-3° in a south/southwesterly direction.

STRATIGRAPHY

The Hesperus area, located on the northwestern flank of the San Juan Basin, contains rocks of Quaternary and Cretaceous age. The Quaternary sediments are confined to the valley bottoms and in particular the La Plata River valley along the eastern portion of the area. These deposits are primarily poorly consolidated gravels.

The Cretaceous strata exposed in the project and adjacent area consists of Mancos shale, the coal bearing Mesa Verde Group, and the Lewis shale. The Mancos and Lewis shales are of marine origin and the sediments of the Mesa Verde Group are of transitional to non-marine origin. The Menefee formation, the middle member of the Mesa Verde Group, is the primary coal bearing formation. The following is a brief description of the strata encountered in the area from bottom to top.

Mancos Shale

The Mancos shale conformably overlies the Dakota sandstone and is approximately 2,000 feet thick. It consists of dark gray to black shale and silty to fine sandy shale with small amounts of dark-gray argillaceous limestone in lenses and concretions which weather to a bright yellow brown color.

Point Lookout Sandstone

The Point Lookout Formation is the basal member of the Mesa Verde Group in the Hesperus area. In this area, the Point Lookout Formation is divided into two members: a lower member made up of thin sandstone beds with inter-bedded Mancos shale that comprises a transitional sequence above the Mancos shale; and an upper massive sandstone

member consisting of thick, massive beds of even-textured, medium-grained sandstone that form conspicuous cliffs in the northern portion of the project area.

The Point Lookout sandstone is reported to maintain a rather uniform thickness of about 400 feet across the Hesperus area, but the sandstone beds at any given horizon become progressively finer grained eastward and the lower member thickens at the expense of the massive sandstone member. In the project area, the massive sandstone member of marine origin is about 100 feet thick and the lower transitional member is about 300 feet thick.

Menefee Formation

The Menefee Formation is the middle member of the Mesa Verde Group and consists of a complex assemblage of lenticular cross-bedded sandstone beds, gray, brown, and black shales, and coal beds. The formation is characterized by irregular bedding and rapid lateral changes of lithology.

The contact of the Menefee with the underlying Point Lookout sandstone is conformable. In most places the contact is marked by a sharp break between the carbonaceous shales and coals of the Menefee and the clean sandstone of the massive member of the Point Lookout. Locally, through the eastern half of T35N R12W, the basal Menefee is reported to consist of massive sandstones and the separation is not readily made.

The Menefee Formation thins in an eastward direction from approximately 350 feet in the Cherry Creek Valley, about three miles west of the project area, to about 123 feet in the Florida River valley about 16 miles east of the project area.

Most of the variations of thickness of the Menefee Formation are reported to be thinner where the more compressible shale and coal dominate the section. Locally, thickness variations of the Menefee can be attributed to scouring action of the water source responsible for the disposition of the overlying Cliff House Sandstone. From an area near the head of Hay Gulch in Section 27, T35N, R11W, east to the La Plata River, the upper coal bearing horizon is significantly thinned and apparently replaced by the overlying Cliff House Sandstone. This upper coal bearing horizon is scoured to where the upper coal seam, so prevalent in the Hay Gulch area, is completely absent.

The Menefee Formation is of non-marine origin throughout the Hesperus area. The petrographic impression of the formation varies with its lithologic character, but over most of the area it is slightly less resistant than the overlying and underlying formation.

Cliff House Sandstone

The Cliff House Formation is the upper member of the Mesa Verde Group in the Hesperus area and is of marine origin. It generally consists of irregular to lenticular ledges of hard, fine to medium-grained calcareous sandstone enclosed in softer argillaceous fine sandstone, mudstone, and silty shale.

Like the Point Lookout sandstone, the Cliff House sandstone is reported to decrease in grain size in an eastward direction. Ten to fifteen miles east of the project area, the formation is composed of soft dark-gray mudstone and fine sandy silt-shale with an occasional very thin lentil of fine sandstone in the lower part.

The Cliff House sandstone has an average thickness of 350 feet throughout most of the project area. It shows a slight eastward thinning, probably due to the decrease in coarse clastics and the increase in compactable fine sediments.

Lewis Shale

The Lewis Shale conformably overlies the Cliff House sandstone and consists of dark gray to black homogeneous clay shale with scattered concretions of dense argillaceous limestone and with a few thin seams of bentonite in the upper part. The formation is reported to be about 1,825 feet thick with the basal contact being very sharp with black flaky clay-shale resting on gray mudstone or sandy shale of the Cliff House sandstone.

STRUCTURE

The geologic structure of the Hesperus area is characterized by gentle southward dips ranging from seven to two degrees away from the structurally high La Plata Mountains to the north. It is probable that a small amount of faulting is present in the vicinity of the town of Hesperus. A fault with a displacement of 33 feet has been reported in the Monarch mine about one mile northeast of Hesperus. While results of exploration drilling conducted in the area have not revealed significant faulting, it is probable that faulting is present given the relationship between the structure and stratigraphic deposition.

GEOLOGY DESCRIPTION: UNDERGROUND MINING

SURFACE GEOLOGY

Only the upper two members of the Mesa Verde Group are exposed on the property. The King II Mine is located on the north side of Hay Gulch with entries to be driven into the coal bearing Menefee Formation. The Cliff House Formation caps the higher ground on both sides of the gulch.

COAL GEOLOGY

Exploration drilling reports and analysis reports obtained by National King Coal concluded that the two coal seams exposed at the current mine coalesce into one "A" seam pod to the northwest of the current operation. These reports state that holes were drilled approximately 300-400 feet deep and no ground water encounters were reported. None of these holes were located within the CDRMS permit boundary. At the location of the King II Mine there is one "A" coal seam pod with a thickness ranging from 5.9 to 11.7 feet, with an average of 9.9 feet.

Bedding at the project site dips 3-6° in a south-southwesterly direction.

COAL QUALITY

The coal within the "A" seam pod of the King II Mine is low ash, low sulfur, and bituminous coal with a 5.0 free swelling index (blending metallurgical coal). An average analysis of six samples as received follows:

BTU	Moisture	Ash	Sulfur
12,743	5.6%	7.5%	0.68%

Additional coal analysis as well as analysis of the immediate floor and roof for the upper seam is included in Appendix 4.

GEOLOGIC HAZARDS

Geologist, David L. Gaskill, of the Conservation Division of the U.S.G.S. reported no unusual geologic hazards are known that might adversely affect mining in the upper or lower Menefee coal seams. He noted that ground water tables were below the seams (See King I Mine existing permit **Appendix 4(3)**). Mr. Gaskill's report was prepared in February, 1980, for the survey's consideration of National King Coal's application for a new Federal Lease adjacent to the current lease holdings at the current mine.
An inspection of the current King I Mine workings shows no significant

faults or strata displacements. The coal is strong and pillars are structurally competent showing a lack of squeezing (crushing) or rib spalling. The mine floor does not buckle due to stress from the overburden and because the water table is lower than the seams, pore water pressure is non-existent. The immediate mine roof consists of thinly laminated shales and sandstones. These beds rise up to the base of the Cliff House sandstone an average of twenty feet above the coal seam. The thick Cliff House sandstone provides a great deal of ground stability and generally prevents subsidence from reaching the surface after pillars are extracted during second mining.

STRATIGRAPHIC CROSS-SECTION

Regional and project area cross sections are shown on Map King II-004 and King II-008, and contained in the NEDO Project Geologic Report excerpts (Appendix 4).

EXPLORATION CORE DRILLING

During summer, 2015, GCC drilled 8 exploration holes, numbered GCC15-14 thru GCC15-21 as shown Map King II-004, within the existing permit area. One additional hole (GCC-15-22) approved in TR-22, was not drilled because the data from previous holes in this series rendered potential data from this hole unnecessary. Holes were rotary-drilled, nominally 5 to 6 inches in diameter, to predetermined core points. The total depth of each borehole was about 320 feet. The predetermined core zone was cored by PQ wireline methods. Drilling was with air, air with water injection, or water. Cuttings pits were necessary at all locations (see drawing at Appendix 4(4). Cuttings pits were excavated by a back-hoe and were approximately 6 feet wide by approximately 10 feet long. The pits were unlined and constructed the same for all drilling methods used.

All 8 boreholes utilized the already disturbed area of the existing roadway, minimizing the foot print. Drill holes were sealed by filling with cement to an elevation above the coal seam encounter, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug was covered with like material, such as road base or topsoil, depending which was present. Tracks were raked or brushed to remove obvious signs of activity. Water bearing strata were not encountered in the 8 drill holes. Drilling was accomplished with a truck-mounted core rig accompanied by a water truck typically of 3,000 gallon capacity; a flat-bed service truck; and smaller pickup trucks as necessary for service and transportation to and from the drilling sites. Water was provided to drill sites GCC15-14 thru GCC15-21 from the mine supply at the main plant.

All of the holes were geophysically logged. The equipment necessary for such work was mounted in a full-size Suburban-type 4X4. Under this program no roads were proposed for construction and no blasting was performed. The moderately rugged terrain of the exploration area consisted primarily of the mesas drained by Hay Gulch. Elevations varied from approximately 7,200 feet to 7,800 feet on the mesa top. The major changes in elevation were predominantly along the edges of the flat top mesas with relatively little elevation change on the mesa tops. All 8 of the exploratory boreholes were drilled on the mesa top. Topography is shown on attached map Topography & Drill Hole Locations (Appendix 4 (4) page 1).

The proposed exploration area was accessed by dirt roads and well defined jeep trails controlled and maintained by the Ute Mountain Ute Tribe and the State of Colorado. The weather can drastically affect mobility and as such severely limit exploration efforts, especially in winter months

The exploration borehole drilling was anticipated to be completed, weather permitting, by the end of December, 2014. Due to early snow in the region, drilling was actually completed during early summer, 2015.

Water bearing strata was not expected to be encountered in the 9 proposed drill holes. Water has not been encountered in previously drilling projects in the area or in the active workings of the King II mine. Small amounts of water were encountered occasionally at the King I mine. These were believed to be small “perched” aquifers that dried up quickly once the coal had been removed below them. Unlike the King II mine, the King I mine strata dipped below the coal outcrop. King II outcrops on practically all sides of the surrounding mesas, effectively draining any perched aquifers to the outcrop.

REFUSE PILE CHEMISTRY

A discussion of the chemistry and comprehensive sampling plan of the coal mine waste material generated from the King I and King II mines has been added to the permit with Minor Revision MR-41, and can be found as King II Appendix 4(8). Upon approval of MR-41, sampling will commence as soon as possible, weather permitting. Analysis results will be compiled into a report which will be forwarded to the Division and inserted into King II Appendix 4(8).

At the King I Mine: Samples will be collected from three drill holes located as shown on Appendix 4(8) Map 1 and Map 1A, Detail. Map 1 represents a survey performed in January, 2006 at a time when the refuse pile consisted only of King I refuse material. The cross-sections on the left portion of the map show the holes to be drilled and the existing surface and refuse pile/pre-refuse pile interface.

Due to the need to set a drill rig on a relatively flat surface, drill hole locations are placed at intervals along the existing road that accesses the top of the existing refuse pile. These holes are placed such that they will intersect refuse generated only from the King I mine over various periods of time. Holes drilled from higher locations would intersect refuse generated from the King II mine, which is to be sampled separately from the King I refuse. These holes will be drilled to depths of approximately 20' to 35 feet, depending on the cross-section as shown on Maps 1 & 1A, in order to collect representative samples of King I refuse, without intercepting pre-refuse pile base material which could contaminate the samples.

At the King II mine: As shown on Appendix 4(8) Map 2, four additional samples will be collected from existing drill cores or from within the current workings of the King II mine. King II sample locations are spaced at approximately one hole per square mile as per CDRMS guidance document "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data".

Holes labelled RCF #1 thru #3 were chosen to take advantage of locations which are legally and physically accessible within the King II mine. RCF #4 is an available drill core which was collected in 2015 as approved by TR-22.

MONITORING WELL DRILLING, TR-26

GCC proposes to drill 4 monitoring well "clusters" of 3 wells each, numbered MW-1 thru MW-4 as shown in King II Appendix 4 (9), Baseline Monitoring Well Specifications, and one alluvial monitoring well in Hay Gulch, upgradient from the King I mine site (MW-HGA-4) as shown in King II Appendix 4 (13). MW-1, MW-3, MW-4 and MW-HGA-4 are outside of the existing permit area. MW-2 is within the existing permit area. Each cluster will consist of one hole drilled in the Menefee formation to just above the "A" coal seam, one will be drilled into the A coal seam, and the remaining hole will be drilled to below the A seam to a depth just above the "B" coal seam. Alluvial Well MW-HGA-4 will be a single well drilled into the Hay Gulch Alluvium.

See King II Appendix 4(9), Bedrock Cluster Monitoring Well Specifications, for schematics and construction details of the bedrock cluster wells and Appendix 4(13) for schematics and construction details of the Alluvial Monitoring Well. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4)). Cuttings pits are excavated by a back-hoe and are approximately 6 feet wide by approximately 10 feet long. The pits are unlined and construction is the same for all drilling methods used. Locations of proposed holes and existing access roads are shown on the attached topography and drill hole locations map.

A small cutting pit will be constructed to capture the cuttings. During final reclamation, all drill holes will be sealed by filling with cement to an elevation above the coal seam encounter, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug will be covered with like material as in road base or topsoil depending which is present. Tracks will be raked or brushed to remove obvious signs of activity.

Where topsoil is encountered within the area to be disturbed at a drill pad, the topsoil will be salvaged by scraping the suitable soil horizons to the upgradient side of the drill pad where they will be temporarily stockpiled. Topsoil will be salvaged to the depths described in Section 2.04.9 for the soil type encountered at the drill pad. As the time required for drilling is short, less than a few days per hole, stockpiled topsoil will not be seeded or otherwise actively stabilized. Topsoil will be replaced, stabilized, and reseeded after drilling, as described in the reclamation plan in Section 2.05.4.

Given the small size and temporary nature of the drill pads, GCC requests that these areas be granted SAE (small area exemption) status with regard to sediment control. To ensure minimal impact from water erosion, each drill pad will have straw wattle erosion "logs" installed along the downgradient side or sides of the drill pad (See drawing in Appendix 4(4)). The straw wattles will filter any surface water runoff from the temporary drill pad during operations and will be left in place until reclamation of the drill pad is complete.

Drilling will be accomplished with a truck-mounted core rig accompanied by a water truck typically of 3,000 gallon capacity; a flat-bed service truck; and smaller pickup trucks as necessary for service and transportation to and from the drilling sites. Water will be provided to the drill sites from the mine supply at the main plant.

Some or all of the holes may be geophysically logged. The equipment necessary for such work is typically mounted in a full-size Suburban-type 4X4. Under this program no roads are proposed for construction and no blasting will be performed.

The moderately rugged terrain of the proposed exploration area consists primarily of the mesas drained by Hay Gulch. Elevations vary from approximately 7,400 feet to 8,600 feet on the mesa tops. The major changes in elevation are predominantly along the edges of the flat top mesas with relatively little elevation change on the mesa tops. All 4 of the monitoring well clusters will be drilled on the mesa tops. Topography is shown on attached map Topography & Drill Hole Locations (Appendix 4 (4) page 1).

The monitoring wells are accessed by dirt roads and well defined jeep trails controlled and maintained by the Ute Mountain Ute Tribe, Bureau of Land Management, Travis and Theresa Oliger, Clay Rathjen and Jack Wiltse. The weather can drastically affect mobility and as such, severely limit access, especially in winter months

The monitoring well drilling is anticipated to be completed, weather permitting, possibly by the end of December, 2016 or during spring and summer of 2017.

Water bearing strata are not expected to be encountered in the 4 monitoring well locations. Water has not been encountered in previous drilling projects in the area or in the active workings of the King II mine. Small amounts of water were encountered occasionally at the King I mine. These were believed to be small “perched” aquifers that dried up quickly once the coal had been removed below them. Unlike the King II mine, the King I mine strata dipped below the coal outcrop. King II outcrops on practically all sides of the surrounding mesas, effectively draining any perched aquifers to the outcrop.

2.04.7 - HYDROLOGY DESCRIPTION

Through exploration drilling as yet, no significant groundwater aquifers have been identified within and adjacent to the areas expected to be mined, therefore it is anticipated that the King II Mine will have little impact on groundwater systems locally or regionally and its impact on surface hydrology will be low. Operations within the Menefee coal seam are not expected to disrupt aquifers, streams, water systems, or the watershed (up-slope areas of the mine site). Hydrologic data obtained from the existing King II workings, abandoned King I Mine workings, core drill holes in the existing project area, and other research studies predict that the mining operation will have a negligible impact on groundwater of the permit and adjacent area and minor impact to surface water of the area (Appendix 4).

GROUNDWATER INFORMATION

Exploration drilling and reconnaissance of the permit area have not revealed a significant local or regional groundwater aquifer above or below the coal seam to be mined. The deeply dissected nature of the topography of the permit area and relatively flat and limited extent of the surfaces of the drainage basin upper surfaces limit the aerial extent of any aquifer and the potential for recharge to any aquifer in the area.

AQUIFERS

The King I Mine and the King II Mine are not in a major groundwater recharge area. Research shows this portion of the San Juan Basin has had very limited ground water development. Many of the wells in the general area have been completed in the unconsolidated alluvial gravels and terrace deposits of the La Plata River and its tributaries (including Hay Gulch), or in consolidated aquifers further south (down-dip) in the basin. Two formations, the Cliff House Sandstone and the Menefee Formation are important and relative to mining operations. These are further discussed below. The underlying Point Lookout Sandstone will not be affected by the mining operations.

Cliff House Sandstone

This unit comprises the cap rock to the dip slopes of the area. Based on information provided by the Menefee Land Company exploration drilling program for a proposed coal mine bordering the King I Mine, the sandstone is not saturated and is above the potentiometric surface in the immediate project vicinity. No water was encountered in any drill hole during this program at a level above or in the Menefee seams. All wells in this unit were dry in the Cliff House formation.

As these wells are located across Hay Gulch, there can be no hydrologic connection between the King II Mine and the Cliff House sandstone in their location. Therefore, no potential for impacts exists.

Menefee Formation

The upper part of this formation contains the coal seam to be mined at the King II Mine. Sixty seven years of mining at the King I Mine two miles southeast has not encountered any ground water in this formation.

Well Number 1, which is drilled in and draws water from the Quaternary alluvium, has a static water level 76 feet below ground level. Ground level at that point is at an elevation of 7,390 feet above sea level. The coal seam being mined is at an elevation of 7,450 feet. Thus, the mine will be located at least 136 feet above the potentiometric level. There is no indication that the aquifer will be affected by the King I Mine.

An exploratory core drill hole located in the SE/4 NW/4 of Section 32 was driven from the surface through all the overburden strata to the base of the currently mined upper Menefee coal seam at the King I Mine. No water was encountered. A well core hole was driven in 1978 on the King I Mine bench near the water tank to a depth of ninety feet. The well was dry. The collar of the well is below the upper Menefee seam outcrop. These two holes along with the previously mentioned active water wells indicate that the overburden strata, and strata at least to a depth of twenty feet below the lower Menefee coal seam contain no aquifers.

The best evidence is, however, of no disturbed aquifers or no aquifers and no ground water seepage in the mine workings themselves, except for local perched aquifers. Water was be pumped into the King I and is pumped into the King II Mine for dust and fire control. This is a normal need for operating coal mines. Intake water used inside a mine is typically not pumped out or discharged.

Point Lookout Sandstone

The Point Lookout Sandstone is below the formation to be mined and will not be disturbed during the mining process. The upper 100 to 140 feet is massive sandstone which may or may not contain significant amounts of ground water. Wells have recently been drilled into this unit for real estate developments in the area. Small amounts (max. pump rate of 30 gpm) of water were encountered in some locations.

Searches of the records of the Colorado Division of Water Resources for the King I Mine and personal observations of Fred M. Johnson, Certified Professional Geologist, indicate that quality of water in the massive sandstone member of the Point Lookout Sandstone is good.

GROUNDWATER WELLS

Groundwater wells in the vicinity of the project (Colorado Division of Water Resources database) reveal that water supply wells are completed in the alluvium of Hay Gulch, in strata that are isolated from the workings by the incision of Hay Gulch, or in strata far below the level of the "A" seam.

Landon Beck of Norwest Corporation performed a study of groundwater quantity and quality as it related to a subset of adjacent landowner concerns expressed in a Neighborhood Compatibility Meeting held on September 11, 2012. The study report, entitled "GCC Energy King II Coal Mine Hydro Study" is included as Appendix 4(6) of this document.

This report concludes:

> "GCC Energy mines a dry coal resource at the King II Coal Mine. No fluid transport mechanism exists to allow migration of any potential contaminates from the mine. No dewatering systems are employed at King II so there is no impact on local or regional aquifer water tables, including those produced by the ALO water wells identified for this study. Well construction of the ALO water wells has been found by public CDWR record to be typical for domestic water wells. This includes drilling and construction practices that co-mingle multiple water-bearing intervals, including coal seams, to obtain as much permitted water production as would reasonably be desired for a domestic water well. The practice of well completion within a coal seam, whether documented as producing water or not, is not a favorable practice and typically requires substantial mitigation including advanced pumping system design, monitoring and maintenance. Coal fines, methane and H2S gas production and bio-sludge accumulation must be expected with domestic water production at the seven ALO water wells independent of GCC Energy mining operations at the King II Coal Mine."

Technical Revision TR-26 has been submitted to the Division to address additional ground water monitoring wells, spring and seep surveys and additional surface water monitoring of the Hay Gulch ditch. The data obtained from these locations will be used to further define the hydrogeology of the area.

As of March 27, 2015 the records of the Colorado Division of Water Resources show the following wells which are within one (1) mile of the permit boundary:

Owner	Permit #	Install Date	T.S	R.	Sec.	Depth Feet	Static Level	Rate gpm	Use
State Board of Land Commissioners	50641	02/02/1972	34N	11W	4	225	140	7	Domestic
Alford, David H	93462	01/15/1943	34N	11W	5U	14	NDA	15	Domestic
Aspaas, Helen Ruth	197706	07/01/1890	34N	11W	5U	70	NDA	15	Domestic
Isgar, Shirley & Alford, David	61239-F	06/21/2004	34N	11W	5U	17	NDA	20	Commercial
Shafer, Charles	92816	11/09/2007	34N	11W	6U	115	52	7	Domestic
Wilson, John	173238	08/29/1990	34N	11W	6U	55	30	15	Domestic
Isgar, Arthur & Anne L	78235	06/01/1970	34N	11W	7	16	NDA	10	Dom./Stock
Walstedter, Joel	202718	07/17/1997	34N	11W	7U	500	300	5	Domestic
Beyer, Curtis D	77395	12/24/1974	34N	11W	8	450	364	6	Dom./Stock
Compton, Patricia	222459	08/24/2000	34N	11W	8	560	240	8	Domestic
Compton, Thomas L	77395-A	07/20/2002	34N	11W	8	560	300	15	Domestic
Etheridge, Gary	199059	07/18/1997	34N	11W	8	500	60	5	Domestic
Ramsey, Douglas K	227224	08/23/2000	34N	11W	8	500	200	8	Domestic
Hidden Ridge Ranch	244909	12/04/2002	35N	11W	28	315	142	2	Domestic
Huggins, William O III	237555	09/07/1995	35N	11W	28	100	18	15	Domestic
Hunzeker, Karen A	277287	05/23/2008	35N	11W	28	180	20	20	Domestic
Schultz, Mark & Angela	247773	03/03/2003	35N	11W	28	320	160	5	Domestic
Right, C L	18643	02/06/1964	35N	11W	32	80	40	20	Domestic
Smith, Violet E	47390	12/31/1954	35N	11W	32	72	36	35	Domestic
Waters, Bill	249530	06/01/2005	34N	12W	1	180	5	18	Domestic
Bontranger, Daniel	189391	11/28/1996	34N	12W	1U	230	28	4	Domestic
Paulek, Randy	263365	02/26/2007	34N	12W	2	160	31	NDA	
Doddoli, Adolfo & Allene F	265187	09/26/2005	34N	12W	3	340	340	20	Domestic
Miller, Tim E	251817	10/03/2003	34N	12W	3	600	230	5	Domestic
Schroeder, Charlotte L & Monroe L	240015	05/30/2002	34N	12W	3	560	350	4	Domestic
Woodworth, Joshua J	257977	09/06/2004	34N	12W	3	540	300	5	Domestic

Owner	Permit #	Install Date	T.S	R.	Sec.	Depth Feet	Static Level	Rate gpm	Use
Allmier, Robert	234470	07/10/1990	34N	12W	11U	347	NDA	10	Domestic
Boyer, Paul & Scott, Nancy	152123	07/10/1990	34N	12W	11U	347	NDA	10	Domestic
Funk, Peter Charles	211166	08/28/1998	34N	12W	12U	500	240	4	Domestic
Sullivan, Timothy & Martha (aka Haugen)	158064	10/05/1990	34N	12W	12U	500	NDA	4	Household
Haggerty, Jack & Caldwell, Christine	241354	06/11/2004	35N	12W	27	840	400	0.75	Domestic
Haller, Philip & Kim	239007	04/04/2002	35N	12W	27	740	320	1	Domestic
Vega, Paul A	273055	06/16/2007	35N	12W	27	660	525	5	Dom./Stock
Coyne, J T	228139	11/15/2000	35N	12W	34	500	400	9	Domestic
Gallagher, Timothy J & Christine M	236082	05/29/2002	35N	12W	34	600	240	2	Domestic
Jackson, Eugene & Linda	265631	09/27/2005	35N	12W	34	200	50	15	Domestic
King, Gerald T	292848	04/03/2014	35N	12W	34	NDA	280	8	Domestic
Luz, Travis	256673	08/01/2003	35N	12W	34	680	360	14	Domestic
Mills, Thomas P	249212	07/08/2003	35N	12W	34	700	300	10	Domestic
Oliger, Travis J & Theresa T	226214	09/05/2000	35N	12W	34	500	400	12	Domestic
Slade, G B	31110	06/12/1967	35N	12W	34	85	66	8	Domestic
Slade, G B	31111	06/17/1967	35N	12W	34	103	83	17	Domestic
Speas, Deborah	269922	10/12/2006	35N	12W	34	770	580	NDA	Domestic
Trujillo, Thad	268168	05/08/2006	35N	12W	35	100	25	20	Domestic
Trujillo, Thad	268278	05/11/2006	35N	12W	35	120	25	30	Domestic
National King Coal (#2 Down gradient)	260656	11/30/2007	35N	12W	36	20	NDA	NA	Monitoring

These wells and or points of diversion are shown on Map King II-004. Copies of Colorado Division of Water Resources well data sheets can be found in Appendix 4(5).

SURFACE WATER INFORMATION

The only significant surface water features within and adjacent to the project area are the Hay Gulch irrigation ditch that runs from northeast to southwest north side of County Road 120 within the project area. There are no plans to disturb this ditch, and it will be maintained during the course of mine operations. Water quality and flow data from the Hay Gulch irrigation ditch are contained in Appendix 4.

There are no streams, lakes, or ponds within the project area. The adjacent Dunn Ranch owned by the Ute Mountain Tribe contains one stock pond, identified from maps and aerial photography. Currently, access to this property has not been granted, so a definitive evaluation of the structure has not been undertaken.

Alkali Gulch is located to the northwest of the project area. As this feature is isolated from the project area by an intervening ridge, the potential for impacts to any surface waters of Alkali Gulch are insignificant.

The surface drainages channels that are located within the bottom of the two arms of the drainage basin in the project area are incised discontinuous features. Based on an investigation of their configurations, they do not regularly flow, have not flowed during the past year, and based on the vegetation stature and lack of flow related deposition, appear not to have run in recent times.

Maps King II-007 A thru G provides information on surface water features of the project and adjacent area.

ALTERNATIVE WATER SUPPLY INFORMATION

GCC Energy, LLC estimates a consumptive use of 8.61 acre feet per year, for use in dust control operation. The three continuous mining machines, each feeder breaker and belt transfer points are sprayed to reduce dust. Process water will be obtained by development of a well, located in the Hay Gulch Valley Floor, or drilled adjacent to the surface facilities. No other consumptive uses of water are anticipated for the mine. Water will be detained within the sediment pond only to allow sediment settling. The pond will not be lined or sealed and remaining water will be allowed to recharge or evaporate.

2.04.8 - CLIMATOLOGICAL INFORMATION

Site-specific data on the climate at the mine site are not available. However, temperature and precipitation data has been recorded for the Fort Lewis Station, approximately five miles west of the recording station. Prevailing wind data is not recorded at the Fort Lewis Station but is available from the La Plata County (Durango) Regional Airport. All data in this section is from the summaries at http://www.wrcc.dri.edu/cgi-bin. Copies of the summaries from the web site are provided in Appendix 5.

Fort Lewis Station Mean Monthly Precipitation (inches)

	Jan	Feb	Mar	Apr	May	Jun
Mean	**1.67**	**1.39**	**1.50**	**1.15**	**1.03**	**0.69**

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	**2.06**	**2.27**	**1.72**	**1.90**	**1.44**	**1.37**	**18.19**

Fort Lewis Station Mean Monthly Temperature (°F)

	Jan	Feb	Mar	Apr	May	Jun
Max.	**36.8**	**40.5**	**46.5**	**56.1**	**65.9**	**76.6**
Min.	**9.4**	**12.7**	**19.3**	**25.9**	**32.9**	**40.4**
Mean	**23.0**	**26.6**	**32.9**	**40.9**	**49.2**	**58.4**

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Max.	**81.2**	**78.2**	**71.9**	**61.2**	**46.8**	**38.4**	**58.3**
Min.	**48.4**	**47.1**	**39.7**	**30.3**	**19.5**	**11.4**	**28.1**
Mean	**64.7**	**62.7**	**55.9**	**45.8**	**33.2**	**24.9**	**43.2**

Durango Airport Prevailing Wind Direction

	Jan	Feb	Mar	Apr	May	Jun
Direction	**N**	**N**	**N**	**WSW**	**W**	**N**

	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Direction	**N**	**N**	**N**	**N**	**N**	**N**	**N**

2.04.9 - SOIL RESOURCE INFORMATION

Soil Resource Inventory

The U.S. Department of Agriculture Soil Survey of La Plata County, Colorado (1988) identifies four soil series within three map units in the area of the project to experience surface disturbance. The distribution of the soil map units is depicted on map King II-006. Data sheets for soil sample locations and analysis summaries are contained in Appendix 6.

Umbarg soils are found within the level colluvial deposits between the bordering sideslopes of the drainage basins. These are fine-loamy, mixed mesic Cumulic Haplustolls. These soils typically form in alluvium on fans and upland valley bottoms. They are deep and moderately well drained.

The presence of this soil series was confirmed by sampling at three locations within the area of disturbance (sample points U1, U2, and U3). Soil suitable for plant growth and revegetation was identified to an average depth of 25.3 inches.

The Lazear-Rock Outcrop Complex was mapped and confirmed on the northeast, south, and southwest facing drainage sideslopes within the project area. This map unit comprises the Lazear series and exposed rock outcrops (in this area, sandstone and shales). The Lazear series is described as a loamy, mixed (calcareous), mesic Lithic Ustic Torriorthent. This series is shallow and well-drained, formed in residuum and alluvium derived from sandstone.

This soil map unit (and the Lazear series) was confirmed at two sample sites on either side of the drainage basin in the location of the portals and surface facilities (sample points LRO1 and LRO2). Soil test pits revealed variable depths of plant growth medium ranging from five to 28 inches. Salvage within this soil type will be dependent on the near surface proximity of sandstone outcrops.

The third soil map unit identified within the potential surface disturbance area is the Archuleta-Sanchez Complex located on the northwest facing sideslope along the east drainage basin arm. The complex is comprised of 45 percent Archuleta loam and 30 percent Sanchez very stony sandy clay loam. Remaining constituents are clays, loams, and rock.

The single sample point (AS1) within this complex revealed the presence of the Sanchez series. This soil is a loamy-skeletal, mixed Lithic Eutroboralf. These soils are shallow, well-drained and formed in

residuum overlying sandstone on hills, ridges, and mountainsides.

The soil test pit revealed a very shallow five inch deep stony loam profile underlain by sandstone. Salvage of suitable plant growth material from this soil unit may be problematic, and this unit should not be relied on to provide a dependable quantity of plant growth material for reclamation, if disturbed.

Suitability of Soils for Reclamation

Appendix 6 contains the results of soil analysis for the three soil series encountered in the soil resource inventory. Also included in the Appendix is a compilation of soil horizon suitability criteria for reclamation. The following summary table addresses those soil parameters identified in Rule 2.04.9.

Soil/Parameter	pH	EC	SAR	Texture
Umbarg (range)	6.94-7.72	0.3-0.7	0.5-0.6	Sandy loam- Loam
Umbarg (mean)	7.38	0.47	0.53	
Lazear (range)	7.1-7.62	0.3-0.5	0.6-1.2	Clay-Sandy clay loam
Lazear (mean)	7.44	0.4	0.93	
Sanchez	6.56	0.4	0.7	Sandy clay loam
Suspect Levels	<5.5 or >8.8	>8.0	>16.0	

Based on the results of sampling, none of the soil series has limitations for plant growth based on the parameters specified in Rule 2.04.9 and guidelines from five western states.

With regard to other parameters evaluated, the following samples exceeded suspect levels for the identified parameters, or were below deficiency levels for nitrogen, phosphorus, or potassium.

The Umbarg 2 sample was slightly below the deficiency level for nitrate nitrogen (4.2 ppm with 2% organic matter). This can be corrected with fertilizer or amendments during reclamation.

Both Lazear samples revealed deficient levels of phosphorus in sampling (2.5 an 0.6 ppm). As with nitrate-nitrogen this can be corrected with fertilizer or amendments during reclamation.

All samples showed iron levels well above suspect levels identified by Munshower as potentially inhibitory to vegetation. As no symptoms of iron poisoning presented in the vegetation, these levels were not

considered to be problematic with the vegetation species present at the site.

The Umbarg 2 and 3 samples showed aluminum concentrations (4.9-5.6 ppm) at or slightly above the Munshower suspect levels. As with iron, no metal symptoms were apparent in the vegetation.

The Lazear samples contained 44-45 percent clay in their textural analysis. This percentage exceeds the suspect level for Montana and is borderline suspect for New Mexico (the only other state to specify a numerical suspect level for clay). For this reason, and the variability of depth and likelihood of encountering undesirable rock fragments, the applicant proposes to exclude the Lazear soils from salvage for reclamation.

Based on the results of soil sampling and field identification and mapping, the Umbarg soils appear suitable for use in reclamation. If disturbed, the Sanchez series soils can provide limited amounts of suitable soil for reclamation. Lazear series soils, given their concentration of clay and relative shallow and stony nature are not particularly suited for reclamation. The depth and extent of the Umbarg soils within the area for surface disturbance, make salvage of these soils in sufficient amounts for reclamation preferable.

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consisted of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involved completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further defined coal reserves for future mine planning. All of the proposed boreholes were drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

TR-26 Monitoring Well Site Locations

Technical Revision TR-26 to this permit document will consist of drilling monitoring wells on land owned by State of Colorado Lease CO-3388, Bureau of Land Management, Travis & Theresa Oliger, Clay Rathjen, and Jack Wiltse. This drilling program involves completion of 4 bedrock monitoring well clusters of 3 wells each (MW-1 thru MW-4) and one alluvial monitoring well in Hay Gulch, upgradient from the King I mine site (MW-HGA-4).

Soil resources of areas proposed for disturbance were characterized during the baseline soils investigation for the King II Mine. The disturbance proposed for the monitoring well clusters in total will be significantly less than one acre in size.

For that reason, no additional baseline soils investigations are proposed. The soils anticipated to be encountered at each monitoring well cluster are described below, and evaluated based on the descriptions within the Soil Survey of La Plata County Area, Colorado (USDA, 1988) and soil sampling and analysis conducted for the King II Mine baseline permitting in 2005.

Cluster MW-1

Two soil map units have been identified for potential disturbance by this monitoring well cluster, the Archuleta-Sanchez Stony Complex 12-65% slopes (USDA Map Unit 7) and the Zau Stony Loam 3-9% slopes (USDA Map Unit 79).

The Archuleta-Sanchez Stony Complex was sampled and evaluated in the King II Mine baseline soils investigation and found to be a very shallow stony loam underlain at shallow depth by sandstone. For this reason, topsoil salvage in this soil was not considered practical.

The Zau Stony Loam soil is described as a moderately deep, well-drained soil of high mesas and mountainsides. Characteristically, it has a 4" surface layer of organic material, underlain by a stony loam and a brown clay loam, with bedrock appearing at between 20 and 40 inches. The predominant use of this soil is rangeland, due to slow permeability and erosion potential.

Cluster MW-2

Located up-drainage from the King II Mine surface facilities, the sole soil unit within this monitoring well cluster is Pulpit Loam 3-12% slopes (USDA Map Unit 56). The USDA characterizes this soil as a deep, moderately well drained soil on mesas derived from wind-borne material (loess). A soil column of this unit is generally comprised of a loam 5" thick, underlain by silty clay loam and loam 24" thick. Sandstone parent material is present between 20 and 40". This soil is often used for irrigated cropland.

Cluster MW-3

Located on the sideslope above a drainage bottom, monitoring well cluster MW-3 may disturb two soil series, Lazear Stony Loam 6-25% slopes (USDA Map Unit 41) and Witt Loam 3-6% slopes (USDA Map Unit 76).Lazear Stony Loam is closely related to the Lazear Rock Outcrop Complex (USDA Map Unit 42) and this series (Lazear Stony Loam) was sampled in the King II Mine baseline soil investigation. It is a shallow, well-drained soil derived from sandstone residuum. The surface is typically a stony loam 5" thick underlain by up to 10" of loam. The sandstone parent material is typically found at 15". In sampling the Lazear soils during baseline investigations, it was found that these soils were very high in clay fraction, exceeding Montana and New Mexico suitability standards. For this reason, and the high variability of depth and potential for a large rock component, these soils were excluded from topsoil salvage at the King II Mine.

Witt Loam soils are formed in calcareous loess on uplands and mesas. A typical profile yields a surface layer 7" thick of loam, underlain by additional loam and silty clay loams to 60". This soil is used for crops and rangeland with management concerns being erosion, given the silty nature of the profile.

MW-4

Monitoring Well Cluster MW-4 is located on the edge of a mesa and may encounter Pulpit Loam (USDA Map Unit 56) and Lazear Rock Outcrop Complex (USDA Map Unit 42)

Both of these soils have been discussed above.

MW-HGA-4

The Big Blue clay loam soil type is located within the alluvial deposition of Hay Gulch, and is derived from adjacent sediment with a shale parent material (USDA Map Unit 13). The Soil Survey of La Plata County Area describes the typical pedon as ine-textured, with a dark gray clay loam 4" thick, underlain by a very dark gray silty clay approximately 6" in thickness. Underlying material is silty clay to 60". Underlying material may exhibit gleying and mottles indicative of slow permeability.

Potential Suitability for Topsoil Salvage and Reclamation Potential

Archuleta-Sanchez Stony Complex

The potential for salvaging sufficient quantities of topsoil from areas with this soil type is limited, given the shallow nature and presence of bedrock fragments.

Big Blue Clay Loam

Soil salvage from this soil unit is limited given the high clay component and potential for salts in lower horizons of this soil. Based on the descriptions from the NRCS, it is anticipated that four (4) inches of topsoil is acceptable for salvage, with another six (6) inches of underlying soil, if field inspection reveals that the underlying horizon is not salty in nature or does not contain more than 35% clay fraction.

Lazear Stony Loam/Lazear Rock Outcrop Complex

As with the Archuleta-Sanchez Stony Complex, the potential for salvaging sufficient quantities of topsoil from areas with this soil type is limited, given the shallow nature and presence of bedrock fragments.

Pulpit Loam

Soil salvage for disturbance within this soil series may yield depths up to 30" of topsoil and subsoil (B horizon) materials. Salvage should be terminated with the encountering of the sandstone parent material, regardless of depth.

Witt Loam

Soil salvage for disturbance within this soil series may yield depths up to 60” of topsoil and subsoil (B horizon) materials.

Zau Stony Loam

The potential for Zau soils to be suitable for salvage and use in reclamation is dependent on the presence and fraction of rock within the soil column. Locations with more than 15-20% rock fragments are not generally suitable for use in reclamation.

2.04.10 - VEGETATION INFORMATION

Map King II-006 provides a delineation of the vegetation communities disturbed by surface facilities at the mine, as well as the reference area.

The plant communities within the affected surface facilities area are the rabbitbrush/big sage mixed shrubland and pinyon-juniper woodland. The rabbitbrush/big sage mixed shrubland community is located on the relatively flat colluvial bottom that is present between the drainage basin side slopes. The pinyon juniper woodland vegetation community predominates from the edge of the flat colluvial bottom up the side slopes of the dissected drainage basins. Monitoring well locations in TR26 added one additional minor vegetation community, Agricultural/Hay/Old Field, described below.

The majority of surface disturbance will occur within the rabbitbrush/big sage mixed shrubland community. The re-vegetation plan will focus on reestablishment of a mixed shrubland equivalent or better in utility than the existing community.

Disturbance within the pinyon juniper woodland will entail no more than three (3) acres. For this reason, the pinyon juniper woodland was deemed a minor community in accordance with CDRMS guidelines, sampled qualitatively, and is not slated for reestablishment during reclamation.

The Agricultural/Hay/Old Field vegetation community is found within the areas disturbed by monitoring well drill pads MW-3 and MW-HGA-4. The maximum surface disturbance at each drill pad is 0.23 acres, allowing this vegetation community to be considered a minor vegetation community for the purposes of this permit document.

At drill pad MW-3, the site is at the boundary of an old alfalfa hay field that is no longer in active production and a bordering pinyon-juniper vegetation community. The predominant vegetation of this old field is alfalfa and ruderal annual species. Reclamation at this drill pad will not return the drill pad to agricultural species or pinyon-juniper, but will re-establish the predominantly native species in the approved rangeland seed mix in Section 2.05.4.

At drill pad MW-HGA-4, located in Hay Gulch, the vegetation community is a mesic grass/alfalfa field in production. The field is dominated by wheatgrasses, orchardgrass, and alfalfa, and will be returned to this species mix during final reclamation, in accordance with the surface landowner's wishes.

A complete description of the major vegetation communities is contained within the baseline vegetation report in Appendix 7.

Threatened and Endangered Plant Species

The Colorado Natural Areas Program (CNAP) at Colorado State University was contacted to undertake a search of their database of natural heritage elements ("occurrences of significant natural communities and rare, threatened or endangered plants and animals") for the area within and 1.5 miles outside the permit area. The results of that search identified only the wolverine (presumed extirpated in Colorado since 1979) and the Townsend's big-eared bat (a species of concern for the BLM and Forest Service). No candidate or federally listed plant species were identified within or adjacent to the permit area. The CNAP report can be found in Appendix 8

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consisted of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involved completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further defined coal reserves for future mine planning. All of the proposed boreholes were drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

TR-26 Monitoring Well Locations

Technical Revision TR-26 to this permit document will consist of drilling monitoring wells on land owned by State of Colorado Lease CO-3388, Bureau of Land Management, Travis & Theresa Oliger, Clay Rathjen, and Jack Wiltse. This drilling program involves completion of 4 bedrock monitoring well clusters of 3 wells each (MW-1 thru MW-4) and one alluvial monitoring well in Hay Gulch, upgradient from the King I mine site (MW-HGA-4).

Ecosphere Environmental Services of Durango, Colorado has been completed a natural resource survey of the proposed drill sites and will issue a report to be included as Appendix 8(6).

2.04.11 - FISH AND WILDLIFE RESOURCES INFORMATION

The Natural Diversity Information Source (NDIS) of the Colorado Division of Wildlife (http://ndis.nrel.colostate.edu) was searched for information on wildlife species of the surface disturbance area. A list of known or likely wildlife species of La Plata County is contained in Appendix 8.

A further review of wildlife species for which the Colorado Division of Wildlife has distribution maps on the NDIS web site reveals that the permit area is not within any concentration or important ranges for mule deer, elk, bighorn sheep, mountain lion, or black bear (see sample maps in Appendix 8).

Seasonal Use of Potentially Occurring Wildlife Species

With the exception of migratory birds and bats the wildlife species encountered during the site inspection or that potentially occurs on-site are expected to be year-round residents or users of the site. Carnivore and ungulate species are not restricted to this site and tend to have relatively large home ranges (up to several square miles). The majority of rodent and insectivore species can be expected to reside on-site throughout the year, though many may hibernate during the cold months. Avian species may be year-round, temporary migrants, or summer residents of the site. Year-round residents would include raptors, gallinaceous birds, doves, owls, and woodpeckers. The majority of passerines would use the site during the spring, summer, and fall for breeding, feeding or resting during migration. Amphibian and reptile species of the site are year-round residents.

Project Effects to Wildlife

Noise and air emissions during mining will cause a temporary disturbance to wildlife during active operations. Some wildlife species will be temporarily displaced within areas of surface operations. Species such as raccoons, coyotes, deer, and raptors will continue to use the property and adjacent areas during mining operations and the site itself when operations are not active. Bird species will use the periphery of the site and the site itself opportunistically, if prey or food species are present.

The project will ultimately return the site to a topography and vegetation community similar (or better from a wildlife perspective) than that now

on site. The existing hay meadow within Hay Gulch will not be disturbed.

Permanent reclamation of the site will entail grading, re-spreading topsoil, and seeding and planting perennial native species that will support wildlife species. The mining and reclamation will create a more diverse habitat than is currently present. With the planting of desirable native forage shrubs, additional strata and vegetation layers will be added to the site, creating improved cover, foraging, roosting, and nesting areas for wildlife. With control and/or removal of noxious species during the project, and the replacement of desirable graminoid, forb, shrub, and tree species, mining and reclamation will result in enhancement of wildlife habitat on site.

Threatened and Endangered Wildlife Species

The Colorado Natural Areas Program (CNAP) at Colorado State University was contacted to undertake a search of their database of natural heritage elements ("occurrences of significant natural communities and rare, threatened or endangered plants and animals") for the area within and 1.5 miles outside the permit area. The results of that search identified the wolverine (presumed extirpated in Colorado since 1979) and the Townsend's big-eared bat (a species of concern for the BLM and Forest Service). No candidate or federally listed species were identified within or adjacent to the permit area. The CNAP report can be found in Appendix 8.

TR-22 Drill Site Locations

Technical Revision TR-22 to this permit document consisted of drilling exploration core drill holes on State of Colorado Lease CO-3388. This exploration drilling program involved completion of up to 9 boreholes, all within the C-1981-035 permit area. The boreholes further defined coal reserves for future mine planning. All of the proposed boreholes were drilled utilizing already disturbed portions of the access roads.

SWCA Environmental Consultants of Durango, Colorado performed a natural resource survey of the proposed drill sites and issued a report dated April 11, 2014 (see Appendix 8(5).

TR-26 Monitoring Well Locations

Technical Revision TR-26 to this permit document will consist of drilling monitoring wells on land owned by State of Colorado Lease CO-3388, Bureau of Land Management, Travis & Theresa Oliger, Clay Rathjen, and Jack Wiltse. This drilling program involves completion of 4 bedrock monitoring well clusters of 3 wells each (MW-1 thru MW-4) and one alluvial monitoring well in Hay Gulch, upgradient from the King I mine site (MW-HGA-4).

Ecosphere Environmental Services of Durango, Colorado has completed a natural resource survey of the proposed drill sites and will issue a report to be included as Appendix 8(6).

2.04.12 - PRIME FARMLAND INVESTIGATION

A review of the USDA Important Farmlands of La Plata County, Colorado (Appendix 9) reveals that there are no prime farmlands within the permit area. Hay Gulch is described as "Irrigated Land (Not Prime)".

Further, based on the criteria in Rule 2.04.12 the following disqualifying factors apply:

1) The land has not been historically used as a cropland. Livestock grazing and some hay crops have been grown in the Hay Gulch Meadow.

2) The slope of all drainage basin sideslope areas is greater than six (6) percent.

3) Other than Hay Gulch, where no surface disturbance is proposed, the land is not irrigated or naturally sub-irrigated, and has no developed water supply.

4) There are no designated prime farmland soil map units.

Request for Negative Determination of the Presence of Prime Farmland

In accordance with the requirements of Rule 2.04.12(3) GCC Energy, LLC requests a negative determination for the presence of prime farmlands at the King II Mine.

2.04.13 - ANNUAL RECLAMATION REPORT

By March 1 of the following calendar year, an annual reclamation report containing the information specified by Rule 2.04.13 in its current language at the time of the report will be provided to the Colorado Division of Reclamation, Mining & Safety.

2.05.2 - OPERATION PLAN – ESTIMATED AREA FOR LIFE OF MINE OPERATIONS

PRODUCTION METHODS AND EQUIPMENT

The King II Mine is an underground coal mining operation employing room and pillar design and techniques for extraction of the coal resource from the upper Menefee seam.

The engineering and design of the mine require that coal reserves be divided into sections or panels convenient for extraction and in alignment with the mains to facilitate access and extraction. Rooms (larger open areas from which coal is extracted) are developed. Coal pillars are left at the periphery of the rooms to support the main roof. The size, location, and number of rooms and pillars are determined by the physical characteristics (thickness, load bearing capability, presence of non-coal inclusions) of the coal in a given location of the mine. With the completion of a given panel or section (when all minable coal has been extracted), the remaining pillars are mined as the operation retreats from the panel. In this way, the recovery of the coal is maximized. Site work began at the King II mine April, 2007. The first coal was extracted July 25, 2007. Proven coal reserves at present are approximately 8-9 million tons. Current annual production is approximately 970,000 tons. The annual projected maximum production of coal is 1,300,000 tons. Total life of mine at maximum projected production is estimated to be 6 – 9 years (April, 2021 – April 2024).

The coal will be mined using one or two continuous mining units (sections). These sections consist of one or two continuous miners, 2-4 shuttle cars, one or two dual boom roof drills (bolter machines), a feeder/breaker belt feeder, and a 12,470-950/480 volt power center. After coal is cut from the face by the continuous miner, it is loaded into the shuttle cars for transporting to the conveyor belt and removal from the mine.

OPERATION DESCRIPTION

The King II Mine, being an underground operation, will affect the majority of land during the construction of surface facilities and mine access development during the first two to three years of operation. The land to be affected by the construction of mine surface facilities and mine access is specifically described in Sections 2.04.3 (Site Description and Land Use), 2.04.9 (Soils), 2.04.10 (Vegetation) and 2.04.11 (Fish and Wildlife Resources) of this document.

All areas of potential and actual surface disturbance for the King II Mine have been incorporated into the permit document. GCC Energy does not anticipate obtaining a new, separate five-year permit for any areas other than those depicted or described in the King II permit at this time, nor are changes in operations or facilities anticipated at this time.

2.05.3 - OPERATION PLAN - MINE PLAN AREA

PRODUCTION METHODS AND EQUIPMENT

METHOD OF COAL EXTRACTION

The King II Mine will be an underground coal mine. A maximum stripping ratio of 1:50 make coal extraction operations amenable to underground methods only. The method used is common to most U.S. underground coal mines and is called coal extraction by room and pillar mining. A series of mine openings are developed from the surface to the coal resources of the mine property. At the King II Mine, the upper Menefee coal seam outcrops along Cochran Canyon. The portals (mine openings) are to be constructed at the seam outcrop. The openings or entries are then advanced in the coal following the seam. No shafts (vertical openings) or inclines through overburden material are necessary.

The coal reserves are divided up into sections or panels convenient for extraction. First, rooms are developed leaving coal pillars to support the main roof. Later, after a panel has been developed, the pillars are extracted on retreat from the panel. In this way, the recovery of the coal is maximized. Since pillaring operations began at the King I Mine during the late summer months of 1979, the extraction ratio of coal removed from the panels to coal left behind is 5:1. This is an excellent extraction ratio.

MINE WORKINGS

Map King II-005 shows proposed mine workings within the Permit Area boundaries. Superimposed above the workings, the surface topography has been drawn in for correlation purposes between the surface and the underground workings.

MINING EQUIPMENT

The coal will be mined using one or two continuous mining units (sections). These sections consist of one or two continuous miners, 2-4 shuttle cars, one or two dual boom roof drills (bolter machines), a feeder/breaker belt feeder, and a 12,470-950/480 volt power center. After coal is ripped from the face, it is loaded into the shuttle cars for transporting to the conveyor belt for removal from the mine. All the above equipment is electrical. Haulage vehicles for moving men and supplies into the mine are diesel or battery powered.

Electric power for the mine is supplied by a surface sub-station. Voltage entering the mine is 12,470VAC which is stepped down by the

power centers in the mine to 950/480VAC for the electrical equipment. Water used for dust suppression and motor cooling in the mine is supplied via a 4-6 inch diameter HDPE or aluminum pipe. Water will be trucked to the site until such time as water rights agreements are in place for use of irrigation ditch or well water.
Ground water is generally absent and therefore spore water pressure does not contribute to instability of the roof, floor or pillars. In general, working conditions in the mine are good.

STRUCTURAL CONSIDERATIONS OF THE MINE LAYOUT

King II workings are confined to the upper Menefee (A) coal seam of the Menefee formation (Mesa Verde Group). The seam varies from about six to ten feet in thickness. The equipment used in the mine and the mining method itself is tailored to this seam's structural contours. The seam dips at a 2-3% grade to the Southwest. The strike of the seam is S70°E. For specific details of the local geology see Section 2.04.6.

For practical purposes the upper Menefee seam may be considered flat or tabular with no rolling of seam. Consequently, the layout of the mine workings is not dependent upon the steepness of the seam as it is upon the boundary lines of the coal leases. The panels or mining sections are laid out as shown on Map King II-005 to maximize the recovery of the lease coal. Most of the underground openings or entries are driven along some given angle to the true dip to take advantage of the property boundaries. This angle cannot be correlated to the cleat of the coal. The tight cleat allows the mine workings to be oriented without rib spalling problems arising. In addition, the lack of ground water seepage allows the workings to be laid out without regard to drainage slopes.

The main structural consideration of the mine layout is the width of the panels (number of multiple entries) and the width of the entries. A panel width of 250 to 400 feet with five to seven entries has proved satisfactory for development and pillar extraction. This width allows for room development upon retreat from the panel during pillar extraction. Stresses due to overburden thickness are minimal compared to deeper operating coal mines. Maximum over-burden cover does not exceed 350 feet at any point, and the stress field seems to act in a vertical direction. No ground forces other than vertical have been observed by inspection during mining operations. The shallow overburden cover would accommodate an increase in the panel width or the number of multiple entries without undue stress problems. No major faults or slip planes cross the mine workings allowing for an even greater degree of optional orientation of the workings. The widths of the openings are limited to twenty feet by MSHA for control of the immediate roof (the thickness of the roof to the top of the resin bolting horizon).

ANTICIPATED PRODUCTION

ANTICIPATED PRODUCTION

It is anticipated that production may reach 1,300,000 tons per year.

OPERATION PLAN - PERMIT AREA

MINE FACILITIES

SUPPORT FACILITIES

The anticipated surface facilities and structures at the King II Mine are depicted on Map King II-007 (Operation Plan and Surface Facilities). The descriptions and tables in Section 2.05.4 identify each. In general, the mine facilities include the mine bench and portals, offices, maintenance, and shop facilities, infrastructure for supplying power and ventilation to the mine, substation, fuel tanks, water and septic systems, haul and access roads, sediment control systems, stockpiles for topsoil and coal products, and coal sorting and load-out structures. Detailed designs for all structures with design and certification requirements are located in Appendices 10 and 11.

MINE BENCH

The surface disturbed area includes the surface facilities area, the mine bench and the access road to the mine bench. Total disturbed acreage is estimated to be 22.36 acres. All surface facilities for the support and processing of coal will be constructed as shown on Map King II-007 (Operations Plan and Surface Features Map). No surface mining operations exist on the project area; all coal extraction activities are to be confined to the underground King II Mine.
Map King II-007 shows the operations area which includes the mine bench.

A stable sloped highwall will be cut to provide a bench for the portal areas. The highwall is at the outcrop of the coal seam being mined. Material excavated to construct the portal face-up will be used to level the mine bench and fill the two surface water drainage channels after the installation of the Undisturbed Drainage Ditches.

The highwalls and the back-filled surface water drainage channels are shown on Map King II-007 and are included within the boundaries of the surface disturbed area of 22.36 acres.

Spoil material from the earth worked areas will remain in the general facilities area in the west drainage area for use as fill. Diversion culverts and channels (See Maps King II-007 A, B, & C) will divert the up-slope runoff around the disturbed areas. The reclamation plan calls for utilizing the soil stored in the Bermed Topsoil Storage areas for re-vegetating these areas upon abandonment of the mine.

EXISTING STRUCTURES

There were no existing structures prior to construction at the King II Mine as defined by Rule 2.05.3(3)(b).

ROADS

One combination haul/access road will be designed and constructed to access the mine facilities and coal load-out. The road will originate at La Plata County Road 120 and proceed north to a location south of the mine bench where the road will split forming a one-way loop through the mine facilities. Specific designs and the engineer's certification for this road will be included in Appendix 10 and Maps King II-007 D thru G.

An access road to the water tanks is planned. This road will originate at the office building and end at the water tanks. Specific designs and the engineer's certification for this road will be included in Appendix 10.

An access road to the conveyor/return portal area is planned. This road will originate at the office building and end at the conveyor/return air portal area. Specific designs and the engineer's certification for this road will be included in Appendix 10.

CONVEYOR

The conveyor system to be constructed at the King II Mine is depicted on Map King II-007 and described in Section 2.05.4 (Removal of Surface Facilities).

SURFACE DRAINAGE AND RECLAMATION

Reclamation of the permit area is covered in Section 2.05.4. The entire disturbed area will be required for coal operations - all space is utilized. Plans for abandonment of the mine are discussed in Section 2.05.4. Surface drainage patterns through the permit area and the up-slope areas are shown on Maps King II-007 A thru G . Details of the diversion channels and piping systems are discussed in Section 2.05.6 and Appendix 11.

Maps King II-007 A thru G show the runoff flows in the mine plan area and the permit area. Sediment pond design, drainage plans and designed hydraulic structures located within the project area will be certified by a professional engineer. This certification is to be included in Appendix 10 & 11.

The completed undisturbed area drainage ditches and culverts will allow the up-slope undisturbed runoff to bypass the disturbed area, return to the native drainage channel, and ultimately flow into the meadow. There should be no effect on water quality in Hay Gulch attributable to the King II Mine.

Water contained in the sediment pond will not be discharged into the meadow, but allowed to evaporate. The only water to be discharged from the ponds will be from precipitation events approaching or exceeding the ten year, twenty-four hour storm event. The ponds are described in Section 2.05.6 and are designed to manage the precipitation events as required by regulation and in accordance with the requirements of GCC Energy's N.P.D.E.S permit No. CO-G-850001.

PONDS, IMPOUNDMENTS, AND DIVERSIONS

DRAINAGE PLAN

The drainage plan for the King II Mine will consist of diversion of uncontaminated water originating upstream of the mine yard, through the yard to the discharge point at the south end of site. Runoff generated on the yard itself will be collected and routed through the sedimentation ponds.

Refer to 2.05.6 (Hydrologic Balance) Appendix 10 & 11 and Maps King II-007 A thru G for a detailed description of Mine Surface Drainage and Sediment Pond design and descriptions.

The sediment control system for the King II Mine will be comprised of undisturbed area drainage ditches and one sediment pond. Designs for sediment control system structures are included in Appendix 11.

Approximately 1.3 acres of the disturbed area lies below the sediment pond, consisting of the haul road between County Road 120 and the north end of the Sediment Pond. Runoff from this area will tend to collect and drain along the haul road bypassing the sediment pond. Alternate sediment control measures are to be used in this area. These measures consist of the use of rock check dams, rock filters and gravel surface. This area is too small and too flat to run a SEDCAD demonstration. Therefore, GCC Energy, LLC commits to sampling any discharge from this area for Total Settable Solids. This runoff flows into the area on either side of the haul road. This area will be similar to Small Area Exemption #1 of the current King I Mine permit, as approved by the Division.

UNDISTURBED AREA DRAINAGE DITCHES

Two undisturbed area drainage ditches will convey undisturbed surface flow around the disturbed area of the mine surface facilities and return the flow to the native surface drainage channel below the mine bench. The ditches encircle the mine disturbance. One ditch conveys surface flow along the west side of the mine facilities to the native channel, while the corresponding ditch drains east and south above the mine portal and down the east side of the mine bench and surface facilities to the native channel. These open earthen channels will be sized to contain the precipitation events as required by regulation. The channels will be

stabilized with a combination of vegetation and riprap (where necessary).

SEDIMENT POND

One sediment pond is planned for the King II Mine. The sediment pond is located at the southeast corner of the mine bench and sized to contain the precipitation events as required by regulation. Surface runoff will reach the sediment pond through a combination of sheet flow, berms, culverts and "V" ditches. Detailed plans, certifications and maps can be found in Appendix 11 and Maps King II-007, King II-007D, King II-007F and King II-007G. The pond contains a primary spillway at elevation 7233' and an emergency spillway at elevation 7234'. The spillways are both vertical 24" CMP risers with oil skimmers constructed as shown on Map King II-007F, Detail 1. The spillways are always open. The minimum magnitudes of storm events that will cause the spillways to discharge, subtracting a 60% sediment clean-out level of 1.5 acre feet, are as follows:

Primary Spillway: 4.36 acre feet – 1.5 acre feet = 2.86 acre feet

Emergency Spillway: 5.22 acre feet – 1.5 acre feet = 3.72 acre feet

Faces of pond embankments will be stabilized with vegetation. Water is not normally impounded except immediately following storm events or snowmelt. There is no mechanism in place to suddenly draw down the water level.

TOPSOIL

Sufficient suitable topsoil resources exist in the Umbarg soil map unit to provide topsoil replacement depths of six inches. This replacement depth will require stockpiling and ultimate replacement of 20,570 cubic yards of topsoil from the A and B horizons of the Umbarg series. Topsoil will be salvaged and stockpiled using truck/shovel or scraper methods. Topsoil will be salvaged and stockpiled during the operation in piles constructed adjacent to the sediment pond and north of Coal Stack Tube #2. The topsoil pile will be stabilized using the seed mix proposed for final reclamation. To further minimize the potential for accidental contamination, a berm will be constructed around the perimeter of the toe of the topsoil piles. The berms will be of sufficient size (18" to 24" high, 4' to 6' wide) to prevent machinery from intruding on the topsoil stockpile.

Stockpile locations can be found on Map King II-007. Epp & Associates surveyors performed topsoil stockpile volume calculations in March, 2015 using pre-disturbance and as-built aerial surveys. Topsoil Stockpile #1 (south) contains 3,479 cubic yards and Topsoil Stockpile #2 (north) contains 27,191 cubic yards for a total of 30,670 cubic yards on site. The current disturbed area is 22.89 acres. To cover 22.89 acres with 6" of topsoil would require 18,465 cubic yards.

TOPSOIL, EXPLORATION CORE DRILLING

Topsoil will be salvaged and replaced at all areas of new disturbance caused by exploration core drilling that may damage existing topsoil, such as "cuttings pits", used to collect drill cuttings. Existing topsoil will be removed from these areas and stockpiled in a nearby area where it can be accessed without causing damage to the stockpile location. The topsoil stockpile will be "bermed", tarped, or otherwise protected to help prevent loss of topsoil due to rain and wind events. Once the cuttings pits have been re-filled with sub-soil material, the topsoil will be returned to its original location, spread evenly, and re-seeded as detailed in Section 2.05.4 of this document.

Topsoil for exploration core drilling and/or monitoring well drilling and reclamation will be salvaged from the following soil map units; Big Blue Clay Loam, Pulpit Loam, Umbarg Loam, and Witt Loam. Topsoil for mine reclamation will be salvaged from the following soil map units where suitable material for reclamation (greater than 6" is recoverable through normal means) is present; Zau Stony Loam. Topsoil for reclamation will not be salvaged for reclamation from the following soil map units; Archuleta-Sanchez Stony Complex, Lazear Stony Loam, and Lazear Rock Outcrop Complex due to limitations for use in reclamation an overall lack of suitable material.

A further discussion of topsoil salvage, protection, stabilization at exploration drill pads is contained in Sections 2.04.6 and 2.04.9.

OVERBURDEN

Approximately 20,500 cubic yards of material was removed from the portal area and used to construct the mine bench and base for all mine surface facilities. Additional overburden may be excavated in the construction of the sediment pond. No overburden will be stockpiled as occurs in surface coal mining operations. There will be no overburden disposal sites at the King II mine.

Surface blasting is addressed in Section 2.05.3(6) of this application.

Water Balance

A water balance study has been prepared by CDS Environmental Services LLC and is included in this submission as Appendix 4(11). All water entering the mine is purchased at considerable cost; water is not left to "pond". All water is used in the mine for the sole purpose of controlling respirable dust as per MSHA regulations. Water is sprayed on the coal as it is being cut with continuous miners. This coal is shipped to the surface immediately via conveyor belts. MSHA regulations forbid storage of cut coal inside the mine. Water is sprayed on the conveyor belts to suppress dust. This water evaporates continuously and is sprayed continuously to keep the belts damp. Water is sprayed on the roadways to control dust that would be stirred up by mining machinery. Due to the large quantity of arid Southwest Colorado air that is forced into the mine to ventilate the working areas, as per MSHA regulations, water applied to the roadways evaporates quickly and must be re-applied frequently

NON-COAL PROCESSING WASTE

Salvageable steel, concrete and other construction materials will be removed from the mine site to a salvage yard or regulated landfill, if not needed for portal backfill. Materials will be stored while awaiting removal as shown on Map King II-007.

All debris, acid-forming and toxic-forming materials constituting a fire hazard are disposed of by a local waste removal company such as Waste Management or Baker Sanitation. Grease, lubricants, paints, flammable liquids, etc. are stored in the Fuel Storage Building (see Map King II-007) with proper containment and collected on a regular basis by a certified hazardous material collection company such as Safety Kleen.

At no time shall any noncoal mine waste be deposited in a refuse pile or impounding structure, nor shall any excavation for noncoal mine waste disposal be located within 8 feet of any coal outcrop or coal storage area.

COAL FINES

Conveyor belt transported coal arrives at the surface for crushing, screening, storage, and truck loading. The processing of coal is part of the operation of the surface areas of the King II Mine. Four products are prepared for customer use. They are lump coal (6 inches plus), stoker coal (1 x 1/4 inch), nut coal (3 x 1 inch), and mine run coal (2 inch minus).

In the processing of these coals, fines are created (1/4 inch minus), by crushing and screening. These fines are mixed with mine run coal and sold. Coal fines are not stored on the surface in large amounts before being mixed with the mine run and sold. Of the processed product, about 10% to 15% of the coal is fines.

Mine run, stoker, and lump ("domestic") coal is stored in stockpile areas shown on Map King II-007. Mine run storage may amount to 40,000 tons. Open stockpiling is necessary, but large stockpiles are undesirable because of the potential of spontaneous combustion of the coal. Care is taken to keep the coal from being scattered. This is not only advantageous from the standpoint of controlling erosion of the pile but also contamination with spoil materials.

RETURN OF COAL MINE WASTE TO ABANDONED WORKINGS

No coal mine waste will be returned to underground workings at the King II Mine.

SHAFTS: VENTILATION, AIR & ESCAPE

Currently, the construction of ventilation, air, escape or other shafts is not anticipated.

SLIDES AND OTHER DAMAGE

At any time a slide occurs which may have a potential adverse effect on public property, health, safety, or the environment, GCC Energy shall notify the Division by the fastest available means and comply with any remedial measures required by the Division.

2.05.3(6) SURFACE BLASTING PLAN

During preliminary excavations at the King II portal area, a hard sandstone stratum was uncovered that may require surface blasting to break and loosen in order to facilitate excavation of the portal bench. The surface blasting plan is designed to address this stratum at the portal bench and any other areas at the King II Mine facilities area.

GCC Energy anticipates retention of a licensed Colorado blaster to undertake surface blasting activities and will not store explosives on site (except during the times the blaster is present and preparing the shot).

Types and Approximate Amounts of Explosives to be Used

Only one type of blasting operation is anticipated, the shooting of hard sandstone that cannot be broken or removed by other feasible means.

The type of explosives to be used are anticipated to include ANFO, dynamite, and detonation cord. The amount of explosive to be used is anticipated to be more than five pounds per blast and less than 2000 pounds per blast.

Surface Blasting Records

A surface blasting record form will be completed and retained at the mine office for at least three years after each surface blast at the mine. The form is included as pages 12 and 13 of this Section 2.05.3.

Blast Warning and Site Access Control

A blast warning will be employed prior to and after surface blasting at the mine. The pre-blast warning will consist of an audible oscillating siren one-minute long at one minute intervals for the three minutes prior to the blast. The post-blast all clear signal will consist of five short air blasts of the siren ten seconds apart, repeated three times.

Site access control will consist of personnel clearing the blast area of all non-blast related personnel and barricading the blast area with heavy equipment at all access points (roads and trails into to blast area). The barricades will be maintained for fifteen minutes prior to the blast and until the last all-clear signal has sounded.

Blast Monitoring, Pre-Blast Surveys

As there are no dwellings, public buildings, schools, church, or community or institutional buildings within one half mile of any blasting

area, nor is the blasting area within 500 feet of an active or abandoned underground mine, no monitoring is proposed. As blasting will not be conducted within one-half mile of any dwellings or structures, no pre-blast surveys are anticipated to be conducted.

To ensure compliance with restrictions on peak particle velocity, any blasting at the mine will comply with the limitations on maximum weight of explosives contained in Rule 4.08.4(10)(c)ii).

Blasting Schedule

GCC Energy will publish a blasting schedule between 10 and 20 days prior to initiating the surface blasting program in the ***Durango Herald***, the newspaper of general circulation in the area of the mine.

The blasting schedule will:

- identify the location of blasting
- time periods during which blasting will occur
- measures to control access to the blasting area
- the pre-blast warning and all-clear audible signals
- the unavoidable hazardous conditions which would require blasting outside the approved blasting schedule

If changes to the blasting schedule are necessary, the blasting schedule notice will be republished.

Unavoidable Hazardous Conditions

Blasting will occur during times indicated in the blasting schedule unless dangerous atmospheric or site conditions, as determined by the blaster-in-charge, require detonation to avoid accidental detonation. If so directed by an authorized law enforcement or regulatory agent, blasting may occur outside the times specified in the blasting schedule.

Air Blast Limitations

Air blast will not exceed the limitations described in Rule 4.08.4(6)(a).

On-Site Explosive Storage and Handling Facilities

There will be no on-site explosive storage and handling facilities. The licensed blaster will provide storage.

GCC ENERGY, LLC
SURFACE BLASTING REPORT

MINE _____
PERMIT # _____
COUNTY _____
STATE _____

DATE _____
TIME OF BLAST _____

LOCATION _____

BLASTER-IN-CHARGE _____ LICENSE # _____

SIGNATURE _____

DISTANCE TO NEAREST STRUCTURE (IN FEET) _____

STRUCTURE TYPE _____ DIRECTION FROM BLAST _____

WEATHER CONDITIONS (AT TIME OF BLAST) _____

TEMPERATURE _____ WIND DIRECTION/SPEED _____

COMMENTS _____

MATERIAL TYPE BLASTED: _____

TOTAL # HOLES SHOT _____ BURDEN (IN FEET) _____ SPACING (IN FEET)

DEPTH OF HOLES (IN FEET) _____ DIAMETER OF HOLES(IN INCHES)

TYPE(S) OF EXPLOSIVES USED: _____

TOTAL WEIGHT OF EXPLOSIVES USED PER HOLE (IN POUNDS) _____ STEMMING TYPE/LENGTH _____

MAXIMUM POUNDS DETONATED IN ANY 8 millisecond PERIOD _____ DECKING USED?

MAXIMUM HOLES DETONATED IN ANY 8 millisecond PERIOD: _____

METHOD OF DETONATION NONEL ELECTRIC CAP OTHER EXPLAIN _____

TYPE OF CIRCUIT USED SERIES PARALLEL NONEL OTHER

STEMMING TYPE USED _____ DEPTH _____ PROTECTIVE COVER USED ? YES

TYPE OF DELAY DETONATOR USED _____ MINIMUM DELAY PERIODS(millisecond)

DISTANCE FROM NEAREST HOLE TO SEISMIC METER _____

LOCATION OF SEISMIC METER _____ READING FOR THIS BLAST

NAME OF PERSONNEL RESPONSIBLE FOR SEISMIC METER _____

GCC ENERGY, LLC
SURFACE BLASTING REPORT
SHOT INFORMATION/DIAGRAM

MINE	_____	LOCATION	_____	DELAYS USED	_____
DATE	_____	DRILL	_____		
TIME	_____	PATTERN	_____	LEAD IN USED	_____
DRILLER	_____	# OF HOLES	_____		
SHOOTER	_____	HOLE DIAM.	_____	SHIFT	_____
HELPER	_____				

SHOT DIAGRAM

2.05.4 - RECLAMATION PLAN

RECLAMATION TIMETABLE

After completion of mining the following sequence of reclamation events will occur. These actions are estimated to take the specified amount of time but GCC Energy, LLC does not commit to any specified timeframe. Certain activities may be accelerated or delayed dependent on season and whether they can be carried on contemporaneously with other activities.

ACTIVITY	ESTIMATED TIMEFRAME
Mine Portal Sealing	**One month**
Demolition and Removal of Structures	**Four months**
Backfilling and Grading	**Six months**
Re-Establishment of Surface Drainages	**Two months**
Re-Topsoiling	**Two months**
Revegetation	**One Month**
Removal of Sediment Control Structures, Re-Topsoiling, and Revegetation	**Two months (two years later)**
Revegetation Monitoring	**Biennially**

RECLAMATION COSTS

The most recent cost estimate will be contained in Appendix 12.

REMOVAL OF SURFACE FACILITIES

All mine surface facilities, shown on the Operations Plan and Surface Features Map (King II-007), will be disassembled or removed from the mine site. The foundations, steel, and other non-woody material that cannot be sold for salvage will be pushed against the high-wall and covered by at least four (4) feet of non-toxic non-combustible fill and topsoil. Woody material will be removed from the mine site or burned.

All necessary county and state approvals will be obtained prior to burying any demolition debris on the site.

The following surface facilities and structures will be disassembled, removed, or otherwise reclaimed as described below. The designations following the surface facility name correspond to the legend on Map King II-007.

A) 100,000 Gallon Water Storage Tank: This steel tank will be removed from the site during reclamation. Concrete bases will be broken and buried in place or used for portal backfill.

B) 37,000 Gallon Water Storage Tank: This steel tank will be removed from the site during reclamation. Concrete bases will be broken and buried in place or used for portal backfill.

C) Pump House: Portable steel building used to house the various pumps and plumbing. This building as well as piping will be removed and sold as scrap.

D) Shop Equipment Wash Pad: This concrete pad is used in conjunction with an oil skimmer and storage tank to store equipment wash water. To be pumped by a 3rd party vendor.

E) Shop Building: 50'W x 60'L x 16'H steel building used for repair of various mine machinery and fabrication.

F, I) Mine Ventilation Fan: The main mine fan will be a 7' diameter fan as part of a steel structure consisting of air doors for escape purposes, explosion doors which protect the fan in the event of a mine explosion, and a culvert system which connects the fan to the underground workings.

G) Retaining Wall Adjacent to Main Fan: This wall is poured reinforced concrete and is used to protect workers and equipment from material which may fall from the high-wall cut above the fan portal.

H) Total Portal Reclaim Volume: Map King II-010D shows a volumetric calculation of fill quantities required to backfill all portals and the access road to the belt/return portal area.

J) Travelway Portal Structure: This concrete and steel structure will be broken and used for portal backfill.

K, VV) Motor Control Centers #1 & #2: These are portable steel buildings which will be removed from the site.

L) Rock Dust Storage Silo: 11' diameter x 40' tall steel silo for up to 150 tons of rock dust storage that will be removed from the site or cut up and sold as scrap.

M1, M2) Concrete Block Retaining Walls #1 & #2: These are pre-cast concrete block retaining walls used to adjust grade near the office and shop area. They will be broken and buried in place or used for portal backfill.

N) Executive Offices/ Parts Warehouse/ Bath House Building: 60'W x 150'L x 34'H steel building to contain all administrative offices, miner's changing and shower facilities, and a spare parts/supplies warehouse.

O) Covered Storage: This 20W' x 80L' x19'H open steel building will be of pole barn style construction, with steel post uprights and stringers, covered on the roof and three sides by corrugated steel.

P) Main Septic System Tank: This structure is a concrete tank that will be broken up and left in place during reclamation. All pipes to the tank will be removed and disposed of during reclamation.

Q) Parking Area: A 120'x175' graveled area adjacent to the Office Building. The gravel will be excavated and used for backfill at the portal area.

R) Fuel Storage Area: This 25W' x 45L' x20'H steel 3 sided structure will house one 2000 gallon diesel fuel tank with containments for fueling and an contained area for storage of lubricants for underground and surface diesel powered machines.

S) Main Septic System Drain Field: This structure is comprised of an underground gravel field that will be left in place during reclamation. All pipes to the drain field will be removed and disposed of during reclamation.

T) Belt Portal Structure: This concrete and steel structure will be broken and used for portal backfill.

U) Return Portal Structure: This concrete and steel structure will be broken and used for portal backfill.

V) Belt Portal Pump House: Concrete building used to house various pumps and plumbing. This building as well as piping will broken and used for portal backfill.

W) Temporary Waste Rock Storage Area: This area is to be used for temporary storage of underground mine waste rock waiting to be transported the refuse pile at the King I mine.

X) Bermed Topsoil Storage #2: Stored topsoil from this open pile will be re-spread on the disturbed areas after backfilling and grading. The bulk of salvage soil material from the site is very similar in composition and will be used for backfilling and topsoil as needed. The footprint of the topsoil storage area will be reseeded during re-vegetation.

Y, Y1) Electrical Substation: Electrical transformers and infrastructure, including transmission lines, poles, switchgear, concrete slabs and control room) will be removed. The gravel base for the 60 x 80 foot

substation area will be excavated and used for backfill at the portal area.

Z) Substation Ground Field: This area is laced with large, bare copper wire for grounding the main electrical substation. This wire will be pulled from the ground and sold as scrap.

AA) Main Dumpster Pad: The roll-away dumpster sits on this pad. The dumpster is provided by a local waste disposal service.

BB0 thru BB6) Slope Conveyor: This 42" conveyor delivers coal from inside the mine to the Coal Stack Tube #1 & Head House, 20,000 Ton Coal Storage Pile #1. Part of this conveyor utilizes a covered "box truss" design.

CC) Magnet Dumpster Pad #1: A small dumpster sits on this pad to receive the material which is picked up by the belt magnet. The dumpster is provided by a local waste disposal service.

DD, DD1) Coal Stack Tube #1 & Head House, 20,000 Ton Coal Storage Pile #1: Coal will be removed from the site prior to reclamation. Any remaining coal or coal fines will be excavated and buried under four (4) or more feet of non-toxic non-combustible backfill (including topsoil).

EE) Magnet Dumpster Pad #2: A small dumpster sits on this pad to receive the material which is picked up by the belt magnet. The dumpster is provided by a local waste disposal service.

FF thru FF4) Raw Coal Conveyor: 36" conveyor which draws coal from the bottom of the raw coal storage stockpile and delivers it to a coal crusher.

GG) Crushing/Screening Structure: This steel structure processes raw coal. Coal is crushed to a 2" x 0" product for sale to commercial customers and sorted to additional sizes for domestic customers.

HH, JJ) Lump & Stoker Conveyors #1 & #2: These 24" radial stacker conveyors are used to stockpile the domestic coal products once they have been screened. These are portable conveyors which will be removed from the site.

II, KK) Domestic Coal Piles #1 & #2: Raw coal from underground will be delivered to the Coal Crusher/Screening structure. Larger pieces of coal for domestic use will be separated and stored here using Stacker Conveyors #1 & #2. This coal will be delivered by truck to an off-site domestic coal sales yard. Provisions will also be made at this area to divert waste rock and lower quality coal for shipment to a refuse pile or for re-blending into the commercial coal product.

LL) Crushed Coal Storage Conveyor: Crushed coal is moved from the Coal Crusher/Screening Structure to the Coal Stack Tube & Head House, 20,000 Ton Coal Storage Pile #2 via a 36" conveyor.

MM, MM1) Coal Stack Tube #2 & Head House, 20,000 Ton Coal Storage Pile #2: Coal will be removed from the site prior to reclamation. Any remaining coal or coal fines will be excavated and buried under four (4) or more feet of non-toxic non-combustible backfill (including topsoil).

NN) Cross-belt Coal Sampler: This small steel structure sits on a concrete pad. A motorized arm collects coal samples from the conveyor belt and deposits them in buckets for analysis.

OO thru OO5) Truck Loadout Conveyor: 36" conveyor which draws coal from the bottom of the crushed coal storage stockpile and delivers it to the Truck Loadout bins.

PP) Truck Loadout Structure & Bins: The truck loadout facility will be an automated batch-weigh structure. Coal trucks will arrive under a chute at the bottom of the loadout and a pre-measured amount of coal will be deposited in the trailer.

QQ) Truck Scales: These are portable scales that will be removed from the site during reclamation.

RR) Coal Sales Building: This 17W' x 21L' x10'H structure is a conventional stick-built building.

SS, TT) Coal Sales Building Septic Tank and Drain Field: The drain field is comprised of an underground gravel field that will be left in place during reclamation. All pipes to the drain field will be removed and disposed of during reclamation. The tank is a concrete tank that will be broken up and left in place during reclamation. All pipes to the tank will be removed and disposed of during reclamation.

UU) Coal Sales Building Parking Area: This level area used for temporary storage. Gravel from this area will be buried in place and re-topsoiled or excavated and used for portal backfill.

WW) Bermed Topsoil Storage #1: Stored topsoil from this open pile will be re-spread on the disturbed areas after backfilling and grading. The footprint of the topsoil storage area will be reseeded during re-vegetation.

XX) Concrete Truck Wash-Out: This small bermed area is to collect material that is washed from trucks which deliver concrete to the site.

footprint of the topsoil storage area will be reseeded during re-vegetation.

XX) Concrete Truck Wash-Out: This small bermed area is to collect material that is washed from trucks which deliver concrete to the site.

YY) Sediment Pond and Diversion Ditches: The sediment pond is not intended as permanent feature of the mine site, but will remain intact until the site has been successfully reclaimed.

ZZ) Cattle Guard: The cattle guard will either be removed or cut up for scrap or offered to the surface grazing lease holder of the area.

AAA) Portable Offices and Storage Containers: Until the Executive Offices/Parts Warehouse/Bath House Building is completed, several portable offices and storage containers will be utilized. These units are leased from a 3rd party supplier.

BBB) Waterline to Connect to Huntington Ranch Waterline: The waterline will be buried a minimum of 4 feet deep to avoid freezing. The waterline will be left in place during the reclamation phases to supply water to the site for plant germination and dust control. Upon final reclamation, the valve feeding the pipe will be closed. There are no plans to remove the buried portions of the pipe for reclamation purposes. The surface of the field, once the original trench has been back-filled, will be re-seeded using the approved seed mix.

CCC) Equipment Storage Area: A small area just north of the shop used to store machinery or supplies.

Map Symbol	Structure Description	Structure					Slab				Foundation/Footers				Comments
		Volume	Length	Width	Height	Diameter	Length	Width	Thick	Qty	Length	Width	Thick	Qty	
A	Water Storage Tank, 100,000 Gallon	14771			24	28	Circular pad = 613 ft2 x .75								Steel Structure
B	Water Storage Tank, 37,000 Gallon	5007			35	13.5	32	14	6						Steel Structure
C	Main Pump House	1774	14	10	12.67										Metal Building
D	Shop Equipment Wash Pad	0					50	25	0.75		150	2	1		Concrete Pad
E	Shop Building	48000	60	50	16		60	50	0.75		220	2	1		Metal Building
F	Mine Fan	7508	28.6	25	10.5		8	6	4						Steel Structure
G	Retaining Wall Adjacent to Main Fan	480	60	1	8						60	7	1		Concrete Wall
H	Total Portal Reclaim Fill Volume	20,500yd3													See Map King II-010D
I	Fan Portal Structure	4800	30	20	8		30	20	1		100	0.75	4		Metal Building
J	Travelway Portal Structure	4800	30	20	8						60	14	1		Metal/Concrete Building, No Floor
K	Portal Motor Control Center (Portal MCC)	1800	14	10	12.67		14	10	0.5		48	2	0.75		Metal Building
L	Rock Dust Storage Silo	3799			40	11	12	12	1		2	2	2		Steel Structure
M1	Concrete Retaining Wall #1	900	150	2	3										Concrete Block Wall
M2	Concrete Retaining Wall #2	560	70	2	4										Concrete Block Wall
N	Executive Offices/Parts Warehouse/Bath House Building	306000	150	60	34		150	60	0.5		420	1	4		Metal Building
O	Covered Storage Building (Open, Three Sided)	29600	80	20	18.5		80	26	0.5		260	1	4		Metal Building, Includes Internal Footings
P	Main Septic System Tank	600	10	10	6										4000 Gallon Tank
Q	Main Parking Area	0	80	120											Graveled Area
R	Fuel Storage Building	22500	45	25	20		45	27	0.75		140	1	4		Includes 4' apron on west half
S	Main Septic System Drain Field	0	80	50											Leach Field
T	Belt Portal Structure	3000	15	20	10						30	1	2		Metal/Concrete Building, No Floor
U	Return Portal Structure	3000	15	20	10						30	1	2		Metal/Concrete Building, No Floor
V	Belt Portal Pump House	2800	20	14	10		20	14	0.75		68	2	1		Concrete building (walls & ceiling 1' w/rebar)
W	Waste Rock Storage Area (Waste Rock Trucked to King I)	0	20	20											Temporary Gob Storage
X	Bermed Topsoil Storage #2	19,000yd3													Topsoil and Subsoil are Equal at this site
Y	Electrical Substation, Building	2660	19	14	10		19	14	0.5						Metal Building, Concrete Pad, Thickened Edge
Y1	Electrical Substation, Slabs						35	35	0.5						Various Slabs, Thickened Edge
Z	Electrical Substation Ground Field (Buried Copper Wire)	5000	50	50	2										
AA	Main Dumpster Pad	0					20	8	0.5						Concrete Pad, Thickened Edge
BB0	Slope Conveyor (Box Truss Section)	15360	240	8	8										Belt Conveyor, 42”
BB1	Slope Conveyor: Bent 1	7	3	0.75	3		8.5	3.25	1	1	1.5	1.5	4	2	Steel Structure
BB2	Slope Conveyor: Bent 2	105	5	7	3		10	5	1	1	1.5	1.5	4	2	Steel Structure
BB3	Slope Conveyor: Bent 3	21	5	0.75	5.5		10	5	1	1	1.5	1.5	4	2	Steel Structure
BB4	Slope Conveyor: Bent 4	26	5	0.75	7		15	7	1.2	1	1.5	1.5	4	2	Steel Structure
BB5	Slope Conveyor: Bent 5	5550	18.5	5	60		10	10	1.5	2	2	3	4	2	Steel Structure
BB6	Slope Conveyor (Non-Box Truss Section)	1760	110	4	4										Belt Conveyor, 42"
CC	Magnet Dumpster Pad #1	0					8	8	0.5						Concrete Pad, Thickened Edge

Map Symbol	Structure Description	Structure					Slab				Foundation/Footers				Comments
		Volume	Length	Width	Height	Diam.	Length	Width	Thick	Qty	Length	Width	Thick	Qty	
DD	Coal Stack Tube #1, 20,000 Ton Coal Storage Pile	7461			66	12									Steel Structure
DD1	Coal Stack Tube #1 Head House	4350	14.5	12	25										Steel Structure
EE	Magnet Dumpster Pad #2	0					8	8	0.5						Concrete Pad, Thickened Edge
FF	Raw Coal Conveyor	2832	177	4	4										Belt Conveyor, 36"
FF1	Raw Coal Conveyor: Bent 1	9	5	0.75	2.5		7	3	1	1	1.5	1.5	4	2	Steel Structure
FF2	Raw Coal Conveyor: Bent 2	69	8	0.75	11.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
FF3	Raw Coal Conveyor: Bent 3	250	10	1	25		5.5	5.5	1	2	1.5	1.5	4	2	Steel Structure
FF4	Raw Coal Conveyor: Bent 4	360	12	1	30		4	4	1	2	1.5	1.5	4	2	Steel Structure
GG	Crushing/Screening Structure	37100	28	25	53		40	30	0.5						Thickened Edge
GG1	Crushing/Screening Structure Pile Caps	0					6.5	3.5	4	6	1.5	1.5	4	6	Concrete Pads
HH	Lump Conveyor	900	100	3	3										Portable 24" Radial Stacker Belt
II	Lump Coal Storage Area	0			30	60									
JJ	Stoker Conveyor	900	100	3	3										Portable 24" Radial Stacker Belt
KK	Stoker Coal Storage Area	0			30	60									
LL	Crushed Coal Storage Conveyor	10240	320	4	8		7.75	6	1	1	5.75	4	4	1	Belt Conveyor, 36"
LL1	Crushed Coal Storage Conveyor: Bent 1	8	5	0.75	2		7	3	1	1	1.5	1.5	4	2	Steel Structure
LL2	Crushed Coal Storage Conveyor: Bent 2	21	5	0.75	5.5		7	3	1	1	1.5	1.5	4	2	Steel Structure
LL3	Crushed Coal Storage Conveyor: Bent 3	38	5	0.75	10		14	7	1.2	1	1.5	1.5	4	2	Steel Structure
LL4	Crushed Coal Storage Conveyor: Bent 4	3060	17	5	36		8	8	1.5	2	1.5	2.5	4	2	Steel Structure
MM	Coal Stack Tube #2, 20,000 Ton Coal Storage Pile	7461			66	12									Steel Structure
MM1	Coal Stack Tube #2 Head House	4350	14.5	12	25										Steel Structure
NN	Cross-Belt Coal Sampler	0					20	20	6						Concrete Pad, Thickened Edge
OO	Truck Loadout Conveyor	8320	260	4	8										Belt Conveyor, 36"
OO1	Truck Loadout Conveyor: Bent 1	4	5	0.75	1		7	3	1	1	1.5	1.5	4	2	Steel Structure
OO2	Truck Loadout Conveyor: Bent 2	17	5	0.75	4.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
OO3	Truck Loadout Conveyor: Bent 3	43	5	0.75	11.5		4	4	1	2	1.5	1.5	4	2	Steel Structure
OO4	Truck Loadout Conveyor: Bent 4	3864	12	14	23		8	8	1.2	2	1.5	2.5	4	2	Steel Structure
OO5	Truck Loadout Conveyor: Bent 5	3864	12	14	23		5	5	1.2	2	1.5	2.5	4	2	Steel Structure
PP	Truck Loadout Structure & Bins	13500	30	15	30		6.5	3.5	4	6	2	2	4	12	Pile Caps
QQ	Truck Scale	4800	120	20	2		150	16	1						Thickened Edge
RR	Coal Sales Building	2400	20	12	10		20	12	0.5						Thickened Edge
SS	Coal Sales Building Septic System Drain Field	0	50	30											Leach Field
TT	Coal Sales Building Septic System Tank	300	6	10	5										Concrete Tank
UU	Coal Sales Building Parking Area	0													Graveled Area
VV	Main Motor Control Center (Main MCC)	3501	21	16.67	10		21	20	0.5		84	1.5	2		Block Building, Slab Thickened Edge
WW	Bermed Topsoil Storage #1	5000yd3													High quality soil only from lower site
XX	Concrete Truck Wash-Out	0	12	12											Bermed area to wash out trucks
YY	Sediment Pond	0													See Maps King II-007 D,E,F,G
ZZ	Cattle Guard	96	8	24	0.5										Steel Structure
AAA	Portable Office or Storage Container														Leased from port. building vendor
BBB	Waterline to Connect to Huntington Ranch Waterline														6 Inch Pipe Buried >4 Feet Deep
CCC	Non-Coal Equipment Storage Area														Equipment Storage Area
*	All dimensions shown in feet, volumes in cubic feet. All concrete is reinforced with rebar.														

BACKFILLING AND GRADING

Backfilling and grading will be undertaken to achieve the post-mining topographic configuration shown on Maps King II-010 A, B & C.

RETOPSOILING

Topsoil will be replaced to a finished depth of six (6) inches (as described in Section 2.05.3) over all disturbed areas to be reclaimed. Topsoil replacement operations will be completed after backfill and grading operations. To ensure good contact between replaced topsoil and re-graded material, the surface of re-graded areas will be left in a roughened condition. Topsoil will be replaced using methods to minimize compaction after placement. In areas where compaction occurs, ripping or tilling of the replaced topsoil will take place.

REVEGETATION

Re-vegetation Measures

Re-vegetation measures have been developed to meet the goals of providing native, self-sustaining vegetation communities of similar nature and composition as those present in the pre-mining landscape and to provide equivalent or better carrying capacity and utility post-mining.

Timing

With the significance and dominance of cool season graminoid species in the rabbitbrush/big sage mixed shrub-land community, emphasis should be placed on ensuring germination and survival of these species in the re-vegetation seed mixes. Precipitation during the growing season (April-September) decreases from April through June, increases in July and August, and then decreases slowly through the end of the growing season. Given this precipitation distribution, two seeding windows are proposed. A spring seeding window would take advantage of increased mid-late summer precipitation, encouraging summer growth and allowing plants to add sufficient biomass prior to winter. A second autumn seeding window allows seeding into relatively moist ground, but prevents significant seedling growth prior to freezing, allowing seeds to remain dormant over the winter with adequate moisture for early germination in the spring.

Two optimal windows for re-vegetation seeding are proposed dependent on the observations described above; a spring window from March 15 to June 15 and a fall window from August 15 to November 15.

Vegetation seeding will occur during the first planting window after completion of work within the re-graded and topsoiled area.

Seed Mix

The seed mix for the re-vegetation of the King II Mine was developed based on the stated post-reclamation land uses of rangeland and fish and wildlife habitat, and the goal of reestablishing vegetation communities characteristic of the pre-disturbance landscape and complementary to those vegetation communities currently existing outside the areas of disturbance.

A seed mix for the mine site requires species adapted to predominantly loamy soils. The plant species must be adapted to xeric and potentially droughty moisture conditions, given the predominantly south and southwest exposures of the area to be reclaimed. The majority of the species selected were cool season, complementing the adjacent native vegetation. The species selected were robust, and either tall or bushy to provide wildlife cover and forage. A mix of warm and cool season species was developed to provide wildlife with cover and forage throughout the growing season. Graminoids, forbs, and shrubs to be seeded provide a mix of plant morphologies and structures.

Application Methods

Drill seeding will be employed in all areas where slopes are 3:1 or less and equipment access is not a problem. In the remaining cases, broadcast seeding will be employed.

The drill should be regulated to place seed between 0.25 and 0.5 inches in depth from the ground surface. The seeding rate identified in each seed mix table is the rate of application to be used when drill seeding. Drill rows should be positioned so as to be perpendicular to the predominant wind direction and along the contour. In areas where marginal seeding conditions exist (rocky, windswept, shallow soil), two passes of the drill seeder are appropriate, the applications being perpendicular to each other and 45° offset from the predominant wind direction.

Broadcast seeding will be employed in areas where drill seeding cannot be employed due to limitations in area or slope. Where broadcast seeding is employed a centrifugal, fan, airblast, or hydroseeder should be used to distribute the seed. Whenever broadcast methods are employed it is critical to ensure that the seed is subsequently covered through

raking, harrowing, disking, cultipacking, or mulching. Seeding rates for broadcast seeding are twice those employed for drill seeding.

Mulching

Mulch will be employed to minimize loss of seed due to wind and water, and to provide additional moisture retention. Any of the following mulch methods may be employed depending on time of anticipated reseeding, mulch availability, and site specific factors such as slope and aspect.

REVEGETATION SEED MIX: RANGELAND AREAS

COMMON NAME	SPECIES NAME	CHARACTER	VARIETY	SEEDS/LB	SEEDS/ SQFT	SEED RATE lbs (pls)/ac
Graminoids						
Western Wheatgrass	***Agropyron smithii***	**perennial, native cool-season, sod**	**Arriba**	120,000	6	2.18
Slender Wheatgrass	***Agropyron trachycaulum***	**perennial, native cool-season, bunchgrass**	**San Luis**	140,000	4	1.24
Sideoats Grama	***Bouteloua curtipendula***	**perennial, native, warm-season, bunchgrass**	**Butte**	175,000	4	1.00
Blue Grama	***Bouteloua gracilis***	**perennial, native, warm-season, sod**	**Lovington**	725,000	10	0.60
Mountain Brome	***Bromus marginatus***	**perennial, native cool-season, bunchgrass**	**Bromar**	75,000	3	1.74
Indian Ricegrass	***Oryzopsis hymenoides***	**perennial, native, cool-season, bunchgrass**	**Paloma**	150,000	5	1.45
Forbs						
Copper Globemallow	***Sphaeralcea coccinea***	**perennial, native, warm-season**	**ARS 2936**	500,000	5	0.44
Small Burnet	***Sanguisorba minor***	**perennial, introduced, cool-season**		45,000	3	2.90
Totals					40	11.56

note: rates proposed are for drill seeding, broadcast rate 2x

ADDITIONAL SPECIES FOR PINYON-JUNIPER AREAS

COMMON NAME	SPECIES NAME	CHARACTER	VARIETY	SEEDS/LB	SEEDS/ SQFT	SEED RATE lbs (pls)/ac
Shrubs						
Winterfat	***Ceratoides lanata***	**perennial, native**	**Hatch**	112,000	5	1.94
Mountain Mahogany	***Cercocarpus montanus***	**perennial, native**	**Montane**	45,000	5	4.84
Bitterbrush	***Purshia tridnetata***	**perennial, native**	**Maybell**	15,000	3	8.71
Skunkbush Sumac	***Rhus trilobata***	**perennial, native**	**Bighorn**	20,000	2	4.36
Totals					15	19.85

note: rates proposed are for drill seeding, broadcast rate 2x

Hay/Straw Mulch

Hay and/or straw mulch will be employed in areas where wind or water erosion is of significant concern. Such areas may include channel bottoms and hillside slopes. Any hay or straw employed must be certified as native and weed and pest free in accordance with U.S. Department of Agriculture regulations. Hay or straw mulch will be applied at a rate of two (2) tons per acre and crimped or disked into the surface of the soil. Application should be perpendicular to the predominant wind direction and/or the direction of surface water flow.

Hydromulch and Tackifier

Hydromulch and tackifier will be used to anchor seed and any amendments to the soil surface on revegetation areas where the slope is greater than 2.5:1 (horizontal: vertical). Hydromulches to be used would be inert wood and plant fiber products (cellulose), and acceptable tackifiers would be comprised of plant gums or organic co-polymers. Hydromulch and tackifiers should be applied with a hydromulcher at a manufacturers recommended rate of 2500 pounds of hydromulch and tackifier per acre. Hydromulch and tackifier should be applied after seeding, and any application of other soil amendments.

Stubble Mulch

As an alternative to hay or straw mulch in the same applications, stubble mulch (nurse or cover crop) may be employed. This mulch should only be employed in areas accessible to mowing, should that be necessary to control mulch growth or spread. Suitable mulches to be employed would include sterile crosses of agricultural wheat and native wheatgrasses (such as the product Regreen®), sorghum, barley, or other agricultural crop grass. The local Natural Resource Conservation Service office, Agricultural Extension office, or other crop management agency will be contacted to determine stubble mulch strip width, direction, and seeding rate for specific stubble mulch planting.

Irrigation

Irrigation is not employed at the King II Mine.

Revegetation Management

To ensure timely development of the vegetation on the revegetated areas, and to ensure successful revegetation, management of the revegetated areas is necessary. Management measures include control of weeds and

pests, reseeding areas as necessary and controlling access to revegetated areas by humans and wildlife.

Management of the revegetation parcels will be undertaken in the period between revegetation and final bond release. Management measures will be designed and implemented to ensure the success of revegetation measures. Management measures may include thinning vegetation through fire, mechanical or other means, reseeding or replanting vegetation, weed and pest control, relocating or eliminating undesirable wildlife species, and controlling access and human activities.

Weed and Pest Management

As an integral part of the revegetation plan, noxious weeds and plant pests will be managed within the revegetated areas. Weed species to be controlled are identified as those plant species identified by current state statute or regulation as noxious. The species are not listed here as the list of noxious species changes regularly. Plant pests are defined as those biological species that significantly predate the desirable vegetation of the project site.

The presence of noxious weeds and plant pests will be monitored annually during the summer. Management measures will be undertaken where a single or combination of noxious weed species or plant pests comprises or shows a deleterious effect to more than ten (10) percent of the live vegetation. Further, where noxious weed species or plant pests constitute more than 25 percent relative vegetation cover in an area of 500 square feet or such area shows depredation or plant impacts of the same magnitude, such area will be identified as a patch, and subject to management measures, irrespective of the percentage of overall noxious weed cover in the mitigation area.

Noxious weeds or plant pests may be controlled by any combination of cultural, mechanical, biological or chemical measures. Weed control measures will be developed specifically for the noxious weed species encountered and in conjunction with the local weed control district and/or the Colorado State Department of Agriculture. Where noxious weed control measures cause disturbance to the remaining vegetation, seeding or planting of desirable replacement vegetation will occur during the first normal planting or seeding season after weed control measures have been implemented.

Revegetation Monitoring

The success of planted and seeded vegetation will be monitored biennially after initial planting and seeding. Monitoring will consist of qualitative and quantitative vegetation sampling techniques that measure the vegetation cover, species diversity and the survival of plant species within the revegetated areas.

Revegetation Sampling Methods

Revegetation sampling methods employed to measure the success of revegetation at the King II Mine will comply with those specified by the regulatory authority at the time of revegetation monitoring and bond release. Currently CDRMS Rule 4.15.11 specifies methods for use in vegetation sampling. Any of those specified methods may be employed at the King II Mine for vegetation sampling.

Revegetation Success Criteria

In consultation with the Colorado Division of Reclamation, Mining and Safety (Division) in 2005, the big sage mixed shrubland community was delineated and quantitatively sampled. The Division agreed that a segment of that vegetation community (located outside the surface facilities disturbed area) would be utilized as a reference area for revegetation success determinations. Since the reference area was a subset of the vegetation community quantitatively sampled, there was no need for a separate statistical evaluation. The location of the reference area is portrayed on the Soils, Vegetation & Land Use Map, King II-006. The reference area is signed to prohibit unauthorized access, however it is not fenced, providing access to wildlife.

The reference area will serve to provide revegetation success criteria for total vegetation cover and total herbaceous production. These parameters will be sampled during the same season and in the same manner as the revegetated area to establish the success criteria for total vegetation cover and total herbaceous production at the time of revegetation sampling for monitoring or bond release.

Success Criteria: Total Vegetation Cover and Total Herbaceous Production

Determination of revegetation success in achieving the total vegetation cover or total herbaceous production success criteria will be based on quantitative statistical means. The Student's t test is a robust statistical test to evaluate the equivalency of two sample means (Zar, 1974). This test should be employed to test the null hypothesis that the sample mean for revegetated parcel cover or production is equal to or greater than 90 percent of the value of the corresponding cover success criterion. Standard statistical probability ranges should be employed in the determination of whether the revegetated area mean is significantly less than the criterion. When the revegetated area means in all categories are not statistically significantly less than those for all cover criteria, the revegetation will have been demonstrated successful.

Success Criterion: Species Diversity

Species diversity success criteria for revegetated parcels are based on the species numbers, richness and relative abundance in native vegetation communities. Baseline vegetation cover data for the rabbitbrush/big sage mixed shrubland community were employed to determine the dominant plant species of the community, as well as their lifeforms and seasonality. Dominance was determined through selection of species that contributed relative cover of three (3) percent or more relative cover in the baseline sampling. Six species contributed this amount of relative cover; one introduced annual cool season grass, two native cool season grasses, one introduced cool season grass, and two shrubs.

Discounting the desirability of re-establishing an annual introduced grass, and in order to reflect more typical species diversity in the revegetated area, a total of six perennial plant species should be reestablished. Of these species, three should be graminoid, one a forb, and two shrubs in life form. All of the qualifying species should be cool season, deciduous, or evergreen. A minimum of four species should be native. Both bunchgrasses and sod-forming grasses should be represented, though no specific number of each is necessary. No single species should contribute more than 40 percent mean relative cover or less than two percent mean relative cover for graminoids or one percent relative cover for the forb in the revegetated area. Species diversity will have been successfully achieved when the above specifications are met.

Success Criterion: Woody Plant Density

Current woody plant density within the rabbitbrush/big sage mixed shrubland is 2977 individuals/acre. Observation of the community indicates that the current density (particularly of rubber rabbitbrush) is overly high for the post-mining use of rangeland. Neither rubber rabbitbrush nor big sage is particularly desirable for livestock. For this reason, woody plants are not proposed for re-establishment within any area identified as within the rabbitbrush/big sage mixed shrubland vegetation community of the mine site. Woody plants are proposed to be re-established within all areas disturbed and subsequently reclaimed and revegetated within the area identified pre-mine as the pinyon-juniper vegetation community. Within the overall disturbance of 22.36 acres, approximately three (3) acres of pinyon-juniper woodland is proposed for disturbance. When revegetating within the area identified as the pinyon-juniper woodland community pre-mine, additional shrub species will be added to the reclamation seed mix as depicted on the seed mix table to facilitate achieving the designated post-mining land use of wildlife habitat.

In the area identified pre-mine as pinyon-juniper woodland, a woody plant density standard of 200 stems/acre is proposed. Achievement of woody plant density will have occurred, in the area identified pre-mine as pinyon-juniper woodland, when the sampled density is statistically equal to 200 stems/acre. This standard achieves an average woody density of one stem per 218 square feet (or one stem on fifteen foot centers).

Soil Testing Plan

Fertilization immediately after topsoil replacement or coincident with initial revegetation has been shown to promote weed and annual growth on reclaimed areas. For this reason, evaluation of major plant nutrient (N, P, K) concentrations will be undertaken during the second or third growing season after initial seeding. At that time, soil testing will be undertaken to evaluate the concentrations of the major and minor plant nutrients. If sampling reveals a deficiency, fertilizer will be applied at a rate based on recommendations of the NRCS or soil conservation agent. Application can be through aerial means or dry application between the rows of seedlings.

DEBRIS DISPOSAL

Non-coal non-toxic debris and trash will be used as backfill in the portals. Salvageable steel, concrete and other construction materials will be removed from the mine site to a salvage yard or regulated landfill, if not needed for portal backfill. Any remaining liquid waste will be removed to the appropriate regulated disposal facility.

Coal stockpiles will be sold. Any coal residue will be collected with a front-end loader, motor grader, or bulldozer. The residue would be shale and sandstone rock mixed with small amounts of coal. This residue would be ideal for the use of backfilling the portals.

All debris, acid-forming and toxic-forming materials constituting a fire hazard are disposed of by a local waste removal company such as Waste Management or Baker Sanitation. Grease, lubricants, paints, flammable liquids, etc. are collected on a regular basis by a certified hazardous material collection company such as Safety Kleen.

SEALING MINE OPENINGS

In accordance with the requirements of our mine plan, 211.41 (c) 30 CFR, the portals (mine openings or entrances into the King I Mine) will be backfilled and sealed against inflows of surface water and access by animals or people. Coal stockpile residue on the permit area will be scraped from the surface and used for backfill inside the portals. This will limit the presence of any potential acid-forming or toxic materials in backfilled and re-graded area and minimize potential contamination of topsoil and revegetation. The four portals are each approximately 10 feet wide by 8 feet high. To fill them to a depth of 25 feet will require about 296 cubic yards of material plus a small amount to account for sloughing at the inby end. Total portal backfill will require approximately 400 cubic yards of material. After back-filling to a depth of 25 feet from the portal, the mouth of the portals will be caved to completely seal them. The area will then be backfilled, graded and smoothed over to closely approximate the original contour of the hill into which the portals have been opened.

SEALING EXPLORATION DRILL HOLES

Any coal exploration drill holes, vent holes, and groundwater monitoring wells (not transferred to the landowner) in the permit area will be backfilled, sealed at water bearing zones, and capped with concrete plugs to meet reclamation requirements.

GCC proposes to up to drill 9 exploration holes (TR-22), numbered CO-14-01 thru CO-14-09 as shown on Appendix 4 (4) page 1, within the existing permit area. Holes will be rotary-drilled, nominally 5 to 6 inches in diameter, to predetermined core points. The total depth of each borehole is anticipated to be about 320 feet. This predetermined core zone will be cored by PQ wireline methods. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4). Locations of proposed holes and existing access roads are shown on the attached topography and drill hole locations map.

All 9 boreholes will utilize the already disturbed area of the existing roadway minimizing the foot print. A cutting pit will be constructed to capture the cuttings for replacement into the completed borehole prior to plugging the hole. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4). Cuttings pits are excavated by a back-hoe and are approximately 6 feet wide by approximately 10 feet long. The pits are unlined and construction is the same for all drilling methods used. Drill holes will be sealed by filling with cement to an elevation above the coal seam encounter and any water-bearing intervals encountered, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug will be covered with like material as in road base or topsoil depending which is present. Tracks will be raked or brushed to remove obvious signs of activity.

The 9 drill sites will be reseeded (unless disturbance is confined to areas previously disturbed such as preexisting roads, drill pads, etc.) once topsoil has been replaced to pre-disturbance depth using the seed mixes for Rangeland and, if applicable, Pinyon-Juniper as listed in Section 2.05.4, page 12 of this document. Broadcast seeding will be employed due to the very limited size of the disturbed areas. Whenever broadcast methods are employed it is critical to ensure that the seed is subsequently covered through raking, harrowing, or mulching. Seeding rates for broadcast seeding are twice those employed for drill seeding. In addition, applicable sections of the part of this document entitled "REVEGETATION" beginning in Section 2.05.4, page 9 will be adhered to.

SEALING MONITORING WELLS, TR-26

GCC proposes to drill 4 monitoring well "clusters" of 3 wells each, numbered MW-1 thru MW-4 as shown in King II Appendix 4 (9), Baseline Monitoring Well Specifications, and one alluvial monitoring well in Hay Gulch, upgradient from the King I mine site (MW-HGA-4) as shown in King II Appendix 4 (13). MW-1, MW-3, MW-4 and MW-HGA-4 are outside of the existing permit area. MW-2 is within the existing permit area. Each cluster will consist of one hole drilled in the Menefee formation to just above the "A" coal seam, one will be drilled into the A coal seam, and the remaining hole will be drilled to below the A seam to a depth just above the "B" coal seam. Alluvial Well MW-HGA-4 will be a single well drilled into the Hay Gulch Alluvium.

See King II Appendix 4(9), Bedrock Cluster Monitoring Well Specifications, for schematics and construction details of the bedrock cluster wells and Appendix 4(13) for schematics and construction details of the Alluvial Monitoring Well. Drilling will be with air, air with water injection or water. Cuttings pits will be necessary at all locations drilled by conventional methods (see drawing at Appendix 4(4)). Cuttings pits are excavated by a back-hoe and are approximately 6 feet wide by approximately 10 feet long. The pits are unlined and construction is the same for all drilling methods used. Locations of proposed holes and existing access roads are shown on the attached topography and drill hole locations map

A small cutting pit will be constructed to capture the cuttings. During final reclamation, all drill holes will be sealed by filling with cement to an elevation above the coal seam encounter, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug will be covered with like material as in road base or topsoil depending which is present. Tracks will be raked or brushed to remove obvious signs of activity.

Where topsoil has been salvaged and stockpiled, the topsoil will be re-spread evenly over the drill pad area where topsoil was located prior to drilling. The topsoil will be mulched (as necessary) and reseeded as described.

Given the small size and temporary nature of the drill pads, GCC requests that these areas be granted SAE (small area exemption) status with regard to sediment control. To ensure minimal impact from water erosion, each drill pad will have straw wattle erosion "logs" installed along the downgradient side or sides of the drill pad. The straw wattles will filter any surface water runoff from the temporary drill pad during operations and will be left in place until reclamation of the drill pad is complete and vegetation has become established.

The monitoring well sites will be re-seeded as described in Section 2.04.10.

COMPLIANCE WITH THE CLEAN AIR ACT AND CLEAN WATER ACT

GCC Energy, LLC has obtained permits for air emissions and point source discharges from the Colorado Department of Public Health and Environment, delegated agency for enforcement of the Clean Air act and Clean Water Act. There are no waters of the United States requiring a permit from the U.S. Army Corps of Engineers. There are no federally listed or candidate species that require a take permit, habitat conservation plan, or mitigation plan from the U.S. Fish and Wildlife Service.

2.05.5 - POST-MINING LAND USE

The proposed post-mining land uses of the proposed permit area are the same as the pre-mining land uses; rangeland, fish and wildlife habitat, and undeveloped land. The post-mining land uses will be achieved through demolition and removal of buildings and mining related structures (including coal), backfilling and grading of the surface facilities area to a post-mining topography consistent and complimentary to the surrounding topography, replacement of topsoil, and revegetation of the entire mining related disturbance area.

The reclamation plan has been developed to provide a post-mining topography and vegetation community equivalent or better than that there currently. Verification of the utility and capacity of the post-mining land use to support equivalent uses will be undertaken through comparison with the reference area, established to represent the pre-mining condition and utility of the site. Currently, there are no planned uses or land use policies in force for the project area. The reclamation plan has been designed to require no support activities after completion, with the exception of normal management practices (weed control, stock rotation, or others). The reclamation plan is consistent with the requirements of the landowner lease.

GCC Energy, LLC does not propose to change the post-mining land uses from the pre-mining land uses.

2.05.6 - MITIGATION OF THE IMPACTS OF MINING OPERATIONS

AIR POLLUTION CONTROL PLAN

An Air Pollution Control Permit has been obtained from the Colorado Department of Public Health and Environment and is included in Appendix 2.

FISH AND WILDLIFE PLAN

Seasonal Use of Potentially Occurring Wildlife Species

With the exception of migratory birds and bats, the wildlife species encountered during the pre-mine site inspection or that potentially occur on-site are expected to be year-round residents or users of the site.

Carnivore and ungulate species are not restricted to this site and tend to have relatively large home ranges (up to several square miles). The majority of rodent and insectivore species can be expected to reside on-site throughout the year, though many may hibernate during the cold months.

Avian species may be year-round, temporary migrants, or summer residents of the site. Year-round residents would include raptors, gallinaceous birds, doves, owls, and woodpeckers. The majority of passerines would use the site during the spring, summer, and fall for breeding, feeding or resting during migration.

Amphibian and reptile species of the site are year-round residents.

Minimization of Disturbances and Adverse Impacts to Fish and Wildlife

Noise and air emissions during mining may cause a temporary disturbance to wildlife within the area of active surface facilities during operations. Some wildlife species may be temporarily displaced within areas of surface operations.

Common wildlife species such as raccoons, coyotes, deer, passerine birds, and raptors will continue to use the mine site and adjacent areas during mining operations and the site itself.

Bird species will use the periphery of the site and the site itself opportunistically, if prey or food species are present.

Wildlife species have been observed within and adjacent to the active operations and have become adjusted to the operations. In some cases, wildlife (such as deer, small mammals, and birds) are less prone to predation within the active surface operations.

GCC designed and developed the King II Mine surface facilities to minimize the footprint of disturbance. Further, GCC retained native trees, shrubs, and herbaceous vegetation within the surface facilities to minimize habitat fragmentation and disruption to wildlife utilizing the area. Post-construction, GCC reseeded surface facilities boundary areas, sediment control system areas, and topsoil stockpile areas to promote stabilization, sediment control, and habitat development.

Enhancement of Wildlife Habitat: Post Mining

The project will ultimately return the site to a topography and vegetation community similar (or better from a wildlife perspective) than that present prior to mine development. Prior to construction of the King II Mine, the area of surface facilities was a degraded corral and pasture area, dominated by cheatgrass, chamisa, ruderal weeds, and big sagebrush. There was little forage for wildlife species, with poor vegetation community structure and little species diversity.

The existing hay meadow adjacent to the operation within Hay Gulch will not be disturbed during or post-mining, and will provide wildlife habitat throughout and after the operation.

Permanent reclamation of the site will entail grading, respreading topsoil, and seeding and planting perennial native species that will support wildlife species. The mining and reclamation will create a more diverse habitat than was present prior to mining. With the planting of desirable native forage shrubs, additional strata and vegetation layers will be added to the site, creating improved cover, foraging, roosting, and nesting areas for wildlife. With control and/or removal of noxious species during the project, and the replacement of desirable graminoid, forb, shrub, and tree species, mining and reclamation will result in enhancement of wildlife habitat on site.

Protection of Threatened and Endangered Species

The Colorado Natural Heritage Program (CNHP), administered by Colorado State University, was contacted to evaluate the potential for impacts to state and federally listed or candidate threatened,

endangered, and candidate species from the King II Mine project in May 2015 (report in Appendix 8). CNHP concluded that there were "no CNHP designated Potential Conservation Areas (PCAs) in the general project vicinity and no Network of Conservations Areas (NCAs)."

CNHP searched for species records and potential and actual occurrences within a 1.5 mile radius outside the King II Mine affected area. Two species were identified; the Townsend's big-eared bat and the wolverine. As wolverines have been extirpated in Colorado since 1979, the potential for impact to this species from the operation is negligible. Townsend's big-eared bats are found in caves and crevices throughout the southwest. As the King II Mine will not be affecting the habitat of the bat, the potential for impacts is negligible.

As there is not potential for impacts to listed or candidate species, a discussion of impact control measures, management techniques, or monitoring measures is not required.

Protection of Eagles, Migratory Birds, and Other Protected Animals

A raptor protection plan is already on file with the Colorado Division of Reclamation, Mining & Safety.

If protected species are observed within the King II Mine affected area, and the reasonable potential exists for negative direct effects from the King II mining operation, GCC will consult with the regulatory authority (U.S. Fish and Wildlife Service or Colorado Parks and Wildlife) to minimize or mitigate any negative effects. Direct negative effects, as identified by federal and state statute include, but are not limited to, destruction of nests, "takings" of individuals, eggs, or young, and destruction or adverse modification of critical habitat.

In addition to compliance with the federal Bald and Golden Eagle Protection Act, the Migratory Bird Act, the Endangered Species Act, and the Nongame, Endangered and Threatened Species Conservation Act, GCC will ensure compliance with the performance requirements of Rule 4.18 as applicable.

High Value Habitats for Fish and Wildlife

There are no "habitats of unusually high value for fish and wildlife" within the King II Mine affected area, therefore no discussion of impact control measures, management techniques, or monitoring measures is required.

PROTECTION OF HYDROLOGICAL BALANCE

Within the Probable Hydrologic Consequences section of this application it was concluded that there would not be significant effects to the hydrologic balance of the project site or adjacent areas. The lack of significant groundwater and surface water resources in the immediate and adjacent area precludes the potential for significant impacts from a small underground mining operation.

Preventive and protective measures to be employed during and after the mining operation include; isolation of the pre-mining surface water drainages through re-routing and/or piping beneath or through the disturbed area, collection and control of sediment and other constituents from runoff at the disturbed area in a sediment pond, isolation of the Hay Gulch irrigation ditch from disturbed area contamination through berming and silt fencing (if necessary), watering of roadways and surface areas to reduce ambient dust, and gravelling or hard surfacing roadways, parking areas, washout areas, and other locations susceptible to accumulation of sediments or materials.

No losses of quantity or quality of water are anticipated from the King II Mine. There are no known uses of groundwater or surface water in the project or affected area that may be affected by the mining operation. As noted above, the Hay Gulch irrigation ditch will be protected from contamination. Water required for mine use or washing will be obtained from water augmentation plan (See Appendix 2(6)).

Measures for the protection and control of surface and groundwater are further detailed in the operations and reclamation plans.

PROBABLE HYDROLOGIC CONSEQUENCES

The "Cumulative Hydrologic Impact Assessment for Hay Gulch, La Plata County Colorado, Revised October 2006" is included in this permit package as Appendix 4(7). This document was prepared by Tom Kaldenbach, Environmental Protection Specialist for the Colorado Division of Minerals and Geology. Mr. Kaldenbach's assessment concludes that "Neither the King Coal Mines nor the Blue Flame Mine is expected to significantly degrade ground water quality or reduce ground water supply; therefore, no cumulative impact to ground water is predicted for Hay Gulch."

Norwest Corporation performed a geohydrology study of the King II mine area (See Section 2.04.7 and Appendix 4(6)). This report corroborates Mr. Kaldenbach's report of no significant hydrologic impacts.

TR-26 has been submitted to the Division to further address ground water monitoring, springs & seeps and additional surface monitoring of the Hay Gulch Ditch. Data obtained will be used to update the Probable Hydrologic Consequences and the Cumulative Hydrologic Impact Assessment of Hay Gulch and surrounding areas.

No significant hydrologic consequences of mining are anticipated. All coal to be removed from the mine lies above the potentiometric surface of Hay Gulch, the only known aquifer in the area. Therefore, there should be no diminution of water quality or quantity to Hay Gulch from the mine workings or any subsidence related to mining.

As there are no surface drainages from the project area connecting to Hay Gulch there is little likelihood of surface water impacts to water quality or quantity from the operation.

No water is known to occur in any rock unit above or immediately below the coal seams being mined based on the mining at the National King Mine within or immediately adjacent to the permit boundaries. Again, there is little likelihood of significant impact to quantity or quality of groundwater resources resulting from the King II Mine. Should subsidence related features appear above the mine, water would recharge into the localized groundwater system and not continue off-site, given the dissected nature of the project site topography.

The design of the portal facilities and the dip of the strata facilitate drainage of any encountered water in the workings toward the surface. While not anticipated, should water be encountered in amounts that reach the surface, monitoring and control measures will be employed.

WATER MONITORING

Groundwater monitoring has been conducted since 2004 at three baseline alluvial wells, "Wiltse Well Monitoring Station", "Up-Gradient Monitoring Station", and "Down-Gradient Monitoring Station". Surface water monitoring has been conducted at "Hay Gulch Ditch, Downgradient Monitoring Station". Existing monitoring stations will continue to be sampled on a quarterly basis.

TR-26 proposes the addition of an additional Hay Gulch Ditch monitoring station up-gradient from the King I mine, "Hay Gulch Ditch, Up-gradient Monitoring Station" at the confluence of Hay Gulch and Roberts Canyon. Four bedrock monitoring well "clusters" (3 wells each in the Cliffhouse Formation, "A" coal seam into the interburden between the "A" & "B" coal seams) are also proposed (MW-01 thru MW-04). One additional alluvial monitoring station is proposed up-gradient from the King I mine site "King I Up-gradient Monitoring Station" (MW-HGA-4). All water monitoring locations are shown on Maps King II-006A and King II-012. All sampling locations will continue to be sampled until the requirement is waived by the Division of Reclamation, Mining & Safety.

Monitoring parameters will be split into a groundwater group (GW), a surface water group (SW), and a springs & seeps group (S&S). GCC Energy proposes a near consistent analytical suite of parameters across groundwater, surface water and spring and seep monitoring locations in order to best inter-relate surface water and alluvial and bedrock groundwater for four quarters of baseline data collection. However, there are a few exceptions:

- Total Suspended Solids (TSS), Oil and Grease and dissolved oxygen is only for surface water samples, but specifically exclusive of spring and seep samples. This is consistent with the CDRMS Guidelines.

- Sodium Adsorption Ratio analysis only for surface water samples. This is consistent with CDRMS Guidelines.

- Ammonia analysis as one-time only via field kit, sampling at all locations only to establish absence, to be conducted in the fall season (2016Q4).

- Phosphate analysis as one-time only, sampling at all locations only to establish absence, to be conducted in the fall season (2016Q4).

The proposed baseline water quality monitoring parameters have been divided into three appropriate suites to be distinguished by the analytical laboratory and field sampling personnel and presented as Tables 1-3.

Field Parameter Collection

The CDRMS Guidelines recommend monthly collection of water quality parameters for a one-year baseline period. GCC Energy agrees that this is prudent during the baseline period and proposes that it be applied to all current and proposed hydrologic monitoring locations, as applicable given water is present. If water is not present (possibly bedrock wells), a depth to water measurement demonstrating no water present is essential. While these field parameters are indicated in the following Tables 1-3, specifically they are:

Groundwater Monitoring Locations

- Temperature, Specific Conductivity, pH, Oxygen Reduction Potential (ORP), Depth to Water

Surface Water Monitoring Locations

- Temperature, Specific Conductivity, pH, Oxygen Reduction Potential (ORP), Dissolved Oxygen (DO), Flow Rate

Spring & Seep Monitoring Locations

- Temperature, Specific Conductivity, pH, Oxygen Reduction Potential (ORP), Flow Rate

Table 1:
GCC Energy Groundwater Baseline Water Quality Parameter Suite (GCC GW1)

Parameter	Units	Method
Alkalinity, as $CaCO_3$	mg/L	2320 B
Aluminum (Al)	mg/L	EPA200.7
Arsenic (As)	mg/L	EPA200.8
Bicarbonate, as CaCO3	mg/L	2320 B
Cadmium (Cd)	mg/L	EPA200.8
Calcium (Ca+2)	mg/L	EPA200.7
Carbonate, as CaCO3	mg/L	2320 B
Chloride (Cl-)	mg/L	EPA300.0
Copper (Cu)	mg/L	EPA200.8
Depth to Water (field, wells only)	feet	Field
Fluoride (F)	mg/L	EPA300.0
Hardness, as CaCO3	mg/L	Calc. 200.7
Hydroxide, as CaCO3	mg/L	Field
Iron (Fe)	mg/L	EPA200.7
Lead (Pb)	mg/L	EPA200.8
Magnesium (Mg+2)	mg/L	EPA200.7
Manganese (Mn)	mg/L	EPA200.8
Mercury (Hg) Total by CVAA	mg/L	EPA245.1
Molybdenum (Mo)	mg/L	EPA200.8
Oxygen Reduction Potential (ORP) (field)	mV	Field
pH (field)	SU	Field
pH (lab)	SU	EPA150.1
Potassium (K)	mg/L	EPA200.7
Selenium (Se)	mg/L	EPA200.8
Silica (SiO2)	mg/L	Calc. 200.7
Sodium (Na+)	mg/L	EPA200.7
Specific Conductivity (field)	mS/cm	Field
Sulfate (SO4)	mg/L	EPA300.0
Temperature (field)	°C	Field
Total Dissolved Solids (TDS)	mg/L	EPA160.1
Total Nitrogen as Nitrate-Nitrite	mg/L	EPA300.0
Total Organic Carbon (TOC)	mg/L	5310 B
Uranium (U)	mg/L	EPA200.8
Zinc (Zn)	mg/L	EPA200.8

One time only to establish absence, SW and Alluvial GW only in 2016Q4

Ammonia (NH3)	mg/L	EPA350.1
Phosphate (PO4 as P)	mg/L	EPA365.3

Notes:
mg/L = milligrams per liter
SU = standard units
mS/cm millisiemens per centimeter
mV = millivolt

Table 2:
GCC Energy Surface Water Baseline Water Quality Parameter Suite (GCC SW1)

Parameter	Units	Method
Alkalinity, as CaCO3	mg/L	2320 B
Aluminum (Al)	mg/L	EPA200.8
Arsenic (As)	mg/L	EPA200.8
Bicarbonate, as CaCO3	mg/L	2320 B
Cadmium (Cd)	mg/L	EPA200.8
Calcium (Ca+2)	mg/L	EPA200.7
Carbonate, as CaCO3	mg/L	2320 B
Chloride (Cl-)	mg/L	EPA300.0
Copper (Cu)	mg/L	EPA200.8
Depth to Water (field, wells only)	feet	Field
Dissolved Oxygen (DO) (field)	mg/L	Field
Fluoride (F)	mg/L	EPA300.0
Hardness, as CaCO3	mg/L	Varies
Hydroxide, as CaCO3	mg/L	2320 B
Iron (Fe)	mg/L	EPA200.7
Lead (Pb)	mg/L	EPA200.8
Magnesium (Mg+2)	mg/L	EPA200.7
Manganese (Mn)	mg/L	EPA200.8
Mercury (Hg) Total by CVAA	mg/L	EPA245.1
Molybdenum (Mo)	mg/L	EPA200.8
Oil & Grease	mg/L	EPA1664 A
Oxygen Reduction Potential (ORP) (field)	mV	Field
pH (field)	SU	Field
pH (lab)	SU	EPA150.1
Potassium (K)	mg/L	EPA200.7
Selenium (Se)	mg/L	EPA200.8
Silica (SiO2)	mg/L	Varies
Sodium (Na+)	mg/L	EPA200.7
Sodium Adsorption Ratio (SAR)	mg/L	Calculation
Specific Conductivity (field)	mS/cm	Field
Sulfate (SO4)	mg/L	EPA300.0
Temperature (field)	°C	Field
Total Dissolved Solids (TDS)	mg/L	EPA160.1
Total Nitrogen as Nitrate-Nitrite	mg/L	EPA300.0
Total Organic Carbon (TOC)	mg/L	5310 B
Total Suspended Solids (TSS)	mg/L	EPA160.2
Uranium (U)	mg/L	EPA200.8
Zinc (Zn)	mg/L	EPA200.8

One time only to establish absence, SW and Alluvial GW only in 2016Q4

Ammonia (NH3)	mg/L	EPA350.1
Phosphate (PO4 as P)	mg/L	EPA365.3

Notes:
mg/L = milligrams per liter
SU = standard
unitsmS/cm millisiemens per centimeter
mV = millivolt

Table 3:
GCC Energy Spring & Seep Baseline Water Quality Parameter Suite (GCC S&S1)

Parameter	Units	Method
Alkalinity, as CaCO3	mg/L	2320 B
Aluminum (Al)	mg/L	EPA200.8
Arsenic (As)	mg/L	EPA200.8
Bicarbonate, as CaCO3	mg/L	2320 B
Cadmium (Cd)	mg/L	EPA200.8
Calcium (Ca+2)	mg/L	EPA200.7
Carbonate, as CaCO3	mg/L	2320 B
Chloride (Cl-)	mg/L	EPA300.0
Copper (Cu)	mg/L	EPA200.8
Depth to Water (field, wells only)	feet	Field
Fluoride (F)	mg/L	EPA300.0
Hardness, as CaCO3	mg/L	Varies
Hydroxide, as CaCO3	mg/L	2320 B
Iron (Fe)	mg/L	EPA200.7
Lead (Pb)	mg/L	EPA200.8
Magnesium (Mg+2)	mg/L	EPA200.7
Manganese (Mn)	mg/L	EPA200.8
Mercury (Hg) Total by CVAA	mg/L	EPA245.1
Molybdenum (Mo)	mg/L	EPA200.8
Oxygen Reduction Potential (ORP) (field)	mV	Field
pH (field)	SU	Field
pH (lab)	SU	EPA150.1
Potassium (K)	mg/L	EPA200.7
Selenium (Se)	mg/L	EPA200.8
Silica (SiO2)	mg/L	Varies
Sodium (Na+)	mg/L	EPA200.7
Sodium Adsorption Ratio (SAR)	mg/L	Calculation
Specific Conductivity (field)	mS/cm	Field
Sulfate (SO4)	mg/L	EPA300.0
Temperature (field)	°C	Field
Total Dissolved Solids (TDS)	mg/L	EPA160.1
Total Nitrogen as Nitrate-Nitrite	mg/L	EPA300.0
Total Organic Carbon (TOC)	mg/L	5310 B
Uranium (U)	mg/L	EPA200.8
Zinc (Zn)	mg/L	EPA200.8

One time only to establish absence, SW and Alluvial GW only in 2016Q4

Ammonia (NH3)	mg/L	EPA350.1
Phosphate (PO4 as P)	mg/L	EPA365.3

Notes:
mg/L = milligrams per liter
SU = standard units
mS/cm millisiemens per centimeter
mV = millivolt

An Annual Hydrology Report compiling and interpreting the hydrologic data will be prepared based on a water year of October 1 through September 30 each year, and will be submitted to the Division of Reclamation, Mining & Safety by December 31 of that year.

SURFACE WATER MONITORING

In the event of any discharge from any NPDES Discharge Point, the following parameters will be sampled:

a) Flow (gpm)
b) Ph (units)
c) Conductivity (Us/cm)
d) Total suspended solids (mg/L)
e) Total dissolved solids (mg/L)
f) Total iron (mg/L)
g) Settable solids (mg/L)

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

There are no publicly owned parks or places listed on the National Register of Historic Places that may be adversely affected by the operation. The small Hay Gulch cemetery at the southwest corner of the surface facilities north of County Road 120 will not be impacted by development of surface facilities or potential subsidence (as no underground mining will occur below the site).

SURFACE MINING NEAR UNDERGROUND MINING

There are no surface mining activities existing or proposed within 500 feet of any underground mine.

SUBSIDENCE SURVEY, MONITORING, CONTROL PLAN

INVENTORY OF STRUCTURES AND RENEWABLE RESOURCE LANDS

The following is a list of structures and renewable resource lands within the permit area.

Hay Gulch irrigation ditch

County Road 120

Two track road extending north of the project area in Cochran Canyon.

Two track road following the ridge line west of the project area.

Barbed wire fences

Hay Gulch cemetery

Aside from the above mentioned structures, there are no structures or renewable resources in the permitted or potentially affected adjacent lands. There are no aquifers, recharge areas for aquifers, silviculture or irrigated pasture land.

WORST POSSIBLE CONSEQUENCES OF SUBSIDENCE

The two track road following the ridge line west of the project area is the main structure on permitted or adjacent lands which could suffer damage due to the effects of subsidence. In the event that a surface subsidence crack were to intersect the road, it is possible that some repair of the road would be required to allow its continued use. This road is used primarily by the surface grazing lease holders of the State of Colorado land for access to cattle rangelands in the north part of Section 36. Where subsidence cracks have intersected two track roads above the existing King I Mine, repairs were made by shoveling less than a pickup truck load of "road base" into the crack.

In the event that subsidence cracks damage any barbed wire fence within the permit area (a fencepost could be dislodged or strands of barbed wire could stretch and break or sag), GCC Energy, LLC will repair said fences without charge to the surface grazing lease holder, or will reimburse the lease holder for any repairs necessary.
The buildings and structures on and around the surface facility area of the mine will not be damaged by subsidence because there are no minable coal seams beneath this area.

SUBSIDENCE MONITORING PROGRAM

The operator will inspect a fence for subsidence damage no later that in the spring after the fence is undermined. The results of the inspection will be submitted to the Division within 60 days after the inspection.

The operator will inspect the two track road following the ridge line west of the project area (see Map King II-005) for subsidence damage no later that in the spring after the road is undermined. The results of the inspection will be submitted to the Division within 60 days after the inspection.

2.06 - SPECIAL CATEGORIES OF MINING

There will be no experimental practices employed at the King II Mine (Rule 2.06.2).

There will be no mountain top removal at the King II Mine (Rule 2.06.3).

There will be no steep slope mining at the King II Mine (Rule 2.06.4).

GCC Energy, LLC is not requesting a variance from restoration of approximate original contour (Rule 2.06.5).

There will be no disturbance of prime farmlands at the King II Mine (Rule 2.06.6).

GCC Energy, LLC is not requesting a variance for delays in contemporaneous reclamation (Rule 2.06.7).

2.06.8 - ALLUVIAL VALLEY FLOORS

Hay Gulch has been determined to be an alluvial floor by geologist Fred M. Johnson, the Colorado Geological Survey, and the Colorado Division of Reclamation, Mining & Safety in findings related to the permitting of the King I Mine.

The operations of the King II Mine do not propose to affect the Hay Gulch alluvial valley floor. The only mining related feature in the AVF is a monitoring well. At the end of mining, and with the approval of the Division of Reclamation, Mining & Safety, the well will be reclaimed in accordance with the requirements of Rule 4.07 or transferred to another party.

Measures have been taken, as described previously, to protect the alluvial valley floor from adverse effects of mining. Currently, no surface water reaches Hay Gulch from the project area, it is either intercepted by the Hay Gulch irrigation ditch or the elevated base of County Road 120. Mining operations will continue to ensure water from up-slope areas are diverted around all disturbed areas to the Hay Gulch drainage or contained within the disturbed areas. Water monitoring will insure that protection of the alluvial valley floor is maintained.

There will be no auger mining employed at the King II Mine (Rule 2.06.9).

There will be no coal processing plants or support facilities not located within the permit area (Rule 2.06.10).

There will be no *in situ* processing employed at the King II Mine (Rule 2.06.11).

There will be no removal of coal from coal refuse piles at the King II Mine (Rule 2.06.12).

GCC Energy

"Safety as a Value"

Telephone: 970.385.4528
Facsimile: 970.385.4638

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

September 14, 2016

State of Colorado

Division of Reclamation, Mining & Safety
1313 Sherman St., Room 215
Denver, CO 80203

Attn: Rob Zuber, Environmental Protection Specialist II

Re: GCC Energy, LLC, King II Mine
CDRMS Permit # C-1981-035
Minor Revision No. 41 (MR-41) Initial Submittal
King I Mine - Refuse Pile Sampling Plan

Mr. Zuber:

Please find attached Minor Revision MR-41, "King I Mine - Refuse Pile Sampling Plan". This refuse pile sampling plan was originally submitted December 28, 2015 in response to the Division's letter of June, 09, 2015, as a "Supplement" to Technical Revision TR-20, "King I Portal Area - West Waste Bank Designs".

Due to the desire of all parites concerned to charactarize the chemical makeup of the existing refuse pile at the King I mine, and to charactarize the chemical makeup of any future material additions to the pile, GCC Energy has extracted the parts of TR-20 relevent to refuse pile sampling and is submitting them herewith as Minor Revision No. 41 (MR-41).

The remaining portions of Technial Revision TR-20 will be addressed under separate cover.

Please find enclosed:

- Minor Revision #41 CDRMS Application Form
- King I Permit Cover Page
- King I Permit Section 2.04.6 page 5
- King II Permit Cover Page
- King II Permit Table of Contents page ii
- King II Permit Section 2.04.6 pages 6,7 & 8
- King II Permit Appendix 4(8)

GCC Energy

"Safety as a Value"

Telephone: 970.385.4528
Facsimile: 970.385.4638

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326

Please contact Tom Bird at 970.385.4528 x 6503 with questions or comments.

Sincerely,

Tom Bird
Manager of Coal Services
GCC Energy, LLC
tbird@gcc.com

COLORADO DIVISION OF RECLAMATION, MINING AND SAFETY
1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567

APPLICATION FORM FOR A REVISION TO A COAL MINING AND RECLAMATION PERMIT

This form must be completed and submitted with all requests for minor revisions, as defined in Rule 1.04(73), technical revisions, as defined in Rule 1.04(136), and permit revisions, as defined in Rule 1.04(90). All revisions are to address the requirements of Rule 2.08.4. Three (3) copies of the revision, including maps, must be submitted in order for it to be complete.

All revisions are to be formatted so they can be inserted into the permit to replace the revised sections, maps, tables and/or figures, with a revised table of contents, if necessary. The revision submittal date should be printed in the lower right corner of each revision page. A cover letter to the revision should explain the nature of the revision and reference the specific permit sections being revised.

For federal mines, a copy of the revision application must be submitted to all agencies on the federal mailing list (except OSM) at the same time the application is submitted to the Division, and proof of distribution must be submitted to the Division along with the application. Copies of revision pages modified during the review process must be distributed in the same manner, along with proof of distribution. Proof of distribution must be submitted prior to implementation of the revision.

Permit No.: C - 1981 - 035 Date: 09 / 14 / 2016

Permittee: GCC Energy, LLC
King Coal Mine

Street: 6473 County Road 120

City: Hesperus

State: CO Zip Code: 81326 -

Brief Description of Revision: Minor Revision 41 (MR-41): King I Mine - Refuse Pile Sampling Plan

Public Notice Attached: Yes ☐ No ☑ *(Required for PRs and TRs)*

Bond Increase: Yes ☐ No ☑ **Federal** ☑ **Non-Federal** ☐ **Mine**

Proposed Change in:

Permit Area -

Disturbed	(+/-)	0 . 0 Acres
Permit	(+/-)	0 . 0 Acres
Affected	(+/-)	0 . 0 Acres

Surface Ownership -

Private Land	(+/-)	0 . 0 Acres
Federal Land	(+/-)	0 . 0 Acres
State Land	(+/-)	0 . 0 Acres

Mineral Ownership -

Mineral Private	(+/-)	0 . 0 Acres
Mineral Federal	(+/-)	0 . 0 Acres
Mineral State	(+/-)	0 . 0 Acres

GCC ENERGY, LLC
KING I MINE
PERMIT DOCUMENT
CDRMS MINING PERMIT C-1981-035

Technical Revision MR-41

September 14, 2016

GCC Energy, LLC
King I Mine
4424 County Road 120
Hesperus, Co. 81326

REFUSE PILE CHEMISTRY

A discussion of the chemistry and comprehensive sampling plan of the coal mine waste material generated from the King I and King II mines has been added to the permit with Minor Revision MR-41, and can be found as King II Appendix 4(8). Upon approval of MR-41, sampling will commence as soon as possible, weather permitting. Analysis results will be compiled into a report which will be forwarded to the Division and inserted into King II Appendix 4(8).

At the King I Mine: Samples will be collected from three drill holes located as shown on Appendix 4(8) Map 1 and Map 1A, Detail. Map 1 represents a survey performed in January, 2006 at a time when the refuse pile consisted only of King I refuse material. The cross-sections on the left portion of the map show the holes to be drilled and the existing surface and refuse pile/pre-refuse pile interface.

Due to the need to set a drill rig on a relatively flat surface, drill hole locations are placed at intervals along the existing road that accesses the top of the existing refuse pile. These holes are placed such that they will intersect refuse generated only from the King I mine over various periods of time. Holes drilled from higher locations would intersect refuse generated from the King II mine, which is to be sampled separately from the King I refuse. These holes will be drilled to depths of approximately 20' to 35 feet, depending on the cross-section as shown on Maps 1 & 1A, in order to collect representative samples of King I refuse, without intercepting pre-refuse pile base material which could contaminate the samples.

At the King II mine: As shown on Appendix 4(8) Map 2, four additional samples will be collected from existing drill cores or from within the current workings of the King II mine. King II sample locations are spaced at approximately one hole per square mile as per CDRMS guidance document "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data".

Holes labelled RCF #1 thru #3 were chosen to take advantage of locations which are legally and physically accessible within the King II mine. RCF #4 is an available drill core which was collected in 2015 as approved by TR-22

GCC ENERGY, LLC
KING II MINE
PERMIT DOCUMENT
CDRMS PERMIT # C-1981-035

Minor Revision MR-41

GCC Energy, LLC
King II Mine
6473 County Road 120
Hesperus, CO 81326

TABLE OF CONTENTS
APPENDICES

TOPIC	TAB
Right of Entry Information	**1**
(1) State of Colorado Lease CO-3388	
(2) Bureau of Land Management Lease COC-62920	
Licenses and Permits	**2**
(1) Zoning Compliance (La Plata County)	
(2) Air Emission Permit (Co. Dept. of Health)	
(3) Wastewater Discharge Permit (Co. Dept. of Health)	
(4) Landowner Letters	
(5) Monitoring Well Permit	
(6) Water Augmentation Plan	
(7) U.S. Army Corps of Engineers: Section 404-No Permit Required Determination	
Cultural and Historic Resource Survey	**3**
(1) SHPO Concurrence letter	
(2) Cultural Resource Inventory, Hay Gulch Area, Complete Archaeological Service Associates. August 2005	
(3) Cultural Resource Survey, TR-22 Drill Sites, SWCA February 19, 2014	
Geological and Hydrologic Data	**4**
(1) Excerpts from NEDO Project Geological Report, Corte, Jan. 1999	
(2) Hydrologic Water Data: Groundwater Wells and Irrigation Ditch	
(3) Roof & Floor Chemical Analysis	
(4) TR-22 Drill Sites: Location & Topography, Drill Hole Abandonment Drawing, Typical Drill Site Drawing	
(5) Water Well Completion Data – Colorado Division of Water Resources	
(6) GCC Energy King II Coal Mine Hydro Study, Norwest Corporation, February 11, 2014	
(7) Cumulative Hydrologic Impact Assessment for Hay Gulch, La Plata County, Colorado, Tom Kaldenbach, Colorado Division of Minerals and Geology, Revised October, 2006	
(8) King I Mine - Refuse Pile Sampling Plan, MR-41, September 14, 2016	
Climatological Data Summaries	**5**
Soil Resource Data and Analysis	**6**
(1) Field Data Sheet	
(2) Colorado State University Soil, Water and Plant Testing Laboratory Analysis	
(3) Soil Horizon Suitability Criteria for Reclamation	
Baseline Vegetation Report	**7**
(1) Baseline Vegetation Report, National King Coal, LLC, King II Mine, Hay Gulch, Colorado, August 2005	

faults or strata displacements. The coal is strong and pillars are structurally competent showing a lack of squeezing (crushing) or rib spalling. The mine floor does not buckle due to stress from the overburden and because the water table is lower than the seams, pore water pressure is non-existent. The immediate mine roof consists of thinly laminated shales and sandstones. These beds rise up to the base of the Cliff House sandstone an average of twenty feet above the coal seam. The thick Cliff House sandstone provides a great deal of ground stability and generally prevents subsidence from reaching the surface after pillars are extracted during second mining.

STRATIGRAPHIC CROSS-SECTION

Regional and project area cross sections are shown on Map King II-004 and King II-008, and contained in the NEDO Project Geologic Report excerpts (Appendix 4).

EXPLORATION CORE DRILLING

During summer, 2015, GCC drilled 8 exploration holes, numbered GCC15-14 thru GCC15-21 as shown Map King II-004, within the existing permit area. One additional hole (GCC-15-22) approved in TR-22, was not drilled because the data from previous holes in this series rendered potential data from this hole unnecessary. Holes were rotary-drilled, nominally 5 to 6 inches in diameter, to predetermined core points. The total depth of each borehole was about 320 feet. The predetermined core zone was cored by PQ wireline methods. Drilling was with air, air with water injection, or water. Cuttings pits were necessary at all locations (see drawing at Appendix 4(4). Cuttings pits were excavated by a back-hoe and were approximately 6 feet wide by approximately 10 feet long. The pits were unlined and constructed the same for all drilling methods used.

All 8 boreholes utilized the already disturbed area of the existing roadway, minimizing the foot print. Drill holes were sealed by filling with cement to an elevation above the coal seam encounter, then replacing cuttings or other suitable media in the hole and placing a suitable plug 10 feet below the ground surface for support of a cement plug to within 3 feet of the ground surface. The plug was covered with like material, such as road base or topsoil, depending which was present. Tracks were raked or brushed to remove obvious signs of activity. Water bearing strata were not encountered in the 8 drill holes. Drilling was accomplished with a truck-mounted core rig accompanied by a water truck typically of 3,000 gallon capacity; a flat-bed service truck; and smaller pickup trucks as necessary for service and transportation to and from the drilling sites. Water was provided to drill sites GCC15-14 thru GCC15-21 from the mine supply at the main plant.

All of the holes were geophysically logged. The equipment necessary for such work was mounted in a full-size Suburban-type 4X4. Under this program no roads were proposed for construction and no blasting was performed. The moderately rugged terrain of the exploration area consisted primarily of the mesas drained by Hay Gulch. Elevations varied from approximately 7,200 feet to 7,800 feet on the mesa top. The major changes in elevation were predominantly along the edges of the flat top mesas with relatively little elevation change on the mesa tops. All 8 of the exploratory boreholes were drilled on the mesa top. Topography is shown on attached map Topography & Drill Hole Locations (Appendix 4 (4) page 1).

The proposed exploration area was accessed by dirt roads and well defined jeep trails controlled and maintained by the Ute Mountain Ute Tribe and the State of Colorado. The weather can drastically affect mobility and as such severely limit exploration efforts, especially in winter months

The exploration borehole drilling was anticipated to be completed, weather permitting, by the end of December, 2014. Due to early snow in the region, drilling was actually completed during early summer, 2015.

Water bearing strata was not expected to be encountered in the 9 proposed drill holes. Water has not been encountered in previously drilling projects in the area or in the active workings of the King II mine. Small amounts of water were encountered occasionally at the King I mine. These were believed to be small “perched” aquifers that dried up quickly once the coal had been removed below them. Unlike the King II mine, the King I mine strata dipped below the coal outcrop. King II outcrops on practically all sides of the surrounding mesas, effectively draining any perched aquifers to the outcrop.

REFUSE PILE CHEMISTRY

A discussion of the chemistry and comprehensive sampling plan of the coal mine waste material generated from the King I and King II mines has been added to the permit with Minor Revision MR-41, and can be found as King II Appendix 4(8). Upon approval of MR-41, sampling will commence as soon as possible, weather permitting. Analysis results will be compiled into a report which will be forwarded to the Division and inserted into King II Appendix 4(8).

At the King I Mine: Samples will be collected from three drill holes located as shown on Appendix 4(8) Map 1 and Map 1A, Detail. Map 1 represents a survey performed in January, 2006 at a time when the refuse pile consisted only of King I refuse material. The cross-sections on the left portion of the map show the holes to be drilled and the existing surface and refuse pile/pre-refuse pile interface.

Due to the need to set a drill rig on a relatively flat surface, drill hole locations are placed at intervals along the existing road that accesses the top of the existing refuse pile. These holes are placed such that they will intersect refuse generated only from the King I mine over various periods of time. Holes drilled from higher locations would intersect refuse generated from the King II mine, which is to be sampled separately from the King I refuse. These holes will be drilled to depths of approximately 20' to 35 feet, depending on the cross-section as shown on Maps 1 & 1A, in order to collect representative samples of King I refuse, without intercepting pre-refuse pile base material which could contaminate the samples.

At the King II mine: As shown on Appendix 4(8) Map 2, four additional samples will be collected from existing drill cores or from within the current workings of the King II mine. King II sample locations are spaced at approximately one hole per square mile as per CDRMS guidance document "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data".

Holes labelled RCF #1 thru #3 were chosen to take advantage of locations which are legally and physically accessible within the King II mine. RCF #4 is an available drill core which was collected in 2015 as approved by TR-22.

Appendix 4 (8)

Additional Sampling of King I Refuse Pile, and King II Roof, Coal & Floor

King I Refuse Pile Sampling & Analysis

In response to a June 9, 2015 letter received from the Colorado Division of Reclamation, Mining & Safety (CDRMS), GCC Energy, LLC (GCCE) proposes to collect samples of refuse generated from within the old King I mine from the refuse pile located at the King I mine. The King I mine was sealed in January, 2009 and no refuse was generated after that date. Since that time, a great deal of refuse from the King II mine has been added above the final horizon of the King I refuse pile. In order to access King I refuse from the existing pile, GCCE proposes to drill three (3) holes of differing depths, from the existing access road as shown on attached Maps 1 & 1A. These 3 holes have been superimposed on a refuse pile map prepared by Maness and Associates Surveying on January 26, 2006. This map shows that any refuse collected from the three proposed sites was generated from the King I mine, since no mining occurred prior to July, 2007 at the King II mine. A Google Earth image of the area dated 08/30/2006 is also included for additional reference.

These holes would be auger drilled to depths approximately 20' to 35', depending on the cross-sections as shown on Map 1A, into the lower part of the refuse pile, without intercepting pre-refuse pile base material which could contaminate the samples. The cross-sections on the left portion of Map 1 show the holes to be drilled and the existing surface and refuse pile/pre-refuse pile interface. Map 1A shows detail of these three holes. These holes would intercept refuse generated from the King I mine during different phases of deposition. The auger cuttings would be gathered, "coned and cut" as per standard sampling practice, and analyzed as detailed in the attached table and text entitled "Proposed Chemical Parameters & Methods of Analysis". Cuttings not retained for analysis will be returned to the holes. There is no history of spontaneous combustion or excessive heating of coal mine waste at the King I or King II mines. There is no evidence that there will be increased potential for spontaneous combustion caused by drilling the proposed holes.

King II Roof, Coal & Floor Sampling & Analysis

Analysis of King II refuse will be accomplished by obtaining roof & floor samples of retained core drilling cores, as well as roof, coal & floor samples that will be collected from active workings at the King II mine. As per "Guidelines for the Collection of Baseline Water Quality and Overburden Geochemistry Data", as posted on the CDRMS website, roof & floor samples will be collected as composite samples from strata approximately 5 feet overlying and 5 feet

underlying the coal seam at intervals of approximately 1 hole per square mile, or closer.

Attached Map 2, shows the locations of proposed roof, coal and floor samples to be collected and analyzed. These samples will be analyzed as detailed in the attached table and text entitled "Proposed Chemical Parameters & Methods of Analysis". Samples labelled RCF #1 thru #3 were chosen to take advantage of locations which are legally and physically accessible within the King II mine. RCF #4 is an available drill core which was collected in 2015.

Sample Collection & Analysis

The above samples will be collected by GCC Energy personnel under the direction and supervision of Resource Hydrogeologic Services, Inc., and transported, under normal chain-of-custody to a laboratory with the necessary qualifications to analyze the material.

Results of this sampling and analysis results will be compiled in a report and included in the King I & King II permit documents Appendix 4(8).

ROOF, FLOOR, INTERBURDEN, COAL, & REFUSE PILE SAMPLING

Proposed Sampling Procedures

Roof, Floor, Interburden and Coal

a. Drill hole spacing should be approximately one hole per square mile. A minimum of three drill holes should be sampled (this may require a closer drill hole spacing for smaller mines).

b. For each coal seam to be mined, the following samples should be analyzed; a composite sample from the first five (5) feet of strata overlying the coal seam, a composite sample from the first five (5) feet of the stratum underlying the coal seam, a sample of the coal seam, and samples of interburden, partings, splits, etc.

Proposed Chemical Parameters & Methods of Analysis

Chemical Parameter	**Units**	**Methods of Analysis**
pH (paste)	pH units	Saturated paste
Electrical Conductivity	umhos/cm	Saturated paste extract
Total Combustible Solids	ppm	Dry ash; D 3174-73
Lithologic Classification	-	Visual observation
Textural Analysis		
% sand	%	Sieve analysis
% silt	%	Hydrometer
% clay	%	Hydrometer
Saturation Percentage	%	Saturated paste
Sodium Adsorption Ratio	-	Saturated paste extract
Calcium (Ca+2)		Saturated paste extract
Magnesium (Mg+2)		Saturated paste extract
Nitrate-Nitrite	ppm	Saturated paste extract
Sodium (Na+)	ppm	Saturated paste extract
Sulfur		
% Pyritic Sulfur	%	D 2492-79
% Sulfate Sulfur	%	D 2492-79
% Organic Sulfur	%	D 2492-79
Total Sulfur	ppm	D 3177-75
Arsenic (As)	ppm	AB-DTPA/ Ammonium Bicarbonate
Boron (B)	ppm	Saturated paste extract
Cadmium (Cd)		AB-DTPA; DTPA
Copper (Cu)		AB-DTPA; DTPA
Iron (Fe)	ppm	AB-DTPA; DTPA
Lead (Pb)	ppm	AB-DTPA; DTPA
Manganese (Mn)	ppm	AB-DTPA; DTPA
Mercury (Hg)	ppm	Acid extract
Molybdenum (Mo)	ppm	AB-DTPA; Ammonium oxilate
Selenium (Se)	ppm	AB-DTPA; Hot water extract
Zinc (Zn)		AB-DTPA; DTPA

Chemical Parameter Justifications

Chemical Parameter	**Justification**
pH	a characteristic of water needed to assess the solubility ranges of the chemical parameters; a characteristic of rock needed to assess acid-base forming potential; effluent limitations of Rule 4.05.2 (7).
Electrical Conductivity	an indicator of the general quality of water; an indicator of the salinity hazard associated rock materials.
Total Combustible Solids	an indicator of the fire hazard potential of underground mine refuse rock and coal processing wastes.
Lithologic Classification	an indicator of general rock texture and type.
Textural Analysis % sand % silt % clay	an indicator of textural variability; needed to assess erosiveness and suitability of rock material to be used as a plant growth medium; an indicator of the infiltration and water retention properties of spoils material.
Saturation Percentage	an indicator of the general plant growth medium potential of rock materials; an indicator of the water holding capacity, expected percolation rate, and clay swelling capacity of rock materials; used to evaluate the accuracy of reported SAR values.
Sodium Adsorption Ratio (SAR)	an indicator of the irrigation potential of water; an indicator of the dispersing character of the clay fraction of rock materials; an indicator of the infiltration capacity of rock materials.
Major Ions:	
Calcium (Ca^{+2})	a predominant cation in mine drainage at the Edna Mine, concentration increased above background levels (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); needed to evaluate ion balances; needed to calculate SAR.
Magnesium (Mg^{+2})	a predominant cation in mine drainage at the Edna Mine, concentration increased above background levels (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); needed to evaluate ion balances; needed to calculate SAR.

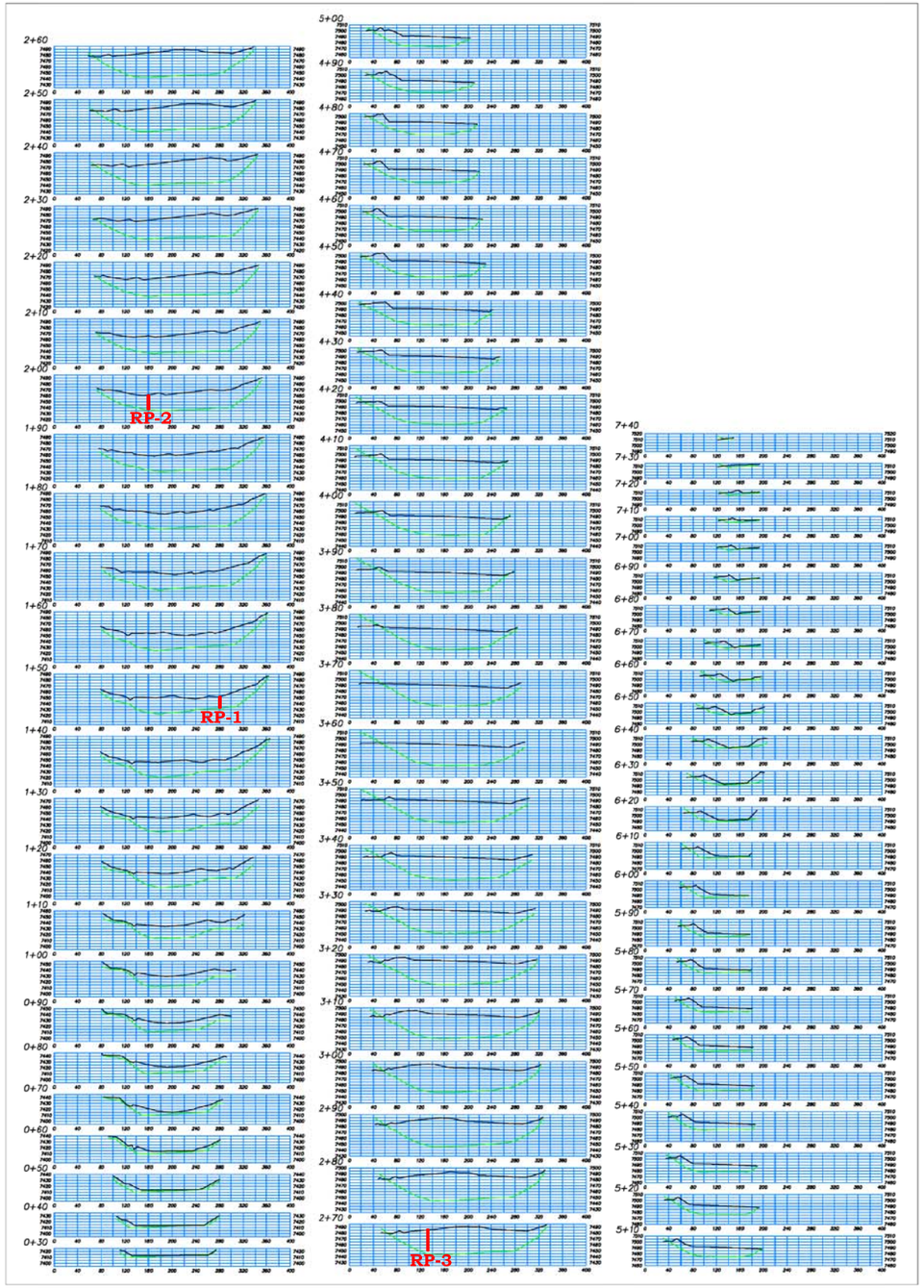
Nitrate-Nitrite	a major component of ammonium-nitrate explosives commonly used at surface mines in the western U.S.; an indicator of spoils material suitability as a plant growth medium; a common constituent of fertilizers spread on reclaimed areas.
Sodium (Na^+)	a predominant cation in mine drainage at the Edna Mine, concentration increased above background levels (McWhorter, et al., 1975); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); needed to evaluate ion balances; needed to calculate SAR.
Sulfur % Pyritic Sulfur % Sulfate Sulfur % Organic Sulfur Total Sulfur	an indicator of the acid-base forming potential of spoils or refuse rock: % pyritic sulfur is an indicator of acid-forming potential; % sulfate sulfur is an indicator of base-forming potential; % organic sulfur is an indicator of the potential for spontaneous combustion of a mine's refuse pile.

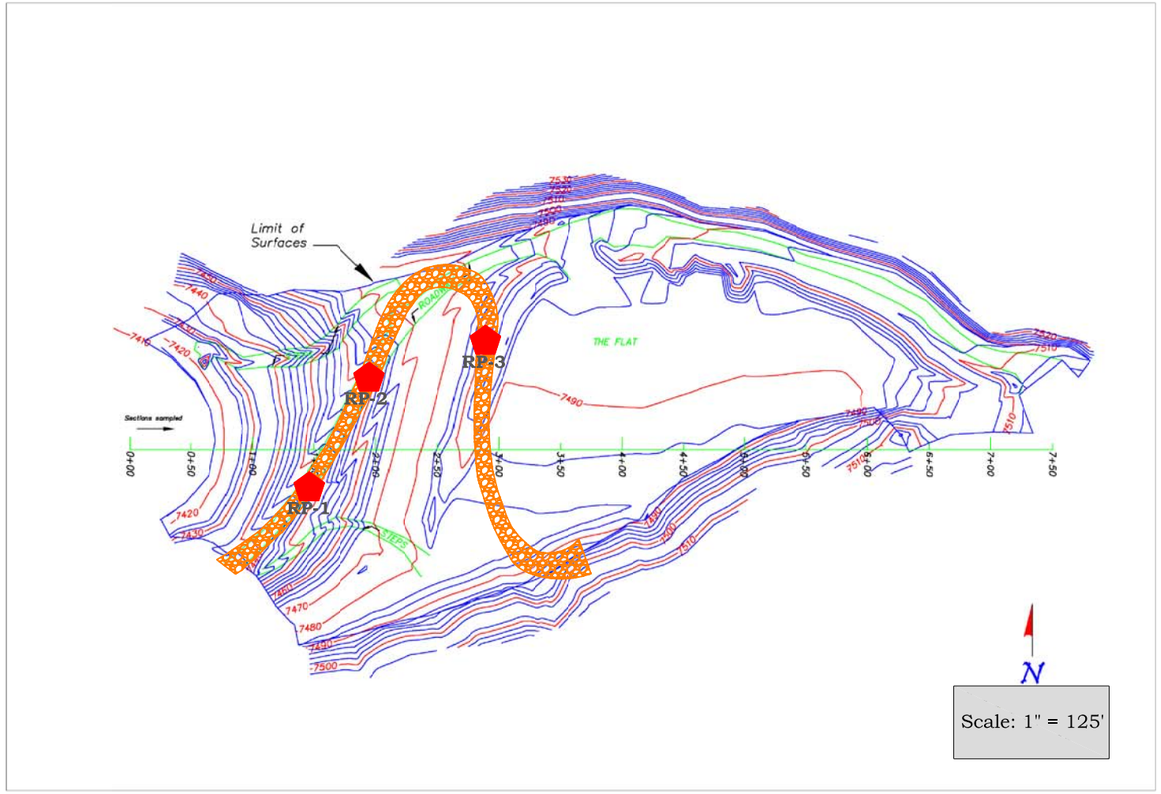
Trace Elements

Arsenic (As)	concentration reported to increase in mine spoils water at the Edna Mine (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); likely to have a higher than average concentration in coal and associated shales (NAS, 1977); may be a pollutant associated with fly ash disposal in surface mines in the western U.S. (Everett, 1979)
Boron (B)	an indicator of the usefulness of spoils and refuse rock as a plant growth medium (Bingham, 1973); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979).
Cadmium (Cd)	concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); may be a pollutant associated with fly ash disposal in surface mines in the western U.S. (Everett, 1979).
Copper (Cu)	concentrations may increase in waters near surface mines in the western U.S, (Everett, 1979); may be a pollutant associated with fly ash disposal in surface mines in the western U.S. (Everett, 1979); change in Cu:Mo ratio could cause molybdenosis in livestock.
Iron (Fe)	increased concentration reported in mine spoils water at the Edna Mine (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); effluent limitations from Rule 4.05.2 (7).

Lead (Pb)	commonly exceeds drinking water, livestock, and aquatic life water quality standards in the Yampa River (Melancon, 1980); increased concentration reported in mine drainage in Colstrip, Montana (Van Voast, et al., 1977).
Manganese (Mn)	increased concentration reported in mine spoils water at the Edna Mine (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); effluent limitations from Rule 4.05.2 (7).
Mercury	increased concentration reported in mine spoils water at the Edna Mine (Skogerboe, et al., 1979); commonly exceeds water quality standards in the Yampa River (Steele, et al., 1978); may be a pollutant associated with fly ash disposal in surface mines in the western U.S. (Everett, 1979).
Molybdenum (Mo)	increased concentration reported in mine effluent at the Empire Energy Mine (Empire Energy, 1981); may be a pollutant associated with fly ash disposal at surface mines in the western U.S. (Everett, 1979); change in Cu:Mo ratio could cause molybdenosis in livestock.
Selenium (Se)	increased concentration reported in spoils water at the Edna Mine (Skogerboe, et al., 1979); may be a pollutant associated with fly ash disposal at surface mines in the western U.S. (Everett, 1979); coal commonly has a higher than average selenium concentration (NAS, 1976); the most highly seleniferous sediments in the U.S. were deposited during the Cretaceous Period (NAS, 1976), most coal-bearing strata in Colorado were deposited during the Cretaceous Period; selenium concentrations in coals and associated black shales are usually much higher than average (Latkin, 1973); at a pH of about 8 (common in Colorado coal environments), selenite may be oxidized to the soluble selenite ion (Latkin, 1973); harmful to livestock if in excessive concentrations.
Zinc (Zn)	increased concentration reported in spoils water at the Edna Mine (Skogerboe, et al., 1979); concentrations may increase in waters near surface mines in the western U.S. (Everett, 1979); may be a pollutant associated with fly ash disposal at surface mines in the western U.S. (Everett, 1979).

The above information was taken from:
http://mining.state.co.us/Programs/Coal/RulesRegs/Documents/OverburdenBaseline.pdf





Site	Cut yards	Fill yards	Net yards	Method
REFUSE PILE 10' SAMPLING	1418	99351	97932 (f)	Prismoidal

Volumes are based on a Base Surface created from 1978 Aerial Topography provided by National King Coal, and a Top Surface created by a December 2005 and January 2006 site survey.

SURVEYOR'S CERTIFICATION:
KNOW ALL MEN BY THESE PRESENTS:
THAT I, ERNEST E. MANESS, DO HEREBY CERTIFY THAT I PREPARED THIS TOPOGRAPHIC MAP FROM AN ACTUAL AND ACCURATE SURVEY OF THE LAND AND THAT THE SAME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

ERNEST E. MANESS
COLORADO REG. 19612

DATE

NOTE: According to the laws of the state of Colorado, any legal action based on any defect in this survey must commence within three (3) years after such defect was first discovered. In no event may any legal action based upon any defect in this survey be commenced more than ten (10) years from the date of the certification shown hereon.

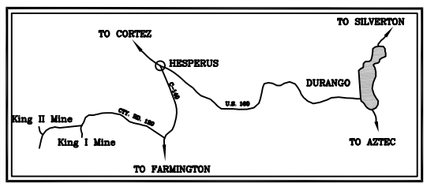
MANESS & Associates Inc.
REGISTERED LAND SURVEYORS

NATIONAL KING COAL MINE
REFUSE PILE TOPOGRAPHY

LOCATED IN SECTION 32 TOWNSHIP 35N RANGE 11 WEST, NMPM
LA PLATA COUNTY, COLORADO

JANUARY 16, 2006 | File: 2005-12-815 | aurora3 kingcoal: dwg: gabvals.dwg

29 S. Washington – P.O. Box 1163 – Cortez, CO. 81321 – Phone: 970/565-8845



REVISIONS	
DATE	DESCRIPTION
12/28/15	Original Drawing, TR-20 AR #3
09/14/16	MR-41 Initial Submittal

LEGEND

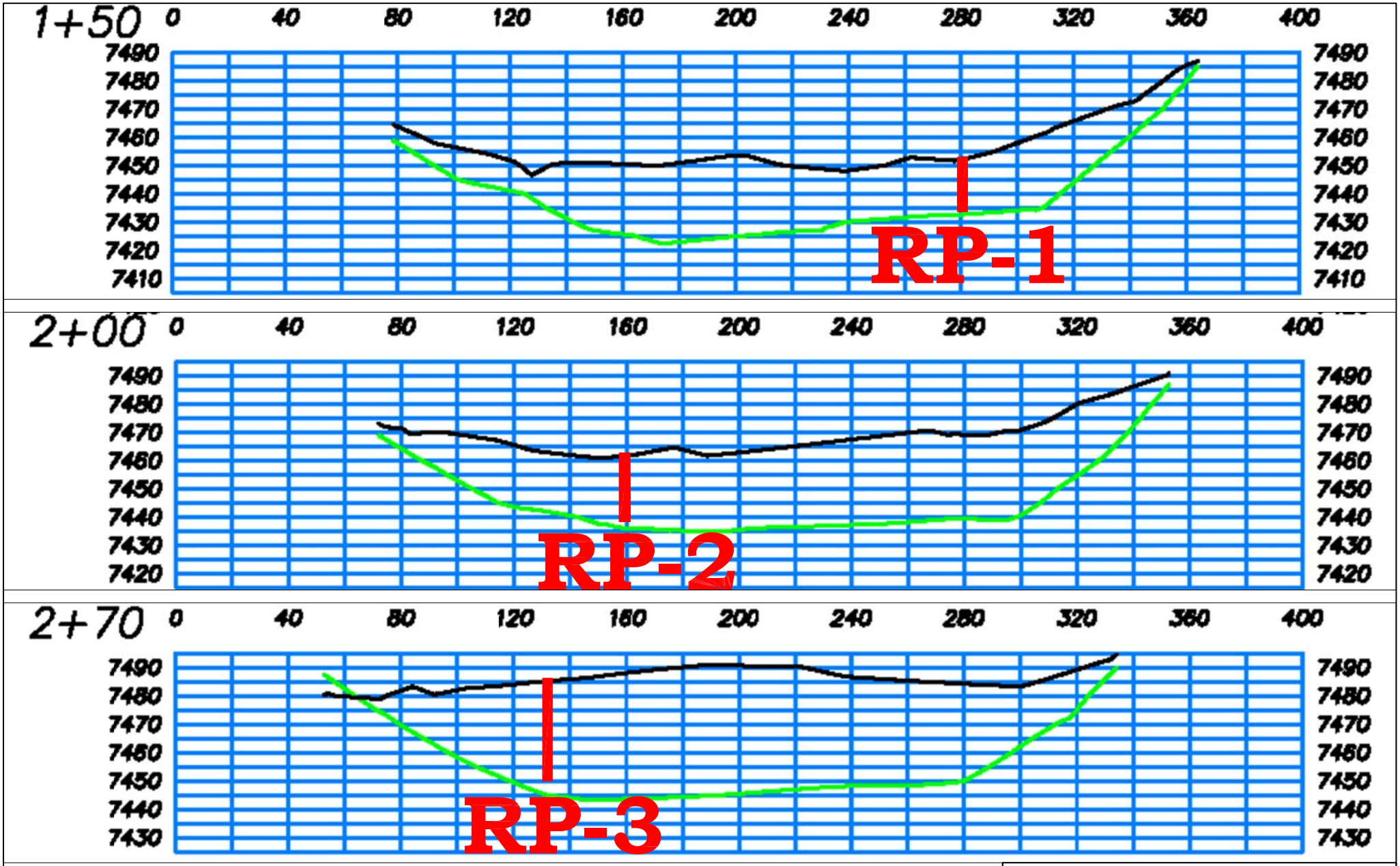
- Refuse Pile Surface 01/2006
- Refuse Pile Surface 11/1978
- Proposed Refuse Pile Sampling Location
- RP-2 Refuse Pile Sampling Location X-Section
- 2016 Refuse Pile Roadway Location

GCC Energy

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
Colorado Mining Permit C-1981-035

King I Mine
4424 C.R. 120
Map 1
King I Refuse Pile Sampling Locations

Scale: NTS		Designed By:	Tom Bird
Date: 09/14/16		Drawn By:	Tom Bird
File Path:	Environmental\King I\Permit Maps		
File Name:	King I-007 Operation Plan & Surf		
Plot Date:	09/14/16		
Plot Time:	9:55 am		



LEGEND

Refuse Pile Surface 01/2006

Pre-refuse Pile Surface 11/1978

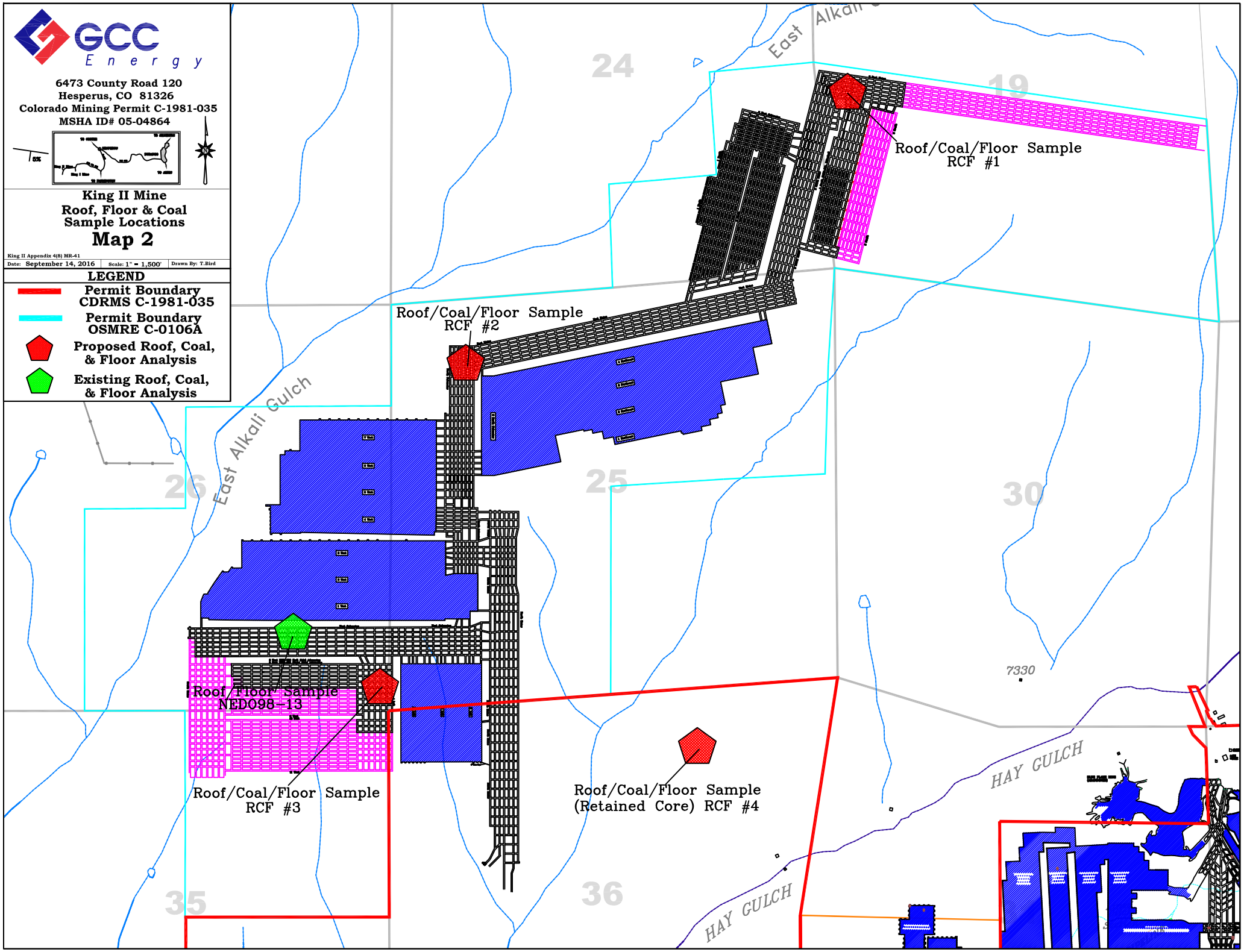
RP-2 Refuse Pile Sampling Location X-Section

GCC Energy

GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
Colorado Mining Permit C-1981-035

King I Mine
4424 C.R. 120
Map 1A, Detail
King I Refuse Pile Sampling Locations

Scale: NTS		Designed By:	Tom Bird
Date: 09/14/16		Drawn By:	Tom Bird
File Path:	Environmental\King I\Permit Maps		
File Name:	King I-007 Operation Plan & Surf		
Plot Date:	09/14/16		
Plot Time:	9:55 am		


GCC Energy
6473 County Road 120
Hesperus, CO 81326
Colorado Mining Permit C-1981-035
MSHA ID# 05-04864
King II Mine
Roof, Floor & Coal
Sample Locations
Map 2
King II Appendix 4(8) MR-41
Date: September 14, 2016
Scale: 1" = 1,500'
Drawn By: T.Bird
LEGEND
Permit Boundary CDRMS C-1981-035
Permit Boundary OSMRE C-0106A
Proposed Roof, Coal, & Floor Analysis
Existing Roof, Coal, & Floor Analysis
East Alkali Gulch
East Alkali
HAY GULCH
HAY GULCH
24
19
26
25
30
35
36
7330
Roof/Coal/Floor Sample RCF #1
Roof/Coal/Floor Sample RCF #2
Roof/Floor Sample NED098-13
Roof/Coal/Floor Sample RCF #3
Roof/Coal/Floor Sample (Retained Core) RCF #4

King I Mine - 08/30/2006
Google earth
Image USDA Farm Service Agency
N
700 ft