



January 24, 2020

Clint Chisler
Reclamation Soil Scientist
Mining and Minerals Division
Mining Act Reclamation Program
Via email at: Clinton.chisler@state.nm.us

Subject: Modification Application for New Units, Exploration Drilling and Off- Spec Coal Placement at GCC Rio Grande Tijeras Mine and Mill (Permit BE001RE)

Dear Mr. Chisler:

GCC Rio Grande, Inc. ("GCC") requests a modification to the Tijeras Mine and Mill Permit No. BE001RE in accordance with the provisions of the New Mexico Mining Act, Sections 69-36-1 through 69-36-20, NMSA 1978 and the New Mexico Mining Act Rules. In summary, GCC would like to increase the extent of the design limits of the Tijeras Mine and Mill by approximately 263.18 acres. This expansion comprises 9 separate section increases: a 9.29 acre portion on the southwest of Quarry 2, a 39.89 acre portion northwest of Quarry 4, a 29.87 acre portion west and south of Quarry 6 (West Cap), a 28.60 acre portion west and east of Quarry 8 (East Cap), a 74.42 acre portion east and west of Quarry 10, a 29.34-acre portion southeast and southwest of Quarry 15, a 35.24-acre portion northwest of Quarry 17, a 9.86-acre portion west of Quarry 18 (19N), a 6.68-acre portion northwest of Quarry 19 (Figure 2). In addition, GCC would like to add permit language to allow exploration drilling within the permit boundary and placement of off-spec coal into the cement kiln dust (CKD) pit located in Quarry 6. (Figure 3).

Details and further discussion relevant to the proposed permit modification is provided in this application. A summary of the existing permit and background information for the Tijeras Mine and Mill is presented in section 1. Sections 2 and 3 provide justification that the proposed changes at the Tijeras facility require a modification rather than a revision of the existing permit and check off application requirements. Sections 5 and 6 describe exploration drilling and off spec coal management. Sections 4 and 7 describe the reclamation plans for the proposed increases and the associated financial assurance estimate. Attached to this letter is a Financial Assurance Estimate (FAE) describing Closeout Plan liability for these additional units.

1. Facility Background and Relevant Permitting History

The Tijeras Mine and Mill permit area consists of approximately 2,219 acres and is located at approximately 35.07171° North Latitude, 106.39780° West Longitude. The Tijeras Mine and Mill has been in operation since 1959 at 11783 State Highway 337, Tijeras, New Mexico, 87509. Ideal Basic Industries began construction and development of the site in 1958. Holnam, Inc. acquired the property and its operations in 1990. In 1995, GCC Rio Grande purchased the site and the facility.

The New Mexico Mining Act, enacted in 1993 at 69-36-1 et seq., NMSA, required existing mining operations to submit a permit application and a closeout plan. A permit application was submitted, and the agency issued MMD Permit #BE001RE on May 23, 1996. This permit authorizes the permittee to conduct mining and reclamation operations at the facility. The required closeout plan was submitted to MMD as an amendment to MMD Permit #BE001RE. On June 30, 1998, MMD issued Permit Revision 98-1

approving the closeout plan and incorporating it as a permit requirement. On September 12, 2007, MMD approved Permit Modification 06-1, codifying the current design limits of Tijeras Mine and Mill. Finally, in August of this year. On July 6, 2015, MMD issued permit modification 14-01, for financial assurance replacement. On August 19, 2015, MMD requested an update to the closeout plan and financial assurance for #BER001RE. On November 06, 2016, MMD approved Permit Modification 16-2 for new units in Quarries 357NE, 357NW and 19N totaling an additional 86.2 acres; On June 1 2017, MMD issued Permit Modification 17-1, which was a modification to the FA instrument replacement. On October 10, 2019, MMD issued Permit Modification 18-1, which approved the new mine closeout plan and associated financial assurance.

2. Justification that Proposed Changes Require a Modification

Section 19.10.5.505 of the New Mexico Administrative Code (NMAC) differentiates between the requirements for hard rock permit modifications and hard rock permit revisions. Applicable portions of the NMAC from Section 19.10.5.505 are included below in bold, followed by an explanation in red of why the Tijeras facility's proposed mining and reclamation changes necessitate a permit modification, as opposed to a permit revision.

(1) The Director shall consider the following factors and their level of impact to determine whether a permit modification would have a significant environmental impact:

(a) Whether the proposed change would authorize an expansion of design limits beyond that currently authorized by the permit that:

(i) Would be located in or is expected to have a direct surface impact on wetlands, springs, perennial or intermittent streams, lakes, rivers, reservoirs or riparian areas.

No tributary water courses, wetlands, wells, springs, stock water ponds, reservoirs, perennial or intermittent streams and ditches on the affected land and on adjacent lands will be affected by the proposed mining operations.

(ii) Is expected to have a direct impact on ground water that has a total dissolved solids concentration of less than 10,000 mg/l.

There are no known water tables within the vertical profile of the area to be mined. Therefore, there will be no direct impacts to any groundwater.

(iii) Is expected to result in point or non-point source surface or subsurface releases of acid or other toxic substances from the permit area.

There will not be any new point sources created by proposed changes to the mining and closure plans. Therefore, no new sources of potential release of acid or toxic forming materials into the hydrologic system at the quarry will occur.

(iv) Would be located in designated critical habitat areas as determined in accordance with the federal Endangered Species Act of 1973 or in areas determined by the Department of Game and Fish likely to result in an adverse impact on an endangered species

designated in accordance with the Wildlife Conservation Act, Sections 17-2-37 through 17-2-46 NMSA 1978 or by the State Forestry Division for the Endangered Plants Act, Section 75-6-1 NMSA 1978.

Based on the information available from the U.S. Fish and Wildlife Service, no critical habitat areas are located within the proposed new units.

(v) Would adversely impact cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties.

There are no cultural resources identified on either the National Register of Historic Places or the New Mexico State Register of Cultural Properties in the proposed mining site. All proposed activities take place within the disturbed or affected mining areas currently identified and approved in Permit No. BE001RE.

(vi) Would be located in a known cemetery or other burial ground.

None of the proposed mining or reclamation activities are located in a known cemetery or burial ground.

(vii) Would be located in an area designated as a Federal Wilderness Area, Wilderness Study Area, Area of Critical Environmental Concern, or an area within the national Wild and Scenic River System.

Proposed mining and reclamation activities will not occur in a Federal Wilderness Area, Wilderness Study Area, Area of Critical Environmental Concern, or an area within the national Wild and Scenic River System.

(b) Whether the proposed change would result in a significant increase in the amount of financial assurance as determined by the Director; or

Proposed modifications do not result in a significant change in the financial assurance. A Financial Assurance Evaluation, that describes close out plan liability for the modified mining and reclamation plans is provided in this document below.

(c) Whether the proposed change would significantly depart from the nature or scale of the permit.

New mining and financial assurance modifications described in this application will occur within the currently approved permit boundary for Permit No. BE001RE. Therefore, changes described in this modification are not significantly different from the approved permit.

3. Application Checklist

19.10.5.502 PERMIT APPLICATION REQUIREMENTS:

A. A minimum of six copies of each application for a permit under this Part shall be submitted to the Director. The Director may require additional copies for distribution by the Director to other governmental agencies with an interest in, or jurisdiction over, elements of the proposed operation.

This application will be submitted electronically; one paper copy will be submitted to your office for MMD file per conversation.

B. All information submitted to the Director shall be made available for public inspection and copying at the Director's office, except as designated confidential. Information in the application which the applicant desires to keep confidential shall be clearly indicated and submitted separately from the rest of the application.

(1) If the operator designates as confidential an exploration map, financial information, information concerning the grade or location of ore reserves or trade secret information, the Director shall maintain the information as confidential and not subject to public records or disclosure laws.

(2) If a request is made for public review of the information held confidential, the Director shall notify the operator and provide a reasonable opportunity for substantiation of the claim that public disclosure of the information could harm the competitive position of the operator. If the claim is not substantiated to the satisfaction of the Director, the information shall be released.

(3) When a request is made for public review of information designated as confidential, the Director shall attempt to notify the operator within 24 hours of the request, and shall provide written notification by certified mail.

There is no information designated as confidential in current modification effort.

C. Each application shall be signed by an applicant or authorized agent of the applicant for the operation with the following certification made:

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals responsible for obtaining the information, I believe the submitted information is true, accurate, and complete.

Please see certification and signature in Section 6 below.

D. Each application under this Part shall be in a format acceptable to the Director and contain the following:

(1) The name of the applicant to whom the permit will be issued.

GCC Rio Grande, Inc. (GCC)

(2) A map(s) and list, including names and addresses, of all owners of surface and mineral estates within the proposed permit area, as shown by the most recent county assessor's property tax schedule.

GCC owns all of the surface estate within the proposed permit boundary except for the United States Forest Service (USFS) property in the southeast portion of the permit boundary (see attached map, *Surface/Mineral Estate Ownership [from Special Warranty Deed]*) and the small rectangular-shaped notch in the northeast ¼ of Section 28. In the southeast portion of the Tijeras Mine and Mill, GCC maintains the indicated mining claims with the BLM annually. The small portion in the NE section of the proposed permit boundary represents a past encroachment onto USFS property. The area was mined for limestone and subsequently reclaimed; although the dates are uncertain, historical aerial

photography indicates surface disturbance in the area in May of 1991. Supporting documentation for these delineations are included as attachments to the application for the modification submitted by GCC in August 2016.

(3) A statement of the basis on which the applicant has the right to enter the property to conduct the mining and reclamation. The applicant will allow the Director to examine, if necessary, the documents which establish such basis.

Rio Grande Portland Cement Corp C/O Mexcement Inc. (GCC) retains both surface and mineral estate ownership; see item D (2) above and see attached map, *Surface/Mineral Estate Ownership (from Special Warranty Deed)*.

(4) The site assessment previously submitted pursuant to Section 69-36-5 of the Act shall be considered part of the application. If information in the site assessment requires updates to provide information necessary for evaluation of the permit or if the site-specific conditions at the time of the assessment significantly deviate from conditions at the time of submittal of the permit application, such updated information or deviations must be described in the application.

No updates to the site assessment are needed, as site specific conditions have not significantly deviated.

(5) A map(s) showing all existing and proposed pits, shafts, adits, stockpiles, waste units, impoundments, leach piles, processing facilities, and support facilities such as office buildings. The map(s) shall identify the proposed permit area and design limits of each unit of the operation.

This information is described in the narrative and shown on Figure 2 of the 2019 GCC Tijeras Mine and Mill Closeout Plan

(6) A description of undisturbed vegetation including a comprehensive list of species and their relative abundance with regards to cover and production.

These data were collected and summarized in "GCC Rio Grande Inc., Tijeras Limestone Quarry, Vegetation Test Plots, 2008 Final Monitoring Report" by Habitat Management, Inc. and are incorporated by reference in the GCC Tijeras Mine and Mill Closeout Plan

(7) Evidence that other applicable state and federal permits to be obtained either have been or will be issued before the activities subject to those permits begin.

GCC Rio Grande was issued an update Title V operating permit on July 28, 2017. Information in Section 6 of the 2019 GCC Tijeras Mine and Mill Closeout Plan, Environmental Standards Compliance contains additional details.

(8) The applicant shall designate an agent and provide the agent's street address for the service of notices and orders in writing from the Director. This information shall be kept current if a permit is granted.

GCC Rio Grande Inc.'s agent in the matter is Samantha Kretz, Environmental Engineer, 11783 State Hwy 337 South, Tijeras, NM, 87059.

(9) A copy of the proposed form of notices required under 19.10.9 NMAC.

This application is for a permit modification only and does not require public notice.

(10) A permit fee as determined pursuant to 19.10.2 NMAC

The required modification fee of \$1000 is enclosed.

(11) Any additional information necessary for evaluation of the permit application as required by the Director.

See Sections 6 below.

E. To avoid duplication and conflicting requirements, the applicant may include information from environmental permits relevant to the application. Permits issued by other governmental agencies shall be accepted by the Director to the extent such permits satisfy the requirements of the Act and 19.10 NMAC.

This information is detailed in Section 6 of the 2019 GCC Tijeras Mine and Mill Closeout Plan, Environmental Standards Compliance.

F. Where physically separate but interrelated mining operations are located in close proximity to each other and are under the control of the same owner or operator, the applicant may request or the Director may determine to issue one permit for all of the operations and require only one permit application and closeout plan.

The proposed permit modification comprises all mining operations within the proposed permit boundary; no other operations in close proximity are proposed to be considered.

4. New Units – Mining and Reclamation Plan

4.1 Resource Extraction

GCC uses limestone, marls and clay for production of cement from the Madera Formation. The formation contains several bed of limestone, siltstone, sandstone, marls and interbedded clays. GCC proposes to extract material from all New Units totaling 263.18 acres (see figure 2, *Quarry Design Limits 2019*):

| Existing Quarries | Size (acres) |
|---------------------|--------------|
| Quarry 2 | 9.29 |
| Quarry 4 | 39.89 |
| Quarry 6(West Cap) | 29.87 |
| Quarry 8(East Cap) | 28.60 |
| Quarry 10(East Cap) | 74.742 |
| Quarry 18(19N) | 9.86 |
| Quarry 19 | 6.68 |

| New Quarry | Size (acres) |
|------------|---------------|
| Quarry 15 | 29.34 |
| Quarry 17 | 35.24 |

In each of the proposed current and new mining units, the extraction process will proceed in the typical manner: the active quarry face is cleared of vegetation, then drilled and blasted; then rock of usable size (not larger than six cubic feet) is trucked downhill to the crusher. Oversized rock is left in the quarry for downsizing or potential later use in reclamation.

4.2 Reclamation

Reclamation in each of the new units will proceed as described with recreation and wildlife habitat identified as post-mining land uses; i.e. geomorphic grading and backfilling, soil cover excavation, stockpiling, and placement, surface water runoff and erosion control, and revegetation will be implemented according to the methods described in the *2019 Closeout Plan, GCC Rio Grande – Tijeras Mine and Mill*.

4.2.1 Post-mining topography

The limestone members that are quarried for cement production are oriented such that quarrying advances along dip slopes, leaving behind a surface which is similar to, but lower than, the original ground surface. Therefore, very little backfilling or other earthfill will be needed to recreate original surface forms. Some sections may require some shape modification to achieve the goals of geomorphic reclamation, i.e. to create functional watershed systems like those that develop naturally; to produce landforms that do not require on-going maintenance to prevent erosion; and to produce a finished site that is in a stable hydrologic equilibrium that minimizes soil erosion, is visually appealing, and promotes a self-sustaining ecosystem. Geomorphic techniques will also be applied in operating quarries, where nearly all Redbed materials will be excavated to allow the quarrying of the upper portion of the Knobby Member of the Madera Formation. Precise terrain modification needs will be determined when quarrying has exposed the final rock surfaces.

4.2.2 Highwalls

Highwalls (vertical or very steep slopes 20 feet or more in height) will be created by operations in all quarries in competent limestone that should support vertical faces without substantial raveling or risk of mass movement. These should fit in well with the numerous natural cliffs that form the local Sandia and Manzano limestone mountain scarps and provide ample raptor habitat. Thus, highwalls may be left behind when the limestone quality is inadequate for the cement manufacturing process.

4.2.3 Reclamation Standards for New Units

As set forth in Subsection A of 19.10.5.507 NMAC, the permit area will be reclaimed to a condition that allows for re-establishment of a self-sustaining ecosystem appropriate for the life zone of the surrounding areas following closure unless conflicting with the approved post-mining land use. The Closeout Plan will be updated to meet the site-specific characteristics of the mining operation and the site, including the New Units presented in this modification request.

Additionally, Quarry 17 is new discrete excavation unit located within the existing Tijeras Mine and Mill permit boundary that exceed the design limits as codified in Modification 06-1 and 16-2. Therefore, GCC

will comply with the standards and requirements set forth in paragraphs A through E of Section 19.10.5.508 New Units of the NMAC. Site-specific characteristics, including the existing mining operation, will be considered in applying the standards and requirements.

5. Exploration Drilling

GCC is requesting allowances to conduct exploration drilling in locations to be determined throughout the quarry area and within the mine boundary. The geologic data collected during exploration drilling is vital to the development of the facility's mining plan.

Following the completion of drilling, GCC will plug and abandon all exploration holes in accordance with 19.10.3.302(L) NMAC. Exploration or development that create a new disturbance will identify the general areas/locations where drilling activities have taken place. Disturbances associated with exploration drilling generally does not exceed 0.5 acres and will be completed in accordance with 19.10.3.302(A). All drilling activities will be conducted in compliance with 19.10.3.302(G). GCC will report new disturbance areas related to exploration drilling in each annual report.

GCC will use best management practices to minimize new disturbance areas including using existing roads and choosing locations with the least possible vegetation. GCC will revegetate all disturbed exploration area in accordance with the Mine Closeout Plan.

6. Off-Spec Coal Management

GCC uses coal as a primary fuel source for operating kilns in the cement manufacturing process. The coal system has a metal detector which identifies if the coal contains metallic pieces that are not able to be removed by a magnet or sorting process. The coal mills cannot grind metal, therefore, coal containing metal is separated from the system. This is what the facility refers to as off spec coal.

GCC is requesting the facility be permitted to place off spec coal into the cement kiln dust (CKD) pit. The CKD pit is located in Quarry 6. The placement of the CKD in Quarry 6 is continuous progress towards reclamation in the quarry. GCC routinely adds Redbed to the area to help stabilize the material placed within the quarry. The cement kiln dust is removed from the manufacturing process when it is required for quality or emission control and is transported to the approved area as shown in Figure 3.

Off spec coal is generated at rate of 25 tons per month and CKD at an average rate of 575 tons per month. GCC is requesting the permission to include off spec coal in the mix of material currently being used to backfill Quarry 6. The off spec material is expected to be less than 5% of the total mixture. GCC performs various analyses on coal and in Figure 4-6 shows the recent results. GCC will continue to comply with the Mine Closeout Plan as required and does not expect this activity to interfere with its ability to do so.

7. Financial Assurance Estimate

Included with this modification application is a spreadsheet that details the calculation of the estimated financial assurance to complete the reclamation of current quarry expansion and new unit Quarry 17 described above. The proposed amount is: \$1,202,196.00.

8. Permit Application Certification

GCC Rio Grande, Inc.
Tijeras Mine and Mill

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals responsible for obtaining the information, I believe the submitted information is true, accurate, and complete.


Samantha Kretz, GCC Tijeras

Jan 24, 2020
Date

Please don't hesitate to contact me if you have any questions or require any additional information.

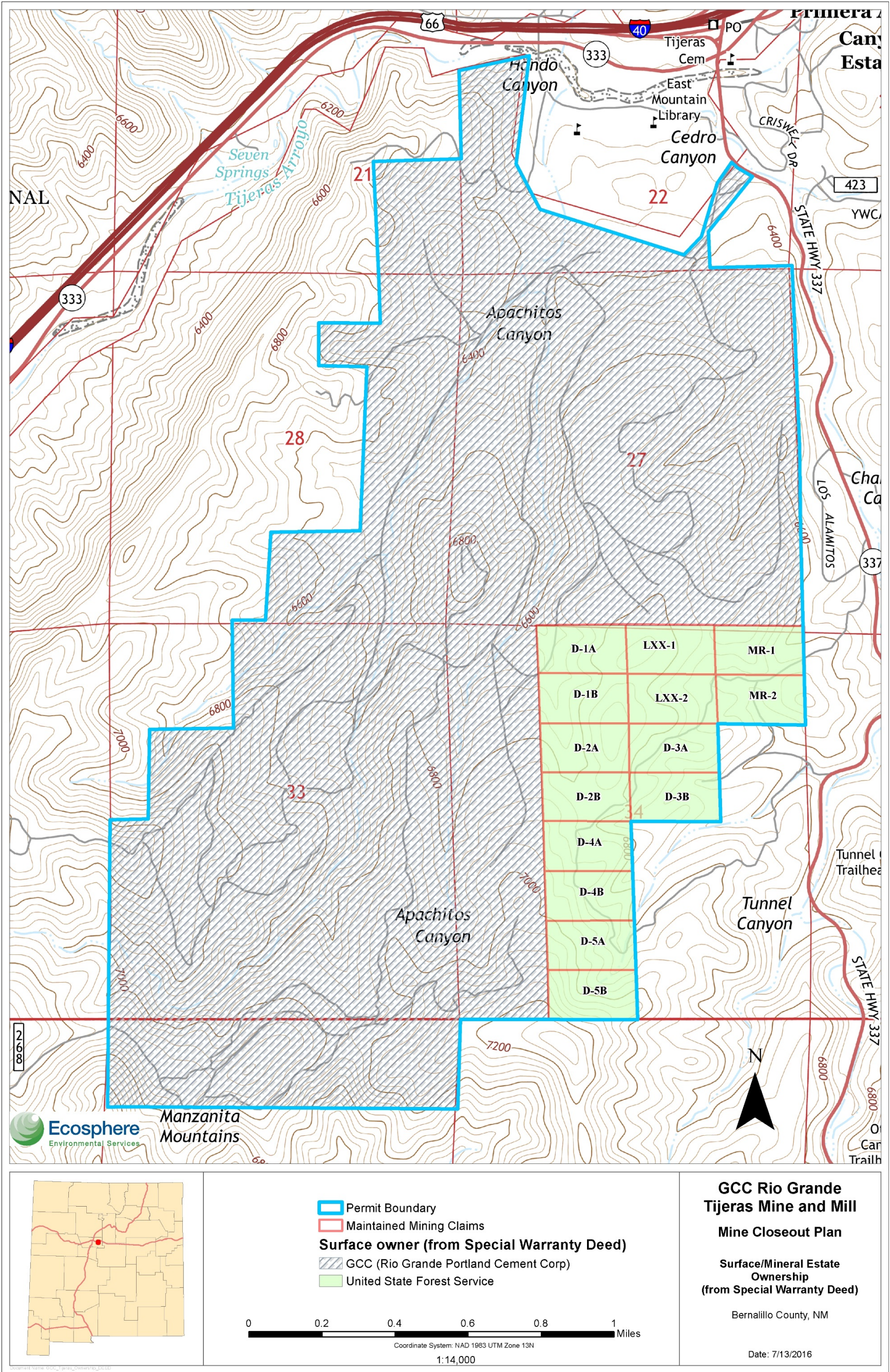


Figure 1: GCC Rio Grande Tijeras Mine and Mill

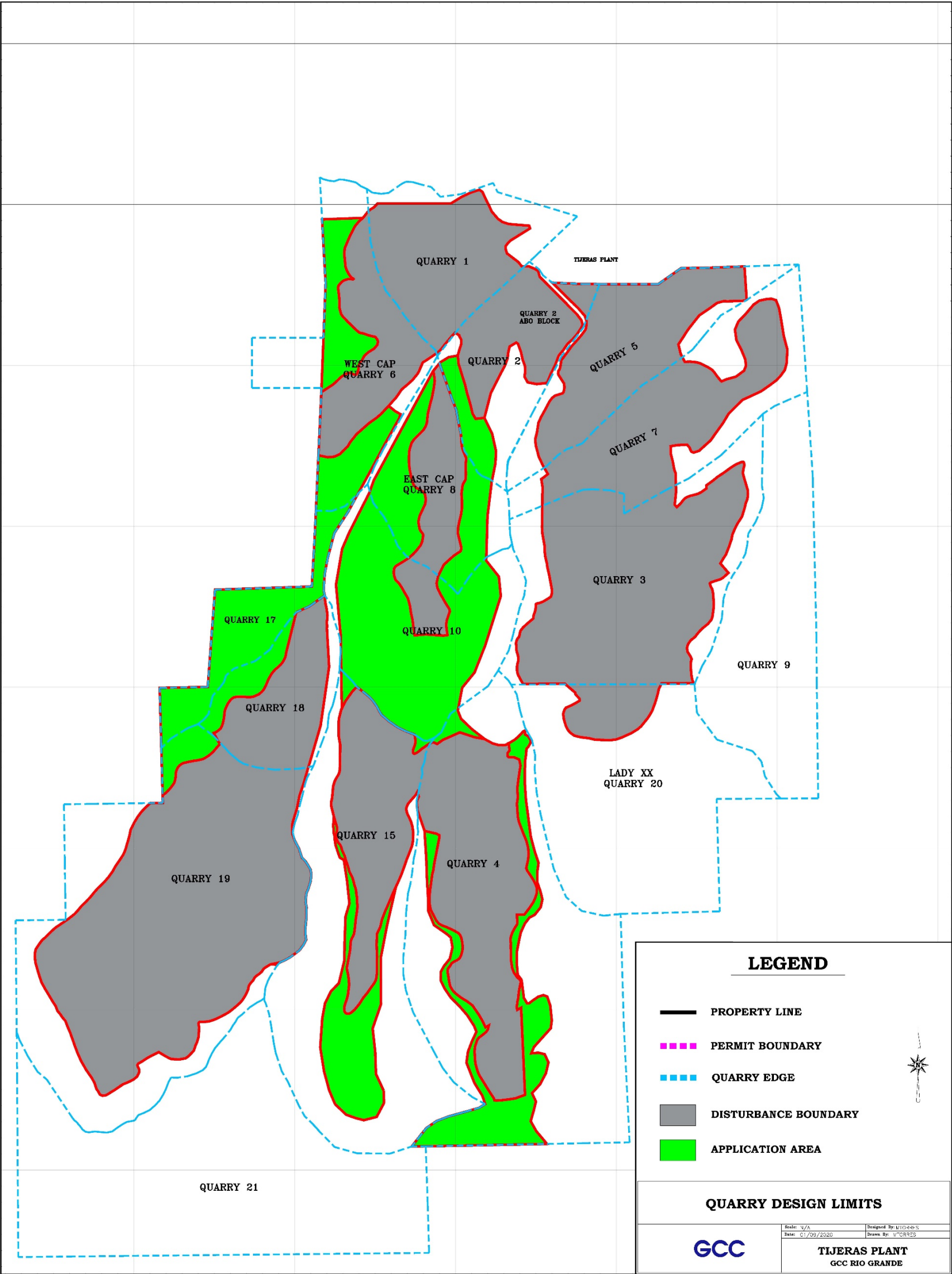


Figure 2: Quarry Design Limits



Figure 3: Cement Kiln Dust (CKD) Map

| | | | |
|----------|-------------------------------------|-------------------|----------------------|
| CLIENT: | GCC Rio Grande, Inc. | Client Sample ID: | Coal |
| Project: | Trace Metals Analysis Coal CKD Kiln | Collection Date: | 5/30/2019 7:00:00 PM |
| Lab ID: | 1905F18-003 | Matrix: | SOIL |
| | | Received Date: | 5/31/2019 1:12:00 PM |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|-------------------------------|--------|-------|------|-------|----|---------------------|-------|
| EPA METHOD 7471: MERCURY | | | | | | Analyst: pmf | |
| Mercury | 0.12 | 0.033 | | mg/Kg | 1 | 6/4/2019 6:38:50 PM | 45353 |
| EPA METHOD 6010B: SOIL METALS | | | | | | Analyst: ELS | |
| Antimony | ND | 47 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Arsenic | ND | 47 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Barium | 22 | 1.9 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Beryllium | ND | 2.8 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Cadmium | ND | 1.9 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Chromium | ND | 5.6 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Cobalt | ND | 5.6 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Copper | ND | 5.6 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Lead | 11 | 4.7 | D | mg/Kg | 2 | 6/5/2019 9:49:11 AM | 45364 |
| Manganese | 6.3 | 1.9 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Nickel | ND | 9.4 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Selenium | ND | 47 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Silver | ND | 4.7 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Thallium | ND | 47 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |
| Zinc | ND | 47 | D | mg/Kg | 2 | 6/5/2019 8:51:47 AM | 45364 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

| | | |
|-------------|---|---|
| Qualifiers: | * Value exceeds Maximum Contaminant Level. | B Analyte detected in the associated Method Blank |
| | D Sample Diluted Due to Matrix | E Value above quantitation range |
| | H Holding times for preparation or analysis exceeded | J Analyte detected below quantitation limits |
| | ND Not Detected at the Reporting Limit | P Sample pH Not In Range |
| | PQL Practical Quantitative Limit | RL Reporting Limit |
| | S % Recovery outside of range due to dilution or matrix | |

Figure 4: Trace Metal Coal Results

CLIENT: GCC Rio Grande, Inc.

Project: Kiln Dust 12 05 19

Lab ID: 1912213-001

Matrix: SOIL

Client Sample ID: Kiln Dust

Collection Date: 11/25/2019 7:00:00 PM

Received Date: 12/5/2019 10:35:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|-------------------------------|--------|-------|------|-------|----|------------------------|-------|
| MERCURY, TCLP | | | | | | Analyst: rde | |
| Mercury | ND | 0.020 | | mg/L | 1 | 12/19/2019 12:03:59 PM | 49412 |
| EPA METHOD 6010B: TCLP METALS | | | | | | Analyst: pmf | |
| Arsenic | ND | 5.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Barium | ND | 100 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Cadmium | ND | 1.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Chromium | ND | 5.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Lead | ND | 5.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Selenium | ND | 1.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |
| Silver | ND | 5.0 | | mg/L | 1 | 12/11/2019 4:22:54 PM | 49256 |

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

| | | | | |
|-------------|-----|---|----|---|
| Qualifiers: | * | Value exceeds Maximum Contaminant Level | B | Analyte detected in the associated Method Blank |
| | D | Sample Diluted Due to Matrix | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| | ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| | PQL | Practical Quantitative Limit | RL | Reporting Limit |
| | S | % Recovery outside of range due to dilution or matrix | | |

Figure 5: Kiln Dust TCLP



General Offices: P.O. Box 995 Price, Utah 84501 435-637-4343
Laboratory: 65 North 300 East Price, Utah 84501

Submitted to:
GCC Energy, LLC
6473 County Road 120
Hesperus, CO 81326
Ph: 970-385-4528
Fax: 866-718-7172

September 17, 2018

Date Sampled: November 2019
Date Received: November 2019

Sample Identification:
November 2019
Monthly Composite
Mine

Sampled By: GCC
Identification By: GCC

Analysis Report #: 101877

CERTIFICATE OF ANALYSIS

Proximate

| | As Received Basis | Dry Basis | Method |
|-------------------|-------------------|-----------|------------------|
| % Moisture | 7.24 | ----- | ASTM D 3302/7582 |
| % Ash | 10.30 | 11.10 | ASTM D 5142 |
| % Volatile Matter | 35.30 | 38.05 | ASTM D 5142 |
| % Fixed Carbon | 47.17 | 50.85 | ASTM D 5142 |
| | 100.00 | 100.00 | |
| % Sulfur | 0.75 | 0.80 | ASTM D 5016 |
| Chlorine % | 0.025 | 0.027 | ASTM D 4208 |
| Btu/Lb. | 12116 | 13061 | ASTM D 5865 |

| | | |
|---------------------------|--------|-------------|
| Moisture Ash Free Btu/Lb. | 14692 | |
| Lbs of SO2 per mmBTU | 1.23 | |
| Lbs of S per mmBTU | 0.62 | |
| Mercury ppm (Dry) | 0.0704 | ASTM D 6722 |

| Fusion Temperatures of Ash | | |
|----------------------------|------|------------|
| Reducing Atmosphere | | |
| Initial Deformation | xxxx | Degrees F. |
| Height=Width | xxxx | Degrees F. |
| Height=1/2 Width | xxxx | Degrees F. |
| Fluid | xxxx | Degrees F. |

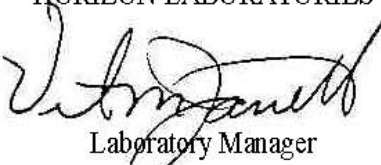
Respectfully Submitted,
HORIZON LABORATORIES

Laboratory Manager

Figure 6: Coal Monthly Composite