TRI-STATE GENERATION AND TRANSMISSION ASSOCIATION, INC.
HEADQUARTERS: P.O. BOX 33695 DENVER, COLORADO 80233-0695 303-452-6111

April 28, 2020

Mr. Zach Trujillo
Environmental Protection Specialist
Colorado Division of Reclamation, Mining & Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, CO 80203

**RE: Colowyo Coal Company L.P.**
**Permit No. C-1981-019**
**Minor Revision No. 216**
**Collom Drilling Program**

Dear Mr. Trujillo,

Tri-State Generation and Transmission Association Inc. (Tri-State), is the parent company to Axial Basin Coal Company, which is the general partner to Colowyo Coal Company L.P. (Colowyo). Therefore, Tri-State on behalf of Colowyo is submitting minor revision 216 (MR-216) to Permit No. C-1981-019.

MR-216 proposes an in-pit drilling program within the Collom Pit. This drilling program will allow Colowyo to further develop and refine its geologic model associated with the Collom Pit and future highwall mining areas in the Collom Pit. It is requested that the Division calculate the cost of reclamation liability associated with this drilling program.

Included in this minor revision are a revision application and a change of index sheet to ease incorporation of this minor revision into the permit document. If you should have any additional questions or concerns, please feel free to contact Tony Tennyson at (970) 824-1232 at your convenience.

Sincerely,

DocuSigned by:
Daniel Casiraro
B70D69F114324DE...

Daniel J. Casiraro
Senior Manager
Environmental Services

DJC:TT:der

Enclosure

cc: Jennifer Maiolo (BLM-LSFO)
Chris Gilbreath (via email)
Tony Tennyson (via email)
Angela Aalbers (via email)
File: C. F. 1.1.1.199 - G471-11.3(21)d

**COLORADO DIVISION OF MINERALS AND GEOLOGY**
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 - 019 Date: 4 / 27 / 20

**Permittee:** Colowyo Coal Company, L.P.

**Street:** 5731 State Highway 13

**City:** Meeker

**State:** CO Zip Code: 81641 -

**Brief Description of Revision:** MR-216 proposes an in-pit drilling program for the Collom Pit to further define the coal reserves to be mined.

**Public Notice Attached:** Yes No ✔ *(Required for PRs and TRs)*

**Bond Increase:** Yes ✔ No **Federal** ✔ **Non-Federal** **Mine**

**Proposed Change in:**

**Permit Area -**

| | | |
|---|---|---|
| **Disturbed** | (+/-) 3.1 | Acres |
| **Permit** | (+/-) 0.0 | Acres |
| **Affected** | (+/-) 3.1 | 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 |

## CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

Mine Company Name: **Colowyo Coal Company**
Permit Number: **C-1981-019**
Date: **April 27, 2020**
Revision Description: **MR-216 Collom In Pit Drilling**

| Volume Number | Page, Map or other Permit Entry to be REMOVED | | Page, Map or other Permit Entry to be ADDED | | Description of Change |
|---|---|---|---|---|---|
| 1 | | | | | No Change |
| 2A | | | | | No Change |
| 2B | | | | | No Change |
| 2C | Page Exh. 7-14-7 (1 page) | | Page Exh. 7-14-7 (1 page) | | Typographical error has been corrected on East Taylor Ditch stations. |
| 2D | | | | | No Change |
| 2E | | | | | No Change |
| 3 | | | | | No Change |
| 4 | | | | | No Change |
| 5A | | | | | No Change |
| 5B | | | | | No Change |
| 6 | | | | | No Change |
| 7 | | | | | No Change |
| 8 | | | | | No Change |
| 9 | | | | | No Change |
| 10 | | | | | No Change |
| 12 | | | | | No Change |
| 13 | | | | | No Change |
| 14 | | | | | No Change |
| 15 | | | | | No Change |
| 16 | | | | | No Change |
| 17 | | | | | No Change |
| 18A | | | | | No Change |
| 18B | | | | | No Change |

## CHANGE SHEET FOR PERMIT REVISIONS, TECHNICAL REVISION, AND MINOR REVISIONS

Mine Company Name: **Colowyo Coal Company** Permit Number: **C-1981-019**

Date: **April 27, 2020** Revision Description: **MR-216 Collom In Pit Drilling**

| Volume Number | Page, Map or other Permit Entry to be REMOVED | | Page, Map or other Permit Entry to be ADDED | | Description of Change |
|---|---|---|---|---|---|
| 18C | Exhibit 7-25A All pages including text, figures, and SEDCAD outputs (19 pages total) | | Page Exh. 7-25A-1, Figure Exh. 7-25A-1, and SEDCAD output 7 pages. | | Exhibit 7-25A has been updated. |
| 18D | | | | | No Change |
| 19 | | | | | No Change |
| 20 | Exhibit 13C Page 17 (1 page) | | Exhibit 13C Page 17 (1 page) | | Exhibit 13C has been updated. |
| 20 | Map 13C-1 Sheet 1 | | Map 13C-1 Sheet 1 | | Map 13C-1 Sheet 1 has been updated. |
| 20 | Exhibit 27, Item 3 - All pages and figure (3 pages & 1 figure) | | Exhibit 27, Item 3 - All pages and figures (5 pages & 1 figure) | | Exhibit 27 has been updated. |
| 21 | | | | | No Change |
| 22 | | | | | No Change |

## Exhibit 7, Item 14, Table 1
## Summary of Ditch and Channel Design Parameters

| | Emergency Spillway Designs | Flow, Q | Slope, % | Bottom Width | Side Slope, H:1V | Rip Rap, D50, in |
|---|---|---|---|---|---|---|
| Exh7-14A | Streeter Pond Spillway | 29.7 | 8 | 20.0 | 1.5 | 9 |
| | Work Area Pond Spillway | 0.0 | 8 | 15.0 | 1.5 | NA |
| | Stoker Siding Pond Spillway | 0.0 | 50 | 5.0 | 2.0 | NA |
| | Rail Loop Pond Spillway | 0.0 | 50 | 7.0 | 2.0 | NA |
| | Prospect Pond Spillway | 3.0 | 33 | 12.0 | 1.5 | 9 |
| | West Pit Pond Spillway | 0.0 | 33 | 20.0 | 1.5 | NA |
| | Section 16 Pond Spillway | 2.4 | 33 | 19.0 | 2.0 | 9 |
| | East Taylor Pond Spillway | 3.7 | 40 | 20.0 | 2.0 | 9 |
| Exh7-14B | **Side Channel Designs (Temporary)** | **Flow, Q** | **Slope, %** | **Bottom Width** | **Side Slope, H:1V** | **Rip Rap, D50, in** |
| | (See Exh. 7, Item 14B text) | | | | | |
| Exh7-14C | **Taylor Tributary Ditch** | **Flow, Q** | **Slope, %** | **Bottom Width** | **Side Slope, H:1V** | **Rip Rap, D50, in** |
| | (All segments designed for 100yr/24 hr storm for simplicity, although only Sta. 0 to 10 requires 100 yr) | | | | | |
| | Taylor Tributary Ditch, Sta 0+00 to 10+00 | 190.8 | 9.5 | 12.0 | 3.0 | 24 |
| | Sta 10+00 to 40+00 | 96.6 | 7.7 | 12.0 | 3.0 | 18 |
| | Sta 40+00 to 80+00 | 84.7 | 7.1 | 12.0 | 3.0 | 18 |
| | Above Sta 80+00 | 76.0 | 10.7 | 12.0 | 3.0 | 18 |
| Exh7-14D | **Section 16 Fill Ditch** | **Flow, Q** | **Slope, %** | **Bottom Width** | **Side Slope, H:1V** | **Rip Rap, D50, in** |
| | Section 16 Fill Ditch | 1.9 | 18 | 0.0 | 3.0 | 12 |
| Exh7-14E | **Streeter Gulch Ditch & Buckskin Draw Ditch** | **Flow, Q** | **Slope, %** | **Bottom Width** | **Side Slope, H:1V** | **Rip Rap, D50, in** |
| | Streeter Gulch Ditch, 100 Year Design | | | | | |
| | Sta 0+00 to 10+00 | 11.0 | 28.3 | 6.0 | 2.0 | 15 |
| | Sta 10+00 to 25+00 | 218.9 | 10.9 | 6.0 | 2.0 | 9 |
| | Sta 25+00 to 45+00 | 13.4 | 2.0 | 12.0 | 3.0 | 9 |
| | Sta 45+00 to 80+00 | 214.6 | 1.9 | 12.0 | 3.0 | Veg. |
| | Sta 80+00 to 92+18 | 201.2 | 3.8 | 15.0 | 3.0 | Veg. |
| | Sta 92+18 to 111+131 | 197.1 | 2.8 | 15.0 | 3.0 | Veg. |
| | Sta 111+131 to 115+92 | 189.4 | 2.6 | 15.0 | 3.0 | Veg. |
| | Sta 115+92 to 187+00 | 152.94 | 5.0 | 15.0 | 3.0 | Veg. |
| | Buck Skin Draw Ditch Sta 0+00 to 35+00 | 45.3 | 4.0 | 12.0 | 3.0 | Veg. |
| Exh7-14F | **West Pit Fill Ditch & East Taylor Pond Ditch** | **Flow, Q** | **Slope, %** | **Bottom Width** | **Side Slope, H:1V** | **Rip Rap, D50, in** |
| | (All segments ex. Coal Road Ditch designed for 100 yr storm; WP Coal Rd Ditch designed for 10 year storm) | | | | | |
| | West Pit Fill Ditch, Sta 0 to 2 | 169.9 | 17.0 | 10.0 | 3.0 | 21 |
| | West Pit Fill Ditch, Sta 2 to 10 | 158.2 | 25.0 | 10.0 | 3.0 | 24 |
| | West Pit Fill Ditch, Sta 10 to 31 | 108.0 | 10.0 | 10.0 | 3.0 | 12 |
| | West Pit Coal Road Ditch, Sta 0 to 21 | 19.2 | 10.0 | 10.0 | 3.0 | Veg. |
| | East Taylor Pond Ditch, Sta 0 to 30 | 50.2 | 3.5 | 0.0 | 3.0 | Veg. |

Revision Date: 4/27/20
Revision No. TR-135

**Table 13C-27 Topsoil Stockpile Revegetation**

| Topsoil Stockpile Number | Acres to be Reseeded |
|---|---|
| **26B** | 2.2 |
| **26A** | 24.2 |
| **36A** | 4.1 |

**Table 13C-28 Collom In-Pit Drill Holes**

| Drill Hole Number | Plugging Requirements |
|---|---|
| Please see Exhibit 27, Item 3 | |

**Table 13C-29 Collom Pit Power Distribution**

| Task | |
|---|---|
| **Remove Power Lines** | 16,897 Feet |
| **Topsoil Replacement** | 25,000 Cubic Yards |
| **Reseed Disturbance** | 10.7 Acres |

**Table 13C-30 Clean Water Diversions**

| Clean Water Diversion | Overburden Replacement (cubic yards) | Topsoil Replacement (cubic yards) | Acres to be Reseeded |
|---|---|---|---|
| **CWD-1** | 5,923 | 4,998 | 4.3 |

**Exhibit 7, Item 25A**
**Collom Pit Drilling**
**Sediment Control Exemption Demonstrations**

Colowyo will be conducting a drilling program within or directly adjacent to the Collom Pit to obtain data to further define the geologic coal structure. The majority of the drill pads are within the primary sediment control system for the Section 25 and 26 Ponds, but three pads and associated roads will be outside of the primary sediment control structures. Therefore, in accordance with Rule 4.05.2(3)(a), this demonstration meets the criteria for an exemption from the requirements of 4.05.2.; and surface water runoff from these drill pads and roads will be treated through a grass filters, and sedimentation ponds or other treatment facilities will not be necessary. The drill pads this grass filter demonstration is applicable for include C-41-20, C-59-20, and C-60-20, and are shown on Figure Exh. 27-3-1 in Volume 20.

For the model demonstration, SEDCAD's grass filter routine has been used to demonstrate that runoff from this area will meet the effluent standards of 0.5 ml/l in accordance with Rule 4.05.2(7) (US EPA, 40 C.F.R. §434.52). Sedimentology parameters and curve numbers used are defined in Exhibit 7 *Methodologies and Assumptions for Sedimentation Pond Designs Evaluations.*

Drill Pad Demonstration

The hydrology model presented within the exhibit evaluates a grass filter for the worst case scenario for one drill pad location (C-41). Since there are three drill pads the largest contributing watershed to one single pad was chosen. All other drill pads watersheds are much smaller in size thus requiring much smaller grass filters. The roads to access the drill pads were not evaluated as Colowyo has already demonstrated larger roads footprints can be treated with grass filters. Please see Volume 18C Exh. 7-25D. Therefore, this demonstration presents the worst-case scenario for the C-41 drill pad location only. This pad and contributing watershed are presented on Figure Exh. 7-25A-1.

The drill pad has 0.5 acres of disturbance, 9.7 acres of contributing watershed, and a ground slope for the contributing watershed of 9%. A curve number of 85 was utilized to reflect the disturbed condition of the drill pad and a curve number of 47 was used to reflect the undisturbed condition of the contributing watershed.

This demonstration utilized the Manning's roughness coefficient of 0.0054, and a stem spacing of 0.67 inches. These inputs are intended to reflect that the native grass cover density adjacent to the drill pads. The 0.36 cfs flow was then run through a native grass filter approximately 150 feet in length (drill pad width) and 5 feet in width (direction of the flow through the grass filter).

As shown in the attached SEDCAD output files, the calculated resulting peak settleable concentration released and the 24-hr weighted settleable solids concentration is 0.2 ml/l, which is below the effluent standards of 0.5 ml/l.

C-60-20

C-41-20

C-59-20

9.7 Acres

## Legend

- Disturbance Boundary
- Section Line
- CN47 Undisturbed
- CN85 Disturbed (Drill Pad)
- Drill Pad

200' 0 200' 400'

CONTOUR INTERVAL 25 FT.
December 2019 Topography

N
W E
S

# Figure Exh. 7-25A-1
# Watershed Boundary for Drill Pad Demonstration

Colowyo Coal Company
5731 State Highway 13
Meeker, Colorado 81641

SCALE: 1" =200'
DATE: 5/18/17
DRWG. BY: Tony
APPROVED BY: JG
DRWG NO.

| No. | REVISION | DATE | BY | CHK |
|---|---|---|---|---|
| 1 | Revised Figure Number | 8/14/17 | Tony | Tony |
| 2 | Revised Drill Pad | 5/4/18 | Tony | Tony |
| 3 | Revised Drill Pad & Watershed | 4/13/20 | Tony | Tony |
| | | | | |
| | | | | |

# Colowyo Mine
# Permit No. C-1981-019

## *Effluent Demonstraton - Grass Filter*
## *10 Year - 24 Hour Storm Event*
## *Collom Drill Pad*

Tony Tennyson

Tri-State Generation & Transmission Assoocation, Inc.
1100 West 116th Avenue
Westminster, CO 80234

Phone: (970) 824-1232
Email: ttennyson@tristategt.org

# *General Information*

## *Storm Information:*

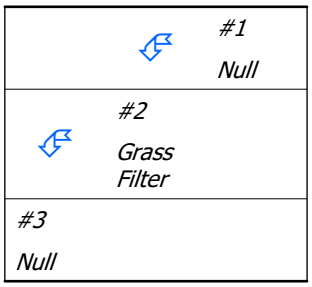
| | |
|---|---|
| Storm Type: | NRCS Type II |
| Design Storm: | 10 yr - 24 hr |
| Rainfall Depth: | 1.800 inches |

## *Particle Size Distribution:*

| Size (mm) | Colowyo Particle Size |
|---|---|
| 4.7500 | 100.000% |
| 0.0750 | 73.000% |
| 0.0400 | 33.000% |
| 0.0010 | 20.000% |

# *Structure Networking:*

| Type | Stru # | (flows into) | Stru # | Musk. K (hrs) | Musk. X | Description |
|---|---|---|---|---|---|---|
| Null | #1 | ==> | #2 | 0.000 | 0.000 | Undisturbed Watershed |
| Grass Filter | #2 | ==> | #3 | 0.000 | 0.000 | Grass Filter |
| Null | #3 | ==> | End | 0.000 | 0.000 | SEDCAD Input |



# *Structure Summary:*

| | | Immediate Contributing Area (ac) | Total Contributing Area (ac) | Peak Discharge (cfs) | Total Runoff Volume (ac-ft) | Sediment (tons) | Peak Sediment Conc. (mg/l) | Peak Settleable Conc. (ml/l) | 24VW (ml/l) |
|---|---|---|---|---|---|---|---|---|---|
| #1 | | 9.700 | 9.700 | 0.00 | 0.00 | 0.0 | 1 | 0.00 | 0.00 |
| #2 | In | 0.500 | 10.200 | 0.36 | 0.02 | 0.3 | 17,191 | 9.80 | 5.57 |
| | Out | | | 0.36 | 0.02 | 0.1 | 5,366 | 0.41 | 0.20 |
| #3 | | 0.000 | 10.200 | 0.36 | 0.02 | 0.1 | 5,364 | 0.41 | 0.20 |

# *Particle Size Distribution(s) at Each Structure*

## *Structure #1 (Undisturbed Watershed):*

| Size (mm) | In/Out |
|---|---|
| 4.7500 | 0.000% |
| 0.0750 | 0.000% |
| 0.0400 | 0.000% |
| 0.0010 | 0.000% |

## *Structure #2 (Grass Filter):*

| Size (mm) | In | Out |
|---|---|---|
| 4.7500 | 100.000% | 100.000% |
| 0.0750 | 73.000% | 100.000% |
| 0.0400 | 33.000% | 100.000% |
| 0.0010 | 20.000% | 71.299% |

## *Structure #3:*

| Size (mm) | In/Out |
|---|---|
| 4.7500 | 100.000% |
| 0.0750 | 100.000% |
| 0.0400 | 100.000% |
| 0.0010 | 71.299% |

# *Structure Detail:*

## *Structure #1 (Null)*

*Undisturbed Watershed*

## *Structure #2 (Grass Filter)*

*Grass Filter*

Grass Filter Inputs:

| Roughness Coefficient | Grass Height (in) | Hydraulic Spacing (in) | Infiltration Rate (iph) | Stiffness Factor (N-sq m) | Filter Length (ft) | Filter Width (ft) | Filter Slope (%) |
|---|---|---|---|---|---|---|---|
| 0.0121 | 6.0 | 0.67 | 0.15 | 20.000 | 150.0 | 5.0 | 3.0 |

Grass Filter Results:

| | |
|---|---|
| Total Infiltration Volume: | 0.0015 ac-ft |
| Filter Infiltration Rate: | 0.0026 cfs |
| Peak Flow Depth: | 0.600 in |
| Critical Prone Velocity: | 1.0367 fps |
| Wedge Location: | 3.65 ft |
| Sediment Depth in Zone D: | 0.0286 in |
| Trap Efficiency: | 75.0 % |

## *Structure #3 (Null)*

*SEDCAD Input*

# *Subwatershed Hydrology Detail:*

| Stru # | SWS # | SWS Area (ac) | Time of Conc (hrs) | Musk K (hrs) | Musk X | Curve Number | UHS | Peak Discharge (cfs) | Runoff Volume (ac-ft) |
|---|---|---|---|---|---|---|---|---|---|
| #1 | 1 | 9.700 | 0.125 | 0.000 | 0.000 | 47.000 | S | 0.00 | 0.000 |
| | Σ | **9.700** | | | | | | **0.00** | **0.000** |
| #2 | 1 | 0.500 | 0.055 | 0.000 | 0.000 | 85.000 | F | 0.36 | 0.023 |
| | Σ | **10.200** | | | | | | **0.36** | **0.023** |
| **#3** | Σ | **10.200** | | | | | | **0.36** | **0.021** |

# *Subwatershed Sedimentology Detail:*

| Stru # | SWS # | Soil K | L (ft) | S (%) | C | P | PS # | Sediment (tons) | Peak Sediment Conc. (mg/l) | Peak Settleable Conc (ml/l) | 24VW (ml/l) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| #1 | 1 | 0.300 | 200.00 | 9.00 | 0.0310 | 0.9000 | 1 | 0.0 | 1 | 0.00 | 0.00 |
| | Σ | | | | | | | **0.0** | **1** | **0.00** | **0.00** |
| #2 | 1 | 0.300 | 150.00 | 1.00 | 1.0000 | 0.9000 | 1 | 0.3 | 17,191 | 9.80 | 5.57 |
| | Σ | | | | | | | **0.3** | **17,191** | **9.80** | **5.57** |
| **#3** | Σ | | | | | | | **0.1** | **5,364** | **0.41** | **0.20** |

# *Subwatershed Time of Concentration Details:*

| Stru # | SWS # | Land Flow Condition | Slope (%) | Vert. Dist. (ft) | Horiz. Dist. (ft) | Velocity (fps) | Time (hrs) |
|---|---|---|---|---|---|---|---|
| #1 | 1 | 3. Short grass pasture | 9.00 | 97.56 | 1,083.99 | 2.400 | 0.125 |
| **#1** | **1** | **Time of Concentration:** | | | | | **0.125** |
| #2 | 1 | 5. Nearly bare and untilled, and alluvial valley fans | 1.00 | 2.00 | 200.00 | 1.000 | 0.055 |
| **#2** | **1** | **Time of Concentration:** | | | | | **0.055** |

## I. INTRODUCTION

The Collom Pit Drilling Program will consist of drilling 80 drill holes (Please see Figure Exh. 27-3-1 for drill pad locations) in order to obtain data to enhance the Collom geologic model. The planned drill holes will be drilled over a succession of years, and Colowyo will annually report in the annual reclamation report all drilling that took place for the report year.

An exemption for sediment control for three drill pads is presented in Exhibit 7, Item 25A in Volume 18C.

## II. SEALING AND RECLAMATION OF DRILL HOLES, DRILL PADS, AND DRILL ROADS

Drill pads shown on Figure Exh. 27-3-1 and listed on Table Exh. 27-3-1 will have either one single cole hole or a combination of a rotary and core drill hole. Drill holes that will be completely or partially mined through, will be reclaimed in accordance with Section 2.05.4(1) in Volume 15. Drill holes that will be drilled outside of the planned mining area will be plugged and abandoned following the completion and logging of each drilling hole.

Topsoil will be removed or windrowed directly adjacent to drill pads. All topsoil that is windrowed will be picked up during the larger striCing effort associated with development of the Collom Pit. Drill roads will use existing ranch roads where possible to limit disturbance, and in areas ranch roads are not available the road to access the drill pad will be brushed only to allow equipment to access each pad location. Most of the drill pads and roads will be mined through, or will be within the larger disturbance footprint associated with the Collom Pit. These drill pad locations and roads will be reclaimed at the aCropriate time in accordance with Map 29B and Section 2.05.4 in Volume 15 when mining is complete.

Drill pads C-41, C-59, C-60 and their associated roads will have the topsoil replaced and will be seeded upon completion of the drilling for the year.

## III. TABLES

Table Exh. 27-3-1

| Drill Pad ID | Drillhole Type | Diam (in) | Total Depth (ft) | Volume of Hole ($ft^3$) | Bags of Plug Gel |
|---|---|---|---|---|---|
| C-01-20 | Rotary | 5.625 | 603 | 104.0 | 8 |
| C-01-20 | Spot Core | 5.625 | 603 | 104.0 | 8 |
| C-02-20 | Rotary | 5.625 | 614 | 106.0 | 8 |
| C-02-20 | Spot Core | 5.625 | 614 | 106.0 | 8 |
| C-03-20 | Spot Core | 5.625 | 620 | 107.0 | 8 |
| C-04-20 | Rotary | 5.625 | 610 | 105.3 | 8 |
| C-04-20 | Spot Core | 5.625 | 610 | 105.3 | 8 |
| C-05-20 | Rotary | 5.625 | 612 | 105.7 | 8 |
| C-05-20 | Spot Core | 5.625 | 612 | 105.7 | 8 |
| C-06-20 | Spot Core | 5.625 | 597 | 103.1 | 7 |
| C-07-20 | Rotary | 5.625 | 495 | 85.5 | 6 |
| C-07-20 | Spot Core | 5.625 | 495 | 85.5 | 6 |
| C-08-20 | Rotary | 5.625 | 539 | 93.1 | 7 |
| C-08-20 | Spot Core | 5.625 | 539 | 93.1 | 7 |
| C-09-20 | Rotary | 5.625 | 617 | 106.5 | 8 |
| C-09-20 | Spot Core | 5.625 | 617 | 106.5 | 8 |
| C-10-20 | Spot Core | 5.625 | 648 | 111.9 | 8 |
| C-11-20 | Rotary | 5.625 | 640 | 110.5 | 8 |
| C-11-20 | Spot Core | 5.625 | 640 | 110.5 | 8 |
| C-12-20 | Rotary | 5.625 | 427 | 73.7 | 5 |
| C-12-20 | Spot Core | 5.625 | 427 | 73.7 | 5 |
| C-13-20 | Rotary | 5.625 | 371 | 63.9 | 5 |
| C-13-20 | Spot Core | 5.625 | 371 | 63.9 | 5 |
| C-14-20 | Rotary | 5.625 | 615 | 106.1 | 8 |
| C-14-20 | Spot Core | 5.625 | 615 | 106.1 | 8 |
| C-15-20 | Spot Core | 5.625 | 705 | 121.7 | 9 |
| C-16-20 | Spot Core | 5.625 | 595 | 102.6 | 7 |
| C-17-20 | Rotary | 5.625 | 607 | 104.7 | 8 |
| C-17-20 | Spot Core | 5.625 | 607 | 104.7 | 8 |
| C-18-20 | Rotary | 5.625 | 600 | 103.5 | 7 |
| C-18-20 | Spot Core | 5.625 | 600 | 103.5 | 7 |
| C-19-20 | Rotary | 5.625 | 578 | 99.8 | 7 |
| C-19-20 | Spot Core | 5.625 | 578 | 99.8 | 7 |

| | | | | | |
|---|---|---|---|---|---|
| C-20-20 | Rotary | 5.625 | 591 | 102.1 | 7 |
| C-20-20 | Spot Core | 5.625 | 591 | 102.1 | 7 |
| C-21-20 | Spot Core | 5.625 | 621 | 107.2 | 8 |
| C-22-20 | Rotary | 5.625 | 578 | 99.7 | 7 |
| C-22-20 | Spot Core | 5.625 | 578 | 99.7 | 7 |
| C-23-20 | Rotary | 5.625 | 625 | 107.8 | 8 |
| C-23-20 | Spot Core | 5.625 | 625 | 107.8 | 8 |
| C-24-20 | Spot Core | 5.625 | 606 | 104.5 | 8 |
| C-25-20 | Rotary | 5.625 | 594 | 102.5 | 7 |
| C-25-20 | Spot Core | 5.625 | 594 | 102.5 | 7 |
| C-26-20 | Spot Core | 5.625 | 581 | 100.3 | 7 |
| C-27-20 | Rotary | 5.625 | 582 | 100.4 | 7 |
| C-27-20 | Spot Core | 5.625 | 582 | 100.4 | 7 |
| C-28-20 | Rotary | 5.625 | 612 | 105.7 | 8 |
| C-28-20 | Spot Core | 5.625 | 612 | 105.7 | 8 |
| C-29-20 | Rotary | 5.625 | 599 | 103.4 | 7 |
| C-29-20 | Spot Core | 5.625 | 599 | 103.4 | 7 |
| C-30-20 | Rotary | 5.625 | 592 | 102.1 | 7 |
| C-30-20 | Spot Core | 5.625 | 592 | 102.1 | 7 |
| C-31-20 | Rotary | 5.625 | 626 | 108.0 | 8 |
| C-31-20 | Spot Core | 5.625 | 626 | 108.0 | 8 |
| C-32-20 | Rotary | 5.625 | 620 | 107.0 | 8 |
| C-32-20 | Spot Core | 5.625 | 620 | 107.0 | 8 |
| C-33-20 | Rotary | 5.625 | 615 | 106.2 | 8 |
| C-33-20 | Spot Core | 5.625 | 615 | 106.2 | 8 |
| C-34-20 | Rotary | 5.625 | 639 | 110.3 | 8 |
| C-34-20 | Spot Core | 5.625 | 639 | 110.3 | 8 |
| C-35-20 | Rotary | 5.625 | 623 | 107.5 | 8 |
| C-35-20 | Spot Core | 5.625 | 623 | 107.5 | 8 |
| C-36-20 | Rotary | 5.625 | 637 | 109.9 | 8 |
| C-36-20 | Spot Core | 5.625 | 637 | 109.9 | 8 |
| C-37-20 | Rotary | 5.625 | 651 | 112.3 | 8 |
| C-37-20 | Spot Core | 5.625 | 651 | 112.3 | 8 |
| C-38-20 | Rotary | 5.625 | 665 | 114.7 | 8 |
| C-38-20 | Spot Core | 5.625 | 665 | 114.7 | 8 |
| C-39-20 | Rotary | 5.625 | 683 | 117.8 | 8 |
| C-39-20 | Spot Core | 5.625 | 683 | 117.8 | 8 |
| C-40-20 | Rotary | 5.625 | 695 | 119.9 | 9 |
| C-40-20 | Spot Core | 5.625 | 695 | 119.9 | 9 |
| C-41-20 | Rotary | 5.625 | 706 | 121.9 | 9 |
| C-41-20 | Spot Core | 5.625 | 706 | 121.9 | 9 |

| | | | | | |
|---|---|---|---|---|---|
| C-42-20 | Rotary | 5.625 | 604 | 104.2 | 8 |
| C-42-20 | Spot Core | 5.625 | 604 | 104.2 | 8 |
| C-43-20 | Rotary | 5.625 | 625 | 107.9 | 8 |
| C-43-20 | Spot Core | 5.625 | 625 | 107.9 | 8 |
| C-44-20 | Rotary | 5.625 | 591 | 102.1 | 7 |
| C-44-20 | Spot Core | 5.625 | 591 | 102.1 | 7 |
| C-45-20 | Rotary | 5.625 | 563 | 97.1 | 7 |
| C-45-20 | Spot Core | 5.625 | 563 | 97.1 | 7 |
| C-46-20 | Rotary | 5.625 | 572 | 98.6 | 7 |
| C-46-20 | Spot Core | 5.625 | 572 | 98.6 | 7 |
| C-47-20 | Rotary | 5.625 | 693 | 119.6 | 9 |
| C-47-20 | Spot Core | 5.625 | 693 | 119.6 | 9 |
| C-48-20 | Rotary | 5.625 | 680 | 117.3 | 8 |
| C-48-20 | Spot Core | 5.625 | 680 | 117.3 | 8 |
| C-49-20 | Rotary | 5.625 | 661 | 114.1 | 8 |
| C-49-20 | Spot Core | 5.625 | 661 | 114.1 | 8 |
| C-50-20 | Rotary | 5.625 | 590 | 101.8 | 7 |
| C-50-20 | Spot Core | 5.625 | 590 | 101.8 | 7 |
| C-51-20 | Rotary | 5.625 | 645 | 111.3 | 8 |
| C-51-20 | Spot Core | 5.625 | 645 | 111.3 | 8 |
| C-52-20 | Rotary | 5.625 | 669 | 115.4 | 8 |
| C-52-20 | Spot Core | 5.625 | 669 | 115.4 | 8 |
| C-53-20 | Rotary | 5.625 | 632 | 109.0 | 8 |
| C-53-20 | Spot Core | 5.625 | 632 | 109.0 | 8 |
| C-54-20 | Rotary | 5.625 | 612 | 105.6 | 8 |
| C-54-20 | Spot Core | 5.625 | 612 | 105.6 | 8 |
| C-55-20 | Rotary | 5.625 | 601 | 103.6 | 7 |
| C-55-20 | Spot Core | 5.625 | 601 | 103.6 | 7 |
| C-56-20 | Rotary | 5.625 | 579 | 99.9 | 7 |
| C-56-20 | Spot Core | 5.625 | 579 | 99.9 | 7 |
| C-57-20 | Rotary | 5.625 | 551 | 95.2 | 7 |
| C-57-20 | Spot Core | 5.625 | 551 | 95.2 | 7 |
| C-58-20 | Rotary | 5.625 | 702 | 121.2 | 9 |
| C-58-20 | Spot Core | 5.625 | 702 | 121.2 | 9 |
| C-59-20 | Rotary | 5.625 | 689 | 118.9 | 9 |
| C-59-20 | Spot Core | 5.625 | 689 | 118.9 | 9 |
| C-60-20 | Rotary | 5.625 | 716 | 123.6 | 9 |
| C-60-20 | Spot Core | 5.625 | 716 | 123.6 | 9 |
| C-61-20 | Rotary | 5.625 | 704 | 121.4 | 9 |
| C-61-20 | Spot Core | 5.625 | 704 | 121.4 | 9 |
| C-62-20 | Rotary | 5.625 | 768 | 132.6 | 9 |

| | | | | | |
|---|---|---|---|---|---|
| C-62-20 | Spot Core | 5.625 | 768 | 132.6 | 9 |
| C-63-20 | Spot Core | 5.625 | 723 | 124.7 | 9 |
| C-64-20 | Rotary | 5.625 | 716 | 123.5 | 9 |
| C-64-20 | Spot Core | 5.625 | 716 | 123.5 | 9 |
| C-65-20 | Rotary | 5.625 | 734 | 126.7 | 9 |
| C-65-20 | Spot Core | 5.625 | 734 | 126.7 | 9 |
| C-66-20 | Spot Core | 5.625 | 622 | 107.3 | 8 |
| C-67-20 | Rotary | 5.625 | 607 | 104.7 | 8 |
| C-67-20 | Spot Core | 5.625 | 607 | 104.7 | 8 |
| C-68-20 | Rotary | 5.625 | 619 | 106.8 | 8 |
| C-68-20 | Spot Core | 5.625 | 619 | 106.8 | 8 |
| C-69-20 | Rotary | 5.625 | 686 | 118.4 | 8 |
| C-69-20 | Spot Core | 5.625 | 686 | 118.4 | 8 |
| C-70-20 | Rotary | 5.625 | 534 | 92.1 | 7 |
| C-70-20 | Spot Core | 5.625 | 534 | 92.1 | 7 |
| C-71-20 | Rotary | 5.625 | 453 | 78.2 | 6 |
| C-71-20 | Spot Core | 5.625 | 453 | 78.2 | 6 |
| C-72-20 | Rotary | 5.625 | 427 | 73.6 | 5 |
| C-72-20 | Spot Core | 5.625 | 427 | 73.6 | 5 |
| C-73-20 | Rotary | 5.625 | 499 | 86.1 | 6 |
| C-73-20 | Spot Core | 5.625 | 499 | 86.1 | 6 |
| C-74-20 | Rotary | 5.625 | 488 | 84.2 | 6 |
| C-74-20 | Spot Core | 5.625 | 488 | 84.2 | 6 |
| C-75-20 | Rotary | 5.625 | 436 | 75.3 | 6 |
| C-75-20 | Spot Core | 5.625 | 436 | 75.3 | 6 |
| C-76-20 | Rotary | 5.625 | 439 | 75.7 | 6 |
| C-76-20 | Spot Core | 5.625 | 439 | 75.7 | 6 |
| C-77-20 | Rotary | 5.625 | 633 | 109.2 | 8 |
| C-77-20 | Spot Core | 5.625 | 633 | 109.2 | 8 |
| C-78-20 | Rotary | 5.625 | 619 | 106.8 | 8 |
| C-78-20 | Spot Core | 5.625 | 619 | 106.8 | 8 |
| C-79-20 | Rotary | 5.625 | 617 | 106.5 | 8 |
| C-79-20 | Spot Core | 5.625 | 617 | 106.5 | 8 |
| C-80-20 | Rotary | 5.625 | 626 | 108.1 | 8 |
| C-80-20 | Spot Core | 5.625 | 626 | 108.1 | 8 |