November 1, 2023

Brock Bowles
Colorado Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203
303-866-3567

Delivered Via Email and CDRMS ePermitting

RE: Young Ranch Resource, LLC; Young Ranch Resource Quarry, M-2021-009
Technical Revision 1

Mr. Bowles:

On behalf of the Young Ranch Resource, LLC and their Young Ranch Resource Quarry ("YRR"), please allow this letter to serve as a request for revision of their 112c Reclamation Permit as Technical Revision 1. This revision updates plans and maps to show the current status and progress of the mining operation within the bounds of the approved permit. All designs, maps, and plans in this revision are in accord with the approved reclamation permit.

Updates include the following topics:

1. Submittal of updated SWMP and Blast Plan

The Stormwater Management Plan ("SWMP") and Blast Plan are updated and attached. Revised stormwater plans reflect the Development Pad and Phase 1 stormwater control and include hydrologic analysis and designs for stormwater management. The Blast Plan is revised with specifics based on the blasting contractors designs and plans.

2. Updated Maps C-2 and C-3

Maps C-2 and C-3 are updated to reflect the Development Pad design onsite. Additional maps including C-2A and C-2B are added to the permit via the Stormwater Management Plan. These are included in the attached SWMP.

3. Updates to Exhibits D & G

Exhibits D and G are updated to reflect the Development Pad and Phase 1 design and necessary changes to match the Exhibit C maps and the SWMP.

Updated permit components are attached to this document.

Cheers,

Katie Todt
Geologist and Senior Consultant
Lewicki & Associates, PLLC
(303) 346-5196katie@lewicki.biz

Ben Langenfeld, PE
Principal Consultant
Lewicki & Associates, PLLC
(303) 960-5613
benl@lewicki.biz

EC:
Robert Young, Jr., YRR
Daniel Miera, City of Central
Lisa Roemhildt, City of Central

Attachments

Young Ranch Resource – Stormwater Management Plan (SWMP)

- Map C-2A
- Map C-2B

Young Ranch Resource – Blast Plan

Map C-2 Development Pad

Map C-3 End of Phase 1

Exhibits D & G

Young Ranch Resource Quarry

Mine Development Phase Stormwater Management Plan

In Conformance with the Guidelines set by:

Colorado Department of Public Health and Environment

Water Quality Control Division

October 2023

Prepared for:

Young Ranch Resource, LLC

Prepared by:

Lewicki & Associates

Table of Contents

STORMWATER MANAGEMENT PLAN (SWMP)

Facility Name:	Young Ranch Resource Quarry – Young Ranch Resource, LLC
Facility Type:	Construction materials quarry
Date Initial Operations Started:	January 2023
Facility Mailing Address:	Young Ranch Resource, LLC 2804 Champ Street Denver, CO 80205
Facility Location Address:	Central City Parkway Central City, CO 80427
Stormwater Administrator	Robert L. Young Jr. Work: (303) 880-0948 Cell: (303) 579-8055

This plan was created using sound engineering practices by Katie Todt and Ben Langenfeld of Lewicki and Associates on 10/23/2023. Lewicki and Associates is located at 3375 W Powers Circle, Littleton, CO 80123. Phone: (303) 346-5196.

Certifications

Permittee Certifying Statement:

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 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.

Name: Robert L. Young Jr.

Company: Young Ranch Resource, LLC

Title: Operations Manager

Signature:

_____

Date:

_____

Professional Engineer Statement

This stormwater management plan was developed in accordance with the requirements of the Colorado Department of Public Health and Environment, Colorado Division of Reclamation, Mining, and Safety, and the City of Central Standards and Specifications and designed to comply with the provisions thereof. I understand that the City of Central does not and will not assume liability for drainage facilities designed by others.

Ben Langenfeld, State of Colorado License No: 4715

Introduction

This Stormwater Management Plan is prepared to mitigate potential impacts to Waters of the U.S. (Clear Creek) resulting from the operations at the Young Ranch Resource Quarry by Young Ranch Resource, LLC in Clear Creek and Gilpin Counties, Colorado. Water quality, drainage, monitoring, and pollution control are addressed in this Plan. Adherence to this plan will allow Young Ranch Resource, LLC to contain potential pollutants on the site and have a plan of action for minimizing the risk of contaminating surface waters. This version of the SWMP only applies to the opening of the site termed “mine development” as shown in SWMP map and the Oct. 13, 2023 dated Map C-2 Mine Development map; both maps are located in Appendix 4. As the mining operation evolves, this plan will be revised to reflect site changes or new stormwater management methods.

During mine development, discharge is to the North Clear Creek via natural drainage routes down the mountain. All water runoff within the disturbed area will be contained with perimeter berms which route the runoff to the Development Pad, acting as a sump. It will be stored in this area for 24 hours to evaporate or infiltrate into the ground before allowed to enter a drainage outlet onto the Central City Parkway roadside ditch. In the event that stormwater remains longer than 24 hours without evaporation, it will be pumped to the same drainage outlet. The Development Pad has a capacity that is greater than the 100-YR event volume. The use of various Best Management Practices (BMPs), such as erosion control, stormwater detention, and silt fencing, will ensure all water discharged from the site is clean and sediment free. This plan accounts for both stormwater and process water. The Young Ranch Resource Quarry will be mined in multiple phases; however, this plan is only applicable to mine development.

1. Key Elements of this Plan

- All disturbed areas will drain into the active pits or will be contained within the porous processing area pad on the site. Water can be stored here for 24 hours where it can evaporate or infiltrate, before it is allowed to enter the drainage outlet and discharge at the permitted discharge points for the site. All stored runoff will be pumped and/or allowed to move to the discharge location within 72 hours. See the SWMP Map for flow directions from particular portions of the site and discharge locations.
- Process Water (water used for dust suppression) shall be contained within the site perimeter and routed to the processing area pad on the site. It can be stored for 24 hours before it will be discharged from the site.
- ***Stormwater*** from rainfall or snowmelt will inadvertently mix with process water or become process water if it flows across the disturbed area and shall be contained within the site and routed to the Development Pad. The Development Pad is a sufficient size to

capture storm events and to allow solids to settle to the bottom. This area will be monitored for sediment buildup and will be cleaned out as required to maintain settling volume.

- Any discharge of ***Process Water*** to surface waters or to groundwater will be regulated through the Water Quality Control Division for discharges associated with aggregate production operations for stormwater and process water. Prior to any discharge, the Young Ranch Resource, LLC will obtain a Discharge Permit to allow discharge of ***Process Water*** from the site.
- Any discharge of ***Process Water*** from the site will be sampled and tested in accordance with the CDPHE Discharge Permit. This may include sampling and testing for flow, pH, Total Dissolved Solids, oil and grease (visual), Oil and Grease, Electrical Conductivity, Total flow, and Total Suspended Solids. The person sampling discharge shall evaluate the flow rate and look for the presence of any oils (oily sheen).
- The only acceptable methods of managing on site stormwater runoff are to contain it for ***Use in Operations***, for ***Infiltration*** into the ground, for ***Evaporation*** into the air, or ***Discharge*** to the designated discharge points.
- ***Sediment is classified by the State as a potential pollutant*** that can negatively affect the quality of stormwater discharges. Loose sediment from construction activities and trucks, etc. will be contained on site completely and not be allowed to be carried off site by stormwater. Erosion control methods such as minimum 5-foot-tall site berms, silt fences or rock wattles be implemented on the site to control sediment migration during stormwater runoff events.
- The best method of managing site runoff water quality is to ***remove and properly dispose of any site contaminants*** that could be transported by stormwater runoff. All activities that could produce pollutants will be restricted to specific areas or have secondary containment. The designated area for this site is within the processing area. Drips, leaks, and spills will be cleaned up regularly. More detail on these items is provided later in this Plan.
- All fuel tanks, petroleum product storage and other chemicals will be regulated under the SPCC plan for the site.

Industrial Activity Description

1. General

1.1. Project Name and Location

Young Ranch Resource Quarry

1 Quarry Road

Central City, CO 80427

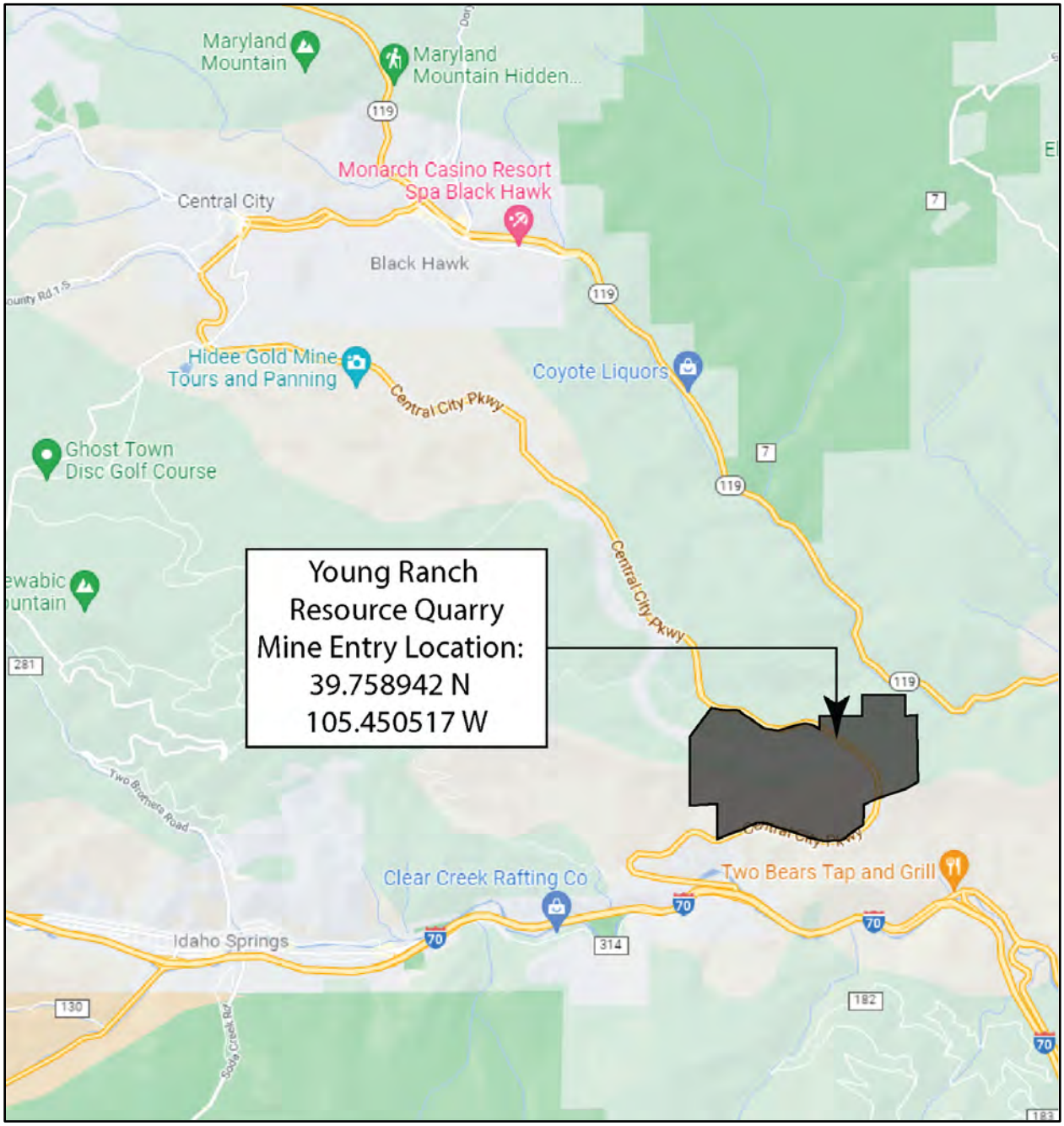
The Young Ranch Resource Quarry is a construction materials quarry located along Central City Parkway approximately 3.2 miles east-northeast of Idaho Springs and 3.8 miles southeast of the city center of Central City, CO. It is situated in both Clear Creek and Gilpin County at an elevation of about 8,000 feet. The site location in relation to Central City and Idaho Springs is shown on the **General Location Map** provided below.

The Young Ranch Resource Quarry property is located across multiple Sections of Township 3 South, Range 72 West of the 6th P.M.

The mine entry location is:

Latitude 39.758942 N
Longitude -105.450517 W

1.2. General Location Map



1.3. Owner Name and Address

The Young Ranch Resource Quarry is operated and owned by:

Young Ranch Resource, LLC

2804 Champa Street

Denver, CO 80205

Contact Person: Robert L. Young

Work: (303) 880-0948

Cell: (303) 579-8055

1.4. Site Description

The Young Ranch Resource Quarry is a construction materials operation located approximately 3.2 miles east-northeast of Idaho Springs and 3.8 miles southwest of Central City, Colorado. The site is situated adjacent to the Central City Parkway (Parkway, CCP). To site is bordered to the north, east, and south by the Central City Parkway with undisturbed rangeland and forests to the west. The Young Ranch Resource Quarry is 469.7 acres in total, while only roughly 15 acres are disturbed during the mine development stage. The entrance to the site is from a ramp from the Central City Parkway, which will be constructed during this phase. The exit is from an exit ramp that will be constructed during this phase. See the SWMP Map and Site Plan in Appendix D for more detail.

The site is located about 0.5 miles southwest of North Clear Creek and ~900 feet north of Clear Creek. Groundwater levels are more than 500 feet below the surface; therefore, it will not be encountered during mining at the quarry. Mining will be conducted in five phases; however, this plan is only applicable to the pre-mine development. This stage of mine development will involve the construction of the exit ramp and underpass from the Central City Parkway, the Development Pad, and haul road to access the first mining area. Mining will not take place during this stage of the quarry's operations.

Surface water from stormwater and process water will be contained within the disturbed areas and will be collected at the Development Pad. This pad can hold all surface runoff from the 100-year 24-hour storm event for up to 24 hours. Any water remaining after 24 hours that has not infiltrated into the ground or evaporated will enter a drainage pipe and drop structure. Sediment will have adequately settled during the 24 hours so that any water to be discharged is sediment free. Any water remaining in the sump area after 24 hours will be pumped into the drainage pipe and drop structure for discharge into the roadside ditch of the Central City Parkway. The point of discharge into the Parkway will be a permitted discharge outfall: Outfall 001-A. Any stormwater collected on site will be discharged from the approved outfall within 72 hours. These runoff management measures and the discharge location are shown on the SWMP map and Site Plan.

At this time, no long-term stockpiles will be located on site as all excess material will be used in building up the Development Pad. Short-term stockpiles may be located throughout the

construction area to serve as temporary placement areas between various phases and locations of construction. The entire site is well outside any floodplains and floodways identified by FEMA within the Clear Creek County parcels. No data is provided for the Gilpin County Parcels, but it is not anticipated that the area is within a floodplain or floodway.

1.4.1. Pre-Development Basin Conditions

The pre-development basin and conditions are shown in Figure 1. The area consists of forested hillside draining to a culvert inlet. The culvert runs below the Central City Parkway before discharging into the downhill drainage. The development drainage conditions are shown on the SWMP Map. They are described throughout this plan. No area or regional drainage plans have been completed. All drainage flows from Basin 1 will eventually discharge to North Clear Creek via the drainage patterns on the north side of the Parkway.

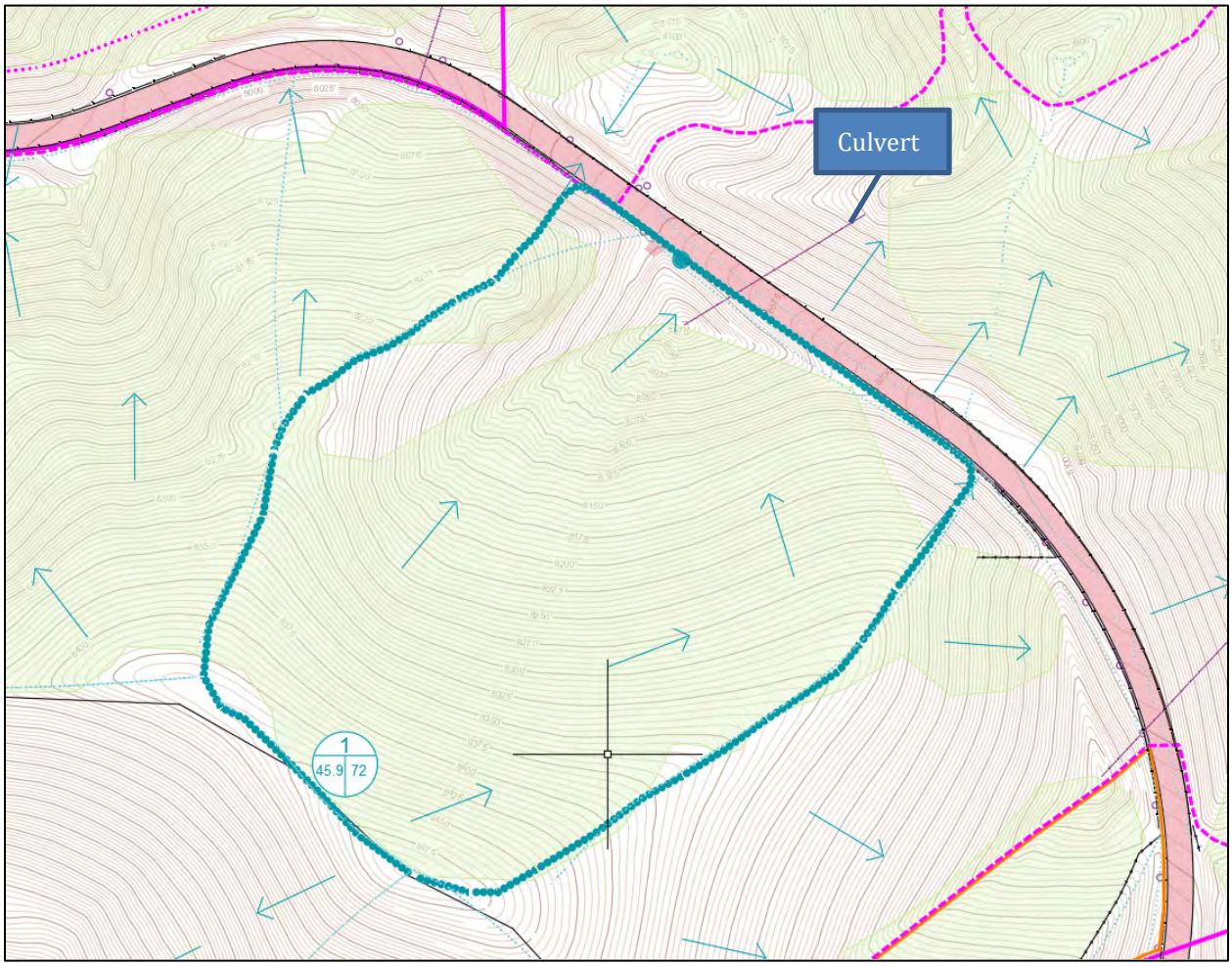


Figure 1. Pre-Development Drainage Basin Conditions

2. Standard Industrial Classification (SIC) Codes

SIC CODE	INDUSTRY DESCRIPTION
1423	Crushed and Broken Granite

3. Description of Operations

Young Ranch Resource, LLC will conduct construction materials mining and processing operations under a Colorado Division of Mining, Reclamation and Safety (DRMS) Permit. The DRMS permit will be released following full site reclamation.

Young Ranch Resource, LLC is permitted for the following uses at the Young Ranch Resource Quarry:

- Mining via drilling and blasting methods
- Crushing and processing of blasted and broken rock
- Truck loading and truck travel in and out of the site.

Brief descriptions of these operations are provided below:

3.1. Mining

Mining of Precambrian metamorphic rock and overlying Quaternary gravel is permitted at the site using drilling and blasting methods. However, this stage of development only involves constructing the Central City Parkway exit ramp and underpass, the haul road to Phase 1, and the Development Pad. The haul road and underpass will be drilled and blasted while the excess material from these will be used to build up the Development Pad. Material may be brought on site to create the exit ramp.

3.2. Processing

Processing will consist of washing and crushing blasted and broken rock using a portable processing unit. Minimal material will be processed during the mine development stage.

3.3. Fuel Storage

A portable fuel tank will be set up in the mining area to supply equipment onsite. It will have full secondary containment. All equipment onsite will have onboard diesel tanks in full secondary containment. Full secondary containment has 110% of the volume of the tank that is in it.

3.4. Chemical Storage

No chemicals are stored onsite.

3.5. Shop activities

There is no shop onsite during site opening and initial construction. A portal office trailer may be located in various portions of the site during construction.

4. Basin Descriptions for Areas of Industrial Activity

4.1. Drainage Basin to Processing Area

The vast majority of the site drains to the processing area during initial mine development. This area is shown on the SWMP map and Site Plan as Basin 1. Stormwater runoff from the slopes and the road up to Phase 1 will run down to the processing area to be collected in the sump area. Water within the processing area will be contained by the natural topography and stormwater berms, with approximately 5-foot height minimum. Water is stored in this sump area for 24 hours before it is pumped to the permitted discharge point. Surface flow directions are shown on the SWMP Map.

4.2. Drainage Basin to the Discharge Point

As shown on the SWMP Plan Map, during this phase of mine development, the majority of disturbed area of the site will be contained within the stormwater control berms built onsite. Eventual discharge of clean water through the approved discharge outfall will occur as needed to protect off-site water rights. A small sub-basin containing the lower fines conveyor area, will drain through a gravel filter berm and through the conveyor culvert to the waste rock land form area. This will eventually drain to the discharge point at the toe of the waste rock land form when it is built.

Construction areas with temporary land disturbance will use stormwater control measures such as waddles, silt fences, or other measures to prevent sediment discharge during construction. Surface flow directions are shown on the SWMP map.

4.3. Off-site Sources

There are none for this site.

4.4. On-site Stormwater and Process Water Runoff

The disturbed areas of the site are handled as follows:

- The majority of the disturbed area drains to the Development Pad. The discharge points are preceded by evaporation and infiltration sumps and erosion control methods for sediment trapping. Sediment is allowed to settle out in the sump prior to water being discharged.
- A 5-foot tall berm surrounds the Development Pad stormwater detention area.

- The processing area runoff will drain internally against the stormwater control berm in the processing area. Stormwater that collects in the processing area will be allowed to infiltrate to the groundwater aquifer. The processing area is large enough to contain a 100-year 24-hour precipitation event.
- An overflow pipe system is installed to facilitate discharge from the Development Pad following sediment settling. Details on this overflow pipe can be found in Appendix 5.

A combined stormwater/process water discharge permit will be in place for discharge from the disturbed area prior to any discharges occurring.

Stormwater volume was determined using the calculations below as described in the "Procedures for Determining Peak Flows in Colorado," that includes and supplements Technical Release No. 55 "Urban Hydrology for Small Watersheds." Prior to discharge, sediment will be controlled by allowing for settling in the processing area sump.

4.5. Stormwater Calculations

Curve Numbers are from the NRCS TR-55 Table 2.2c in Urban Hydrology for Small Watersheds. Impervious area is accommodated for in the Disturbed Ground curve number. Hydrologic Soil Group is taken from the NRCS Soil Survey for the area. Areas are extracted from GIS/CAD mapping software.

All stormwater calculations reflect current operations. They are to be updated as site conditions and operating plans are updated.

Runoff Curve Numbers (CN) for Development Pad Watershed Area (1)

Description	Hydrologic Soil Group	Area (acres)	CN
Disturbed Ground (Development Pad and Road)	Group B/D Soils	5.8	89
Undisturbed Ground (Forests and Shrublands)	Group B Soils	41.3	70

An area of 41.7 acres drains to the Development Pad.

Runoff Curve Numbers (CN) for Development Pad Fines Conveyer Sub-basin Area (2)

Description	Hydrologic Soil Group	Area (acres)	CN
Disturbed Ground (Development Pad and Road)	Group B/D Soils	0.75	89

An area of 0.75 acres drains to the fines conveyor.

Hydrologic Soil Group

Group A Soils:	High infiltration (low runoff). Sand, loamy sand, or sandy loam. Infiltration rate > 0.3 inch/hr when wet.
Group B Soils:	Moderate infiltration (moderate runoff). Silt loam or loam. Infiltration rate 0.15 to 0.3 inch/hr when wet.
Group C Soils:	Low infiltration (moderate to high runoff). Sandy clay loam. Infiltration rate 0.05 to 0.15 inch/hr when wet.
Group D Soils:	Very low infiltration (high runoff). Clay loam, silty clay loam, sandy clay, silty clay, or clay. Infiltration rate 0 to 0.05 inch/hr when wet.

The following areas were calculated in CAD software, which was used in the SWMP Map.

Hydrologic Criteria

Design Rainfalls & Storm Recurrence Interval	10-YR, 24-HR: 2.60 inches 100-YR, 24-HR: 4.44 inches
Runoff Calc. Model	USDA NRCS TR-55 Urban Hydrology for Small Catchments
Storage and Discharge Calc. Methods	Storage: Development pad stage-storage Discharge: USDA NRCS TR-55 Urban Hydrology for Small Catchments
Hydrograph	NOAA Type II Storm, Standard Hydrograph

Runoff Curve Number and Runoff

Development Pad, Pre-Mine Scenario

1. **Runoff curve number (CN)**

Cover Description	CN	Soil Type	Area
Undisturbed ground (Forests and Shrublands)	70	B/D	41.7 acres
CN (weighted):	70		41.7 acres

2. **Runoff**

Frequency	100 yr 24-hr event
Rainfall, P (24-hour)	4.44 in
Runoff Volume	5.32 acre-ft.
Discharge	115.8 cfs

Mine Development, Maximum Disturbance Scenario

3. **Runoff curve number (CN)**

Cover Description	CN	Soil Type	Area
Disturbed ground (Development Pad and Road)	89	B/D	23.6 acres
Undisturbed ground (Forests and Shrublands)	70	B/D	18.1 acres
CN (weighted):	81		41.7 acres

4. **Runoff**

Frequency	100 yr 24-hr event
Rainfall, P (24-hour)	4.44 in
Runoff Volume	8.13 acre-ft.
Discharge	Max. 50 cfs (Discharge through Overflow Spillway)

4.5.1. Development Pad Runoff Storage

A stage-storage curve for the Development Pad is shown in Figure 2. No permanent structure will be installed less than 1-ft off the pad floor. Storage was calculated from topographic survey data. Since the required storage volume o is less than the available storage volume there is more than enough storage volume to contain the 100-YR storm event onsite. There is no threat of discharging if the active area sump fills up during a 100-year 24-hour storm event. Once it is deemed that discharge will be in compliance, discharge via pump and Overflow Spillway pipe will take place.

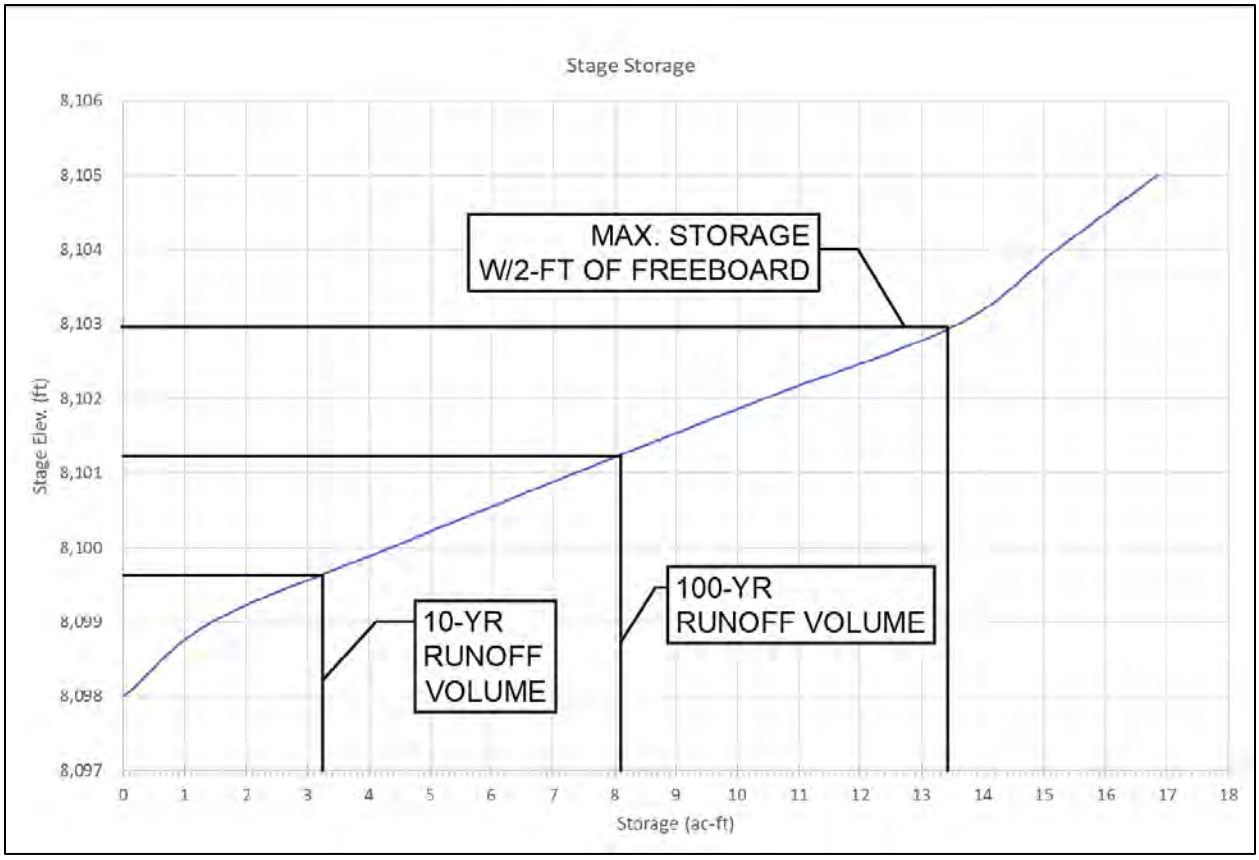


Figure 2. Development Pad Stage Storage

4.5.2. Evaluation of Structure Efficacy

The Development Pad will contain >110% of the 100-YR event runoff volume. Therefore, it will prevent any downstream discharge of additional sediment. Discharge through the Overflow Spillway will be in a controlled manner to discharge runoff once it is clean, and will limit the discharge to less than half (<50 CFS) of the pre-mine condition (115.8 CFS). Downstream structures will not be negatively affected by runoff discharge from the Development Pad.

4.6. Groundwater

Groundwater will not be encountered during this phase of the mining operation.

5. Summary of Existing Discharge Sampling Data

The Young Ranch Resource Quarry may discharge sporadically during mining as a significant amount of process water does not runoff each day. Most discharges are associated with occasional storm events. Records of sampling are kept on site and are available upon request by an inspector. The sample form is included in Appendix A.

6. Description of Sampling Points

The Young Ranch Resource Quarry has one discharge point for the site during mine development. This can be found on the SWMP Map. The discharge point will be permitted with the Colorado Department of Public Health and Environment's (CDPHE) sand and gravel construction discharge permit. Parameters that may be sampled are listed below in the following table.

Effluent Parameter	Measurement Frequency	Sample Type
Flow, MGD	Monthly	In-situ
Total Flow	Monthly	Calculated
Oil and Grease, visual	Twice / Month	Visual
Oil and Grease, mg/l	Contingent	Grab
pH, s.u.	Twice / Month	Grab
Total Suspended Solids, mg/l	Twice / Month	Grab
Total Dissolved Solids, mg/l	Quarterly	Grab
Electrical Conductivity	Quarterly	Grab

7. Monitoring Procedures

Samples will be collected in a manner that represents the discharge of all outfalls. Samples will be made with a clean, clear glass, or plastic container and examined in a well-lit area for: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of pollution. Records of the results of sampling will be maintained with the SWMP located on site. All monitoring is conducted under the supervision of the SWMP Administrator.

Yearly reports are sent to CDPHE-WQCD that detail the site's progress in implementing strategies that will aid in meeting compliance with final selenium limitations.

Stormwater Management Controls

1. SWMP Administrator

The SWMP Administrator is responsible for daily SWMP administration at the site. This designated person is listed at the beginning of this document along with their contact information.

2. Risk Identification and Assessment

It is anticipated that no stormwater discharges will occur for any stormwater events prior to being allowed to settle in the processing area pad.

A summary of estimated risks if a discharge were to occur is presented below:

2.1. Potential for Discharge from Basin:

Pollutant	
Oil and Grease	Low
Total Dissolved Solids	Low
Total Suspended Solids	Low
pH (Outside Range 6.5 to 9.0)	Low

2.2. Identification of Potential Pollutant Sources

2.2.1. Disturbed and Stored Soils

Temporary stockpiles may be located on site during the mine development. Stockpiles may be periodically wet to minimize dust. All stockpiles will be located within the minimum height 5-foot-tall site berms.

2.2.2. Vehicle Tracking of Sediment

As the site has considerable traffic of haul trucks entering and leaving the site on an ongoing basis, these activities have some potential to discharge sediment laden water but the BMPs outlined in this Plan make a sediment laden discharge a remote possibility. The primary BMPs responsible for reduction of this potential is the containment of water within the disturbed areas via perimeter berms and the use of silt fences and rock wattles which filter sediment from being discharged. Truck washing may take place, as needed, in areas contained by these BMPs and vehicle tracking pads will be used at the site access to prevent offsite sediment discharge from vehicles.

2.2.3. Management of Contaminated Soils

The site has no contaminated soils. If a spill occurs, any contaminated soils will be isolated from the area draining to the sediment settling ponds that have no discharge. These materials will be treated or hauled off site in conjunction with the procedures of the SPCC Plan.

2.2.4. Loading and Unloading Operations

All loading and unloading operations will take place in the processing area which is contained by stormwater berms and the sump. The potential for significant pollution from these sources is very low.

2.2.5. Outdoor Storage Activities (Storage of Chemicals)

No chemicals are stored onsite.

2.2.6. Vehicle and Equipment Maintenance and Fueling

There is no used oil or chemical tanks on-site. Portable equipment will have self-contained fuel tanks with secondary containment. A portable fuel tank will be stored on site for equipment maintenance and fueling, with secondary containment. Minor maintenance will be performed on the portal equipment on an 'as-needed' basis. Without BMPs there is a significant potential to discharge pollutant laden water but the BMPs outlined in this Plan make pollutant laden discharges a remote possibility from this source. The primary BMPs are a) the secondary containment of the tanks, b) containment of the areas on site where the fueling and maintenance occurs, and c) the inspection/training/maintenance procedures outlined in the SPCC Plan.

2.2.7. Significant Dust or Particle Generating Processes

Earthwork takes place within a roughly 42-acre area of the Development Pad and adjacent Phase 1 mining area that drains to the pad. Without BMPs there is a significant potential to discharge sediment laden water but the BMPs outlined in this Plan make polluted laden discharges a remote possibility from this source. The primary BMP is as needed water spraying for road dust suppression. Additionally, the use of settling ponds and silt fences ensure that any dust or particles contaminating the runoff water have been adequately filtered before discharging.

2.2.8. Routine Maintenance Activities involving Fertilizers, Pesticides, Detergents, Fuels, Solvents, Oils, etc.

A portable fuel tank will be stored on site for routine fueling of equipment. This will be maintained in accordance with the SPCC plan. No chemicals, fertilizers, etc. will be stored onsite. All portable fuel tanks will be located outside of intended stormwater accumulation areas.

2.2.9. On site Waste Management Practices

All onsite waste will be disposed in facilities operated by the local municipality. All waste storage receptacles will be placed outside of intended stormwater accumulation areas.

2.2.10. Non-Industrial Waste Sources such as Worker Trash and Portable Toilets

Portable toilets are used on site and are regularly serviced by a licensed contractor when workers are present. Worker trash is disposed of in the waste bins that are also taken to the

approved landfill by the local waste management company. Without BMPs there is a slight potential to discharge pollutant laden water but the BMPs outlined in this Plan make pollutant laden discharges a remote possibility from this source. The primary BMPs are the factory supplied waste trash bins, and porta potties, with the proper disposal of the trash and the porta potty waste. All portable toilets will be located outside of intended stormwater accumulation areas.

2.2.11. HMA Plants

There are no HMA plants onsite.

2.2.12. Concrete Batch Plant

There are no concrete batch plants on site.

2.2.13. Building Roofs

The roof from the office trailer will be the only structure roof on the site. Runoff from this structure will be contained within the stormwater control measures implemented onsite.

2.2.14. Other Areas or Procedures Where Potential Spills Can Occur

Other than the tanks identified in this Plan and the SPCC Plan, there are no other tanks or other sources that could result in a spill other than a rupture of hydraulic lines and diesel tanks associated with the mobile equipment on site. Without BMPs there is a reasonable potential to discharge pollutant laden water but the BMPs outlined in this Plan make polluted laden discharges a remote possibility from this source. The primary BMPs are a) the fact that the quantities on the mobile equipment are small, less than 120 gallons of diesel fuel and 60 gallons of oil, and b) the SPCC Plan requires spill kits that will be used to mop up any spill with the mobile equipment.

3. Preventative Maintenance

The following are the inspection and maintenance practices that will be implemented to control stormwater runoff quality:

- The SWMP Administrator will be responsible for inspections, maintenance and oversight of any required repair operations. SWMP inspections will occur at least quarterly over the whole site and records of these inspections will be kept on file on site with the SWMP Plan.
- Ground slopes will be minimized to limit erosion and slow down flow during a stormwater event.
- Inspect all tanks for leaks, proper dispensing equipment and adequate secondary containment in conjunction with the SPCC Plan.
- Inspect all Stormwater berms on site for disruption, erosion, or any other fault that requires maintenance.

4. Good Housekeeping

The following good housekeeping practices will be employed at the site:

- Substances stored on site will be stored in a neat, orderly manner in their appropriate containers.
- Open containers of non-hazardous materials shall be covered to prevent mixing with stormwater.
- The Safety Coordinator is responsible for day-to-day site operations and directing spill prevention, cleanup, and reporting. See SWMP - YRR SPCC Plan.
- No waste oil will be stored onsite.
- If drip pans are used, they will be cleaned on a regular basis and not allowed to fill with stormwater, and the contents disposed in a landfill approved to handle such waste.
- No hazardous materials will be stored onsite.

5. Stormwater Control Measures

This Stormwater Management Plan was developed to improve the water quality of stormwater runoff. The Stormwater Control Measures (SCMs) are intended to prevent the discharge of sediment laden stormwater from this site.

SCM	Location	Type	Install. Date	Implementation Specifics
Development Pad Sump	See SWMP Map and Site Plan	Detention Pond/Active pits during mining	2023	Periodic clean out of accumulated sediment to maintain retention volume; Maintain positive drainage towards sump.
Overflow Spillway	See Appendix 5	Discharge control mechanism	2023	Periodic clean out of sediment of debris to maintain flow path.
Outfall 002-A	See SWMP Map	Discharge point	2023	Pump based discharge with known flow rate.
Stormwater Berms	See SWMP Map and Site Plan	Berms/windrows	2023	Maintain required height according to SWMP maps and vegetation slopes to prevent erosion.

6. Employee Training

Young Ranch Resource, LLC, through the Stormwater Administrator, will train and educate current and new employees on appropriate stormwater management, spill response, good housekeeping and materials storage practices. Best management practice training programs should also be conducted regarding improving the water quality of stormwater runoff.

7. Testing for Non-stormwater Discharges

The only non-stormwater discharges expected at this site are stormwater and process water. Therefore, no testing for illicit connections or other non-stormwater discharges is proposed.

8. Amendments

This SWMP plan must be amended when a new phase is opened or whenever there is a change in facility design, construction, operation, or maintenance that materially affects Young Ranch Resource, LLC potential for discharge of pollutants (sediment, oils, etc.) into or upon waters of the United States. Such amendments must be implemented not later than six months after the change occurs. Any amendments to the SWMP plan will be developed by a Qualified Person.

Final Site Stabilization

As required in the Colorado DRMS permit, the site is to be reclaimed to wildlife habitat, dry rangeland, and evergreen forests.

Comprehensive Inspection

The SWMP Administrator will conduct regular inspections of the site for stormwater management controls, spill control, maintenance, and cleanup. Each quarter, inspections shall be conducted, and the records of such inspections shall be maintained in files at the site together with the SWMP Plan. Inspections shall incorporate a complete review of all BMPs outlined in this plan and will report on any BMPs that are not functioning and/or require maintenance. Any discharges that are out of compliance with the discharge permit shall also be reported with corrective actions outlined.

Record Keeping and Internal Reporting Procedure

Incidents such as spills or other discharges, together with other relevant information describing the quality/quantity of stormwater, will be included in records maintained at the site. Inspection records and maintenance records will be maintained at the site.

At least **four** comprehensive Stormwater Management Plan inspections (spring, summer, fall, and winter) will be conducted each year for annual reporting to CDPHE. These reports shall include the date of the inspection, findings and actions taken, and submitted with the Annual Stormwater Report due **February 15** each year associated with the CDPHE discharge permits.

Consistency with other Plans

The SPCC Plan will be consistent with the SWMP Plan and will be available on site. A discharge permit will be obtained from CDPHE prior to the start of operations. If other permits affecting stormwater are required of the site in the future, the SWMP will be modified to ensure consistency. These plans will also maintain consistency with the County and DRMS permits. A

construction stormwater permit will be secured during initial construction. Prior to the start of mining activities, a comingled stormwater and process water discharge permit will be secured.

Allowable Non-stormwater Discharges

There will be one process water and commingled storm water discharge points for this operation. Only one discharge point will be used during this phase of mine development; however, the site wide discharge permit includes multiple points. All discharge is covered under the Discharge Permit for the SWMP - YRR. Prior to the start of operations that will result in discharge, the discharge permit will be secured and in place.

Appendix 1 Flow Measurements and Calculations

1. Stormwater Discharge

The site discharges from the pumps at Outfall 001-A. The pumps discharge water at a known rate.

Discharge Point	Date of Measurement	Discharge Flowrate (gpm)	Person Taking Readings	Comments

2. Discharge Permit Sampling Requirements

The SWMP - YRR will have multiple discharge points. These points are shown on the SWMP Map. These discharge points will be permitted with CDPHE. The waterways surrounding the SWMP - YRR will also be inspected for visible sheen produced from oil or grease. Likely parameters to be sampled are listed below in the following table.

Effluent Parameter	Measurement Frequency	Sample Type	Limits
Flow, MGD	Continuous	in-situ	Calculated
pH, s.u.	Twice / Month	Grab	pH, s.u. 6.5-9
Total Suspended Solids, mg/l	Twice / Month	Grab	Total Suspended Solids, mg/l 30-day average (30 mg/liter) 7-day average (45 mg/liter)
Oil and Grease	Twice / Month	Visual	Report
Oil and Grease	Twice / Month	Grab	10 mg/L (contingent)
Total Flow	Monthly	Grab	Report
Electrical Conductivity (EC)	Quarterly	Grab	Report
Total Dissolved Solids, mg/l	Quarterly	Grab	Total Dissolved Solids, mg/l – Report amount only

2.1. Visual Sampling Record Sheet

Sample Location	
Collection Date/Time	
Assessment Date/Time	
Sampler (print & sign)	
Visual Assessor (print & sign)	
Nature of Discharge	
Discharge Observations	
Source of Any Observed Contamination	
Was the Sample Taken Within 30 Minutes of Discharge? If, NO, why not?	

Appendix 2 - MSDS for All

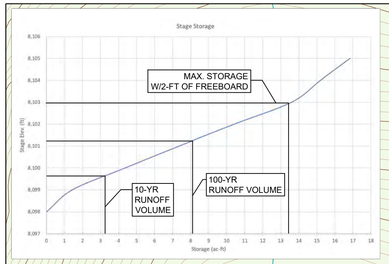
Appendix 3 - Approved CDPHE Discharge Permit

Appendix 4 - Maps

C-2 Mine Development

C-2A Phase 1 SWMP Map

C-2B Phase 1 Main Pad SCMs



Outfall 001-A:
Processing area runoff that does not evap. or infiltrate in 72 hrs will be discharged to the CCP roadside ditch

Central City Parkway

STORMWATER BERM & DISCHARGE SYSTEM
SEE MAP C-2B

BERM OUTSLOPE
SEE DETAIL 1

Mine Exit

FINES CONVEYOR
SEE DETAIL 2

Mine Access

DEVELOPMENT PAD
STORES 100-YR EVENT
RUNOFF FROM DEV. PAD
DRAINAGE BASIN.
SEE STAGE STORAGE FOR VOLUMES.

FINISHED PAD
ELEVATION 8098'-8101'

DEVELOPMENT PAD DRAINAGE BASIN
47.1 ACRES

1
47.1 72

8300'

8400'

8150'

8100'

8075'

8050'

8025'

8105

LEGEND

BOUNDARIES
- County or equivalent

BUILDINGS AND RELATED STRUCTURES
- Building
- Fence

LAND SURVEYS
- Public Land Survey System
- Range or Township line
- Range or Township labels (R1E T2N)
- Section line
- Section numbers (1-36)
- Mining claim or property boundary
- Mining claim or property monument

ROADS AND RELATED FEATURES
- Highway
- Light duty road, paved
- Light duty road, gravel
- Unimproved road

RIVERS, LAKES, SHORELINES, AND CANALS
- Perennial stream/ditch
- Perennial river
- Intermittent stream/ditch
- Perennial lake/pond
- Intermittent lake/pond
- Buried aqueduct, flume, or conduit
- Waterwell (Well Name)
- Drainage Basin
- Drainage Direction (Base/Mining)

VEGETATION & SOILS
- Woodland

TRANSMISSION LINES AND PIPELINES
- Power transmission line; pole; tower
- Telephone/data line, above ground

MINING FEATURES
- DRMS Permit Boundary
- Fixed Structures
- Mobile Structures
- Mining Phases
- SCM (berm, silt fence, etc.)
- Mine road

BASELINE CONTOURS
- Index
- Approximate of indefinite
- Intermediate
- Approximate of indefinite
- Supplementary

POST-MINING CONTOURS
- Index
- Approximate of indefinite
- Intermediate
- Approximate of indefinite
- Dump

Drainage Basin Information
Basin — 46.2 | 78.8 — Composite Curve Number
Area

C-2A Phase 1 SWMP Map

Young Ranch Resource

DRMS Permit Number: M-2021-009 — Young Ranch

Mine Entry Location:	Latitude: 39.75894	Longitude: -105.45051
State: CO	County: Gilpin	Nearest Town: Central City
Section: 28	Township: 3S	Range: 72W PM: 6th
Major Watershed:	Clear Creek	**MSHA ID:** --

Map Scale: 1": 300'

0 300 600

Map Georeferencing Information: **Datum: NAD 83** **Projection: CO NORTH**

Survey Source: County LIDAR
Imagery Source: Google
Survey Date: 2016
Imagery Date: 10/09/23

Drawn by: BEL Date: 10/31/23
Checked by: BEL Date: 10/31/23
Approved by: BEL Date: 10/31/23

File Name: Young Ranch 231018 C-2 Dev Pad

Lewicki & Associates
3375 West Powers Circle
Littleton, CO USA 80123
(303)-346-5196
info@lewicki.biz

GENERAL STORMWATER MANAGEMENT PLAN:
1) DEVELOPMENT PAD DRAINAGE BASIN DRAINS TO DEVELOPMENT PAD WHERE IT IS CONTAINED FOR SETTLING TIME.
2) DISCHARGE SYSTEM (MAP C-2B) USED TO PUMP OUT BASIN AFTER SETTLING, BUT WITHIN 72-HRS.
3) DISCHARGE SYSTEM MAX. OUTPUT OF 50 CFS.
4) FINES CONVEYOR CONTAINS RUNOFF FOR SETTLING. PUMPED OUT AFTER SETTLING, BUT WITHIN 72-HRS.
5) BERM OUTSLOPE VEGETATED FOR EROSION PREVENTION.
6) ALL DISTURBED AREAS DRAIN INTERNALLY OR TO TEMP. STORMWATER CONTROL MEASURE (SCM) SUCH AS SILT FENCING.

Runoff Detention

Basin	Storm Event	Runoff Vol. (ac-ft)	Storage Cap. (ac-ft)
1	100-YR	8.13	13.50
2	100-YR	0.19	>0.75

DETAIL 1: BERM OUTSLOPE STORMWATER CONTROL MEASURES

SILT FENCE OR SIMILAR
TEMP. STORMWATER CONTROL MEASURE
AT BERM TOE

BERM OUTSLOPE
VEGETATED
WITH RECLAMATION SEED MIX
FOR LONG TERM STABILIZATION

PARKWAY DITCH

PARKWAY DITCH
(IN PIPE)

MINE EXIT RAMP

PARKWAY DITCH GRATED
CONCRETE INLET

DETAIL 2: FINES CONVEYOR STORMWATER CONTROL MEASURES

PARKWAY DITCH GRATED
CONCRETE INLET

STORMWATER CONTROL
GRAVEL FILTER BERM (>2-FT TALL)
SEE DETAIL 3

GRATED
CONCRETE INLET

2
0.75 89

DEVELOPMENT PAD

FINES CONVEYOR SUBBASIN
0.75 ACRE

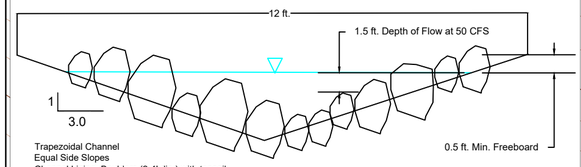
DETAIL 3: GRAVEL FILTER BERM

GRAVEL FILTER BERM
>2' TALL
1H:1V SIDESLOPE
D_{50} = 4"

DIRECTION OF FLOW

SUBBASIN DRAINS TO FINES CONVEYOR

DETAIL 1 - OUTLET ARMOR



Trapezoidal Channel
Equal Side Slopes
Channel Lining: Boulders (2-4' dia.) with topsoil

Boulders mixed with topsoil placed at outlet of discharge pipe. Minimum boulder D30 was calculated according to USACE Steep Slope Riprap Design.

Min. boulder D30 > 18" (1.5').

Channel Grade: 8.0%
Manning's n: 0.05
Flow velocity: 6.8 FPS
See Development Pad Discharge Outlet Hydraflow Report for Details

USACE Steep Slope Riprap Equation, *Hydraulic Design of Flood Control Channels, EM1110-2-1601*, (June 1994).

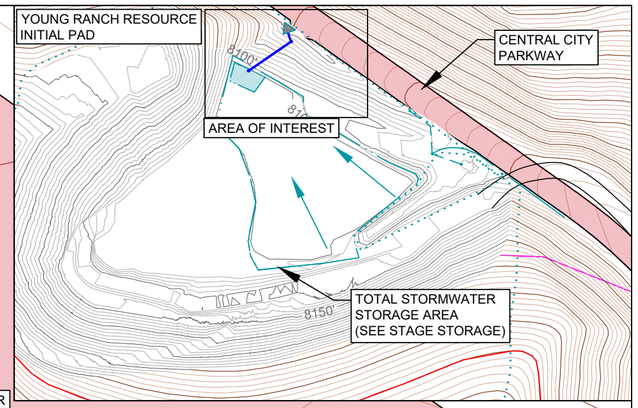
$g := 32.2$ $Q := 50$

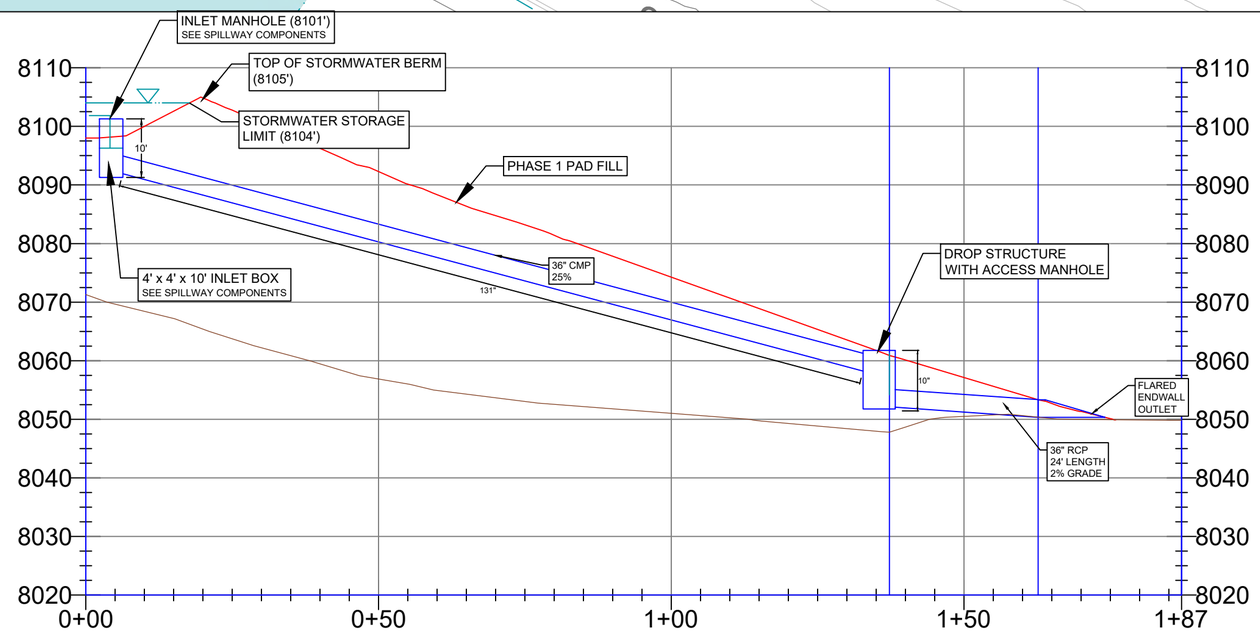
$S := 0.08$ $q := \frac{Q}{0.1} = 1.5$

$D50 := \frac{1.95 \cdot S^{0.555} \cdot q^{\frac{2}{3}}}{g^{\frac{1}{3}}}$

$D50 = 12.455$
$D50' := D50 \cdot 1.5$
$D50' = 18.682$

D30 should be 18.7" when including a 1.5 safety factor.





LEGEND

- Pre-Construction Topography
- Post-Construction Topography
- Overflow Pipe

C-2B Phase 1 Main Pad SCMs

Young Ranch Resource

DRMS Permit Number: M-2021-009 — Young Ranch

Mine Entry Location:	Latitude: 39.75894	Longitude: -105.45051
State: CO	County: Gilpin	Nearest Town: Central City
Section: 28	Township: 3S	Range: 72W PM: 6th
Major Watershed:	Clear Creek	**MSHA ID:** --

Map Scale: 1": 100

0 20' 40'

N

Map Georeferencing Information: **Datum:** NAD 83 **Projection:** CO NORTH

Survey Source: County LIDAR	**Drawn by:** BEL	Date: 10/31/23
Imagery Source: Google	**Checked by:** BEL	Date: 10/31/23
Survey Date: 2016	**Approved by:** BEL	Date: 10/31/23
Imagery Date: 10/09/23		

File Name: Young Ranch 231018 C-2 Dev Pad

Lewicki & Associates

3375 West Powers Circle
Littleton, CO USA 80123
(303)-346-5196
info@lewicki.biz

Appendix 5 – Overflow Spillway Design

1. Development Pad and Overflow Spillway

The Development Pad will contain the 100-YR stormwater event completely. This will prevent uncontrolled discharge of sediments from the Development area. Additionally, an Overflow Spillway device will be used to convey flow from the Development area to the Central City Parkway roadside ditch and eventually downstream culverts. This Overflow Spillway device is sized to convey a maximum flow of 50-CFS. Its location is shown on Map C-2B. Its design is shown on Map C-2B.

The Overflow Spillway will consist of a concrete riser that will extend at least 5-ft above the ground level to ensure containment of the 100-YR event within the Development Pad area. During storm events the pad area will be allowed to fill with runoff from Basin 1. Runoff will be contained for at least 24-hours to facilitate sediment settling. Once settling is complete, the pad will be drained via a pump through the Overflow Spillway out to the Central City Parkway roadside ditch. This discharge rate will be limited to 50 CFS at the most. Typical discharge rate for most storms will be less.

Attached within this appendix are three design documents and precast concrete component diagrams for the spillway components.

Table 1. Overflow Spillway Design Documents

Attachment	Description
Map C-2B (see SWMP Appendix 4)	Inlet, pipe, manhole, and outlet overall design and layout
Precast concrete structures	Inlet, pipes, manhole, and flared outlet concrete specs.
Culvert Report – Outflow Pipe Section 1	Pipe design hydraulic calculations for the first run of pipe within the spillway
Channel Report – Outflow Pipe Section 2	Pipe design hydraulic calculations for the second run of pipe within the spillway
Channel Report – Development Pad Discharge Outlet	Spillway discharge channel armoring design and capacity evaluation.
Channel Report – USACE Riprap Sizing	USACE Steep Slope Riprap sizing calculation method for discharge outlet D30 determination.

2. Central City Parkway – Existing Structures Capacity

The existing culvert that runs beneath the Parkway from the Development Pad area will be buried by the Development Pad construction.

The Central City Parkway roadside ditch has sufficient capacity to convey 288-cfs of flow (see Channel Report – CCP Roadside Ditch). This is well in excess of the maximum 50-cfs that the mine will discharge into it from the Development Pad. The first culvert along the south side of the Parkway is located roughly 1000-ft northwest of the mine entrance.. Another culvert of similar size and slope exists a further along the Central City Parkway roadside ditch roughly another 1000-ft along the Parkway. Both of these can be seen on Map C-2. The first culvert is 24-inches in diameter, the second culvert is 42-inches in diameter. The flow from mine discharge that does not pass through the first culvert will continue downstream to the second

culvert. Overtopping of the Parkway during mine discharge could only occur if the roadside ditch was completely blocked. Since this is very unlikely, it can be expected that the flow within the roadside ditch that does not go through the first culvert will continue downstream. The capacity of the structures downstream from the mine are listed in Table 2.

Table 2. Downstream CCP Structure Capacity

Discharge Structure	Capacity	Notes
CCP Roadside Ditch	288 cfs	0.5-ft of freeboard
Culvert Under CCP 1	32.3 cfs	24-inch dia.
Culvert Under CCP 2†	90 cfs	42-inch dia.

†Calculated using same method as Culvert 2, but at the larger diameter.

Appendix 5 - Attachments

Precast Concrete Specifications – Inlet Drop Structure

Precast Concrete Specifications – Manhole Drop Structure

Precast Concrete Specifications – RCP and Flared Outlet

Culvert Report – Outflow Pipe Section 1

Channel Report – Outflow Pipe Section 2

Channel Report – Development Pad Discharge Outlet

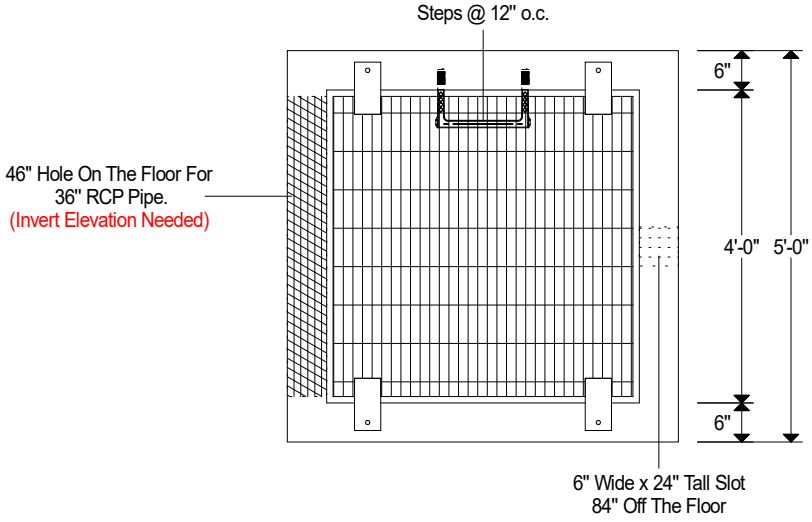
USACE Riprap Sizing

Culvert Report - CCP Culvert 1

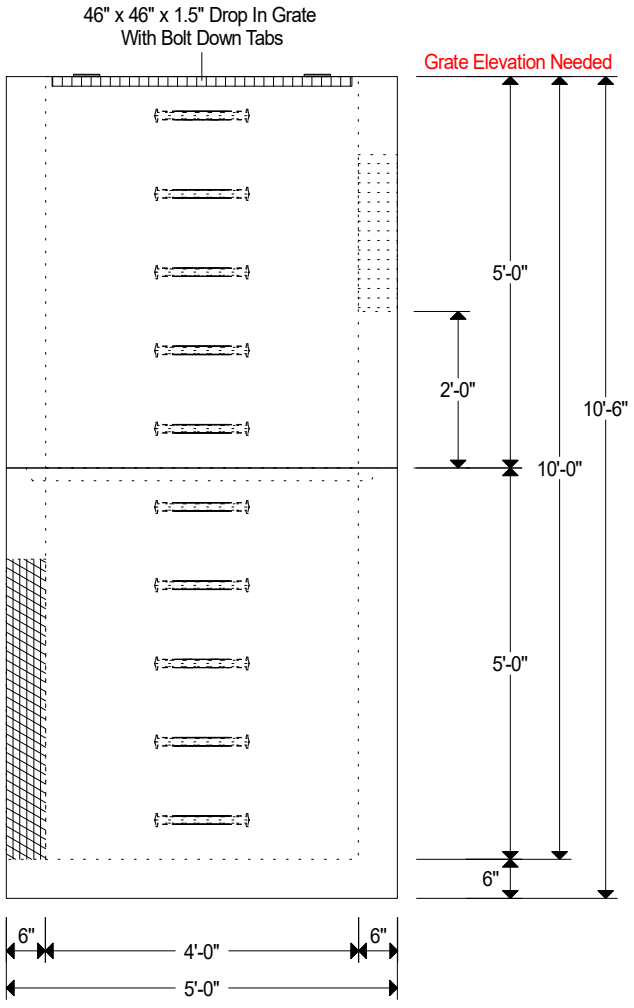
Culvert Report – CCP Culvert 2

Channel Report – CCP Roadside Ditch

Plan



Elevation



Notes:

Please Provide The Following Info Prior To Fabrication:
1) Rim Elevation. 2) Invert Elevation.

Reinforcing - Walls & Floor Both Use #4 Rebars @ 12" O.C.E.W.

Weight - Base Section: 8,630 lbs & Riser Section: 6,750 lbs.

Lifting Plan - Both Sections Uses Utility Lifting Anchors (PL54G).

5,000 P.S.I. Minimum Strength Concrete.

We Produce A Green And Environmentally Friendly Product.

COPELAND PRECAST, INC.
Since 1935
303-936-4817

4'-0" x 4'-0" x 10'-0" I.D. Custom Inlet
With Steps, Hole, Slot, 6" Walls & Floor

No Scale

Customer:
Forbes Excavation & Trucking

Copeland Job Number:	Date Drawn:
23-5611	09/01/2023

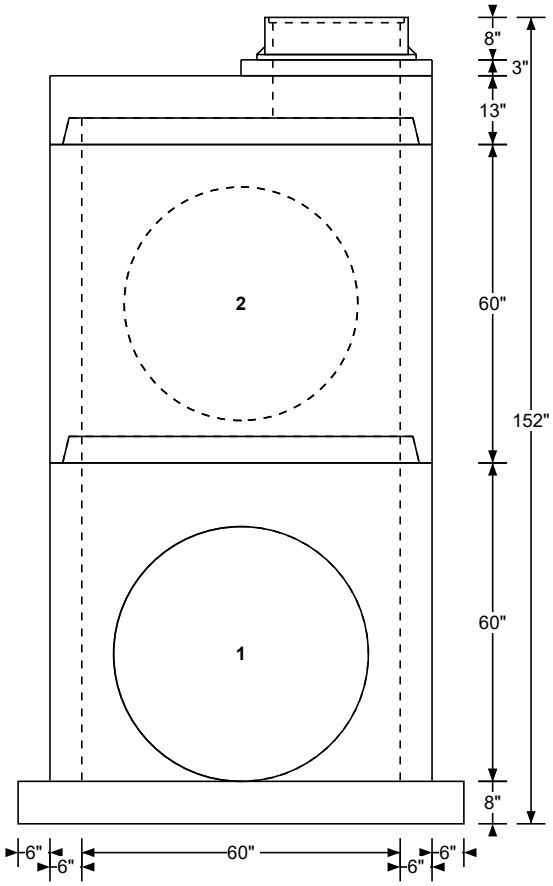
General Information

Job Name:	Manhole and Septic Tank Risers
Job #:	23-5611
Customer:	Forbes Excavation & Trucking
Structure ID:	STORM MH
Type:	60`` Storm Manhole

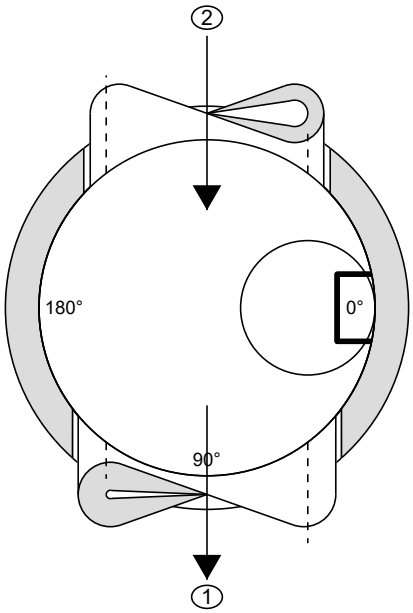
Design Height

Rim:	11.5'
Invert:	0'
Rim to Invert:	11.5'
Floor Height:	0.67'
Sump Height:	0.5'
Overall Height:	12.67'

Elevation View



Plan View



BOM of Structure

Description	Quantity	UOM	Weight(lbs)
ROLL OF CONSEAL (CS- 102 1" X 14.5'/ROLL)	4	EA	0
Hole 34" & Larger (Acc)	2	EA	0
24`` COPELAND STORM SEWER MANHOLE COVER (DPH)	1	EA	115
24`` X 8`` TRAFFIC DUTY MANHOLE RING ONLY	1	EA	181
24`` X 3`` MANHOLE EXTENSION COLLAR	1	EA	147
60`` X 13`` CONCRETE INSERT COVER W/24`` OFFSET OPENI	1	EA	2800
60`` ASTM MANHOLE W/STEPS CENTER VF	1	EA	5641
60`` x 60`` MANHOLE ON BASE W/STEPS SPECIAL	1	EA	9252
Structure Total			**18136**

Openings

PipeNum	Pipe	Elevation	Make	UptoBottom	Angle	Item
1	36 RCP	0	48in Holemaker	0	90	A
2	36 HDPE	5.5	44in HOLE	8	270	B

Notes / Specifications

Reinforcing Meets ASTM C-478

Utility Lifting Anchors (PL66G)

Manhole Steps (PS2-PF)
At 12" On Center

5,000 PSI Minimum Strength Concrete

We Produce A Green And
Environmentally Friendly Product

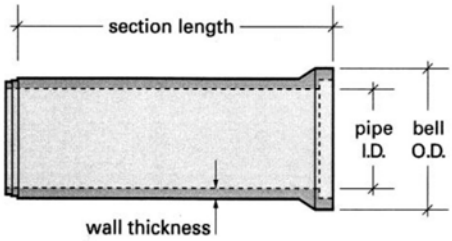
NPCA Certified Plant

Date Drawn: 09/01/2023

Additional Notes:
-Please provide the following info prior to fabrication:
1) Rim Elevation. 2) Invert Elevations. 3) Pipe Angles.
-Overall height assumed to be 12.0` (Rim to inside floor).

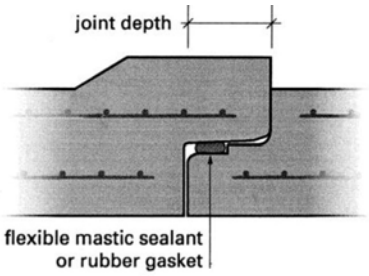
Circular Reinforced Concrete Pipe

Standard Specifications (Manufacturing)	Joint Specifications (Rubber Gasket)	Joint Specifications (Flexible Sealant)
• **ASTM C76** • **AASHTO M170**	• **ASTM C443** • **AASHTO M315**	• **ASTM C990** • **AASHTO M198**



SIDE VIEW

END VIEW



JOINT VIEW

Pipe I. D. (inches)	Bell O.D. (inches)	Wall Thickness (inches)	Section Length (feet)	Section Weight (tons)	Waterway Area (square feet)
12	20.0	2.00	7.5	0.5	0.8
15	23.8	2.25	8.0	0.6	1.2
18	27.6	2.50	8.0	0.7	1.8
24	35.6	3.00	8.0	1.1	3.1
30	42.5	3.50	8.0	1.6	4.9
36	50.3	4.00	8.0	2.2	7.1
42	58.5	4.50	8.0	3.1	9.6
48	66.3	5.00	8.0	3.6	12.6
54	69.5	5.50	8.0	5.1	15.9
60	75.5	6.00	8.0	6.1	19.6
66	81.5	6.50	8.0	7.2	23.8
72	87.5	7.00	8.0	8.1	28.3
78	94.5	7.50/8.25	8.0	8.4/9.4	33.2
84	101.5	8.0/8.75	8.0	9.64/10.6	38.5
90	108.5	8.50/9.25	8.0	11.0/12.1	44.2
96	114.0	9.00/9.75	8.0	12.4/13.5	50.3
108	128.0	10.00/10.75	8.0	15.5/16.7	63.6
120	142.0	11.00/11.75	8.0	18.9/20.2	78.5

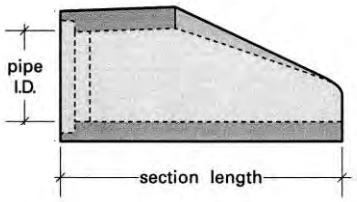
- *RCP strength classification requirements to be determined by a qualified engineer*
- *Additional information available upon request, product data subject to change without notice*
- *Pipe to be produced with concrete meeting CDOT Class 2 sulfate resistance. The engineer shall confirm that this level of sulfate resistance is adequate to meet project requirements and notify Foley Products Company if a higher level of sulfate resistance is needed.*
- *48" and larger to be supplied with lift anchors.*

PRODUCTS FOLEY COMPANY

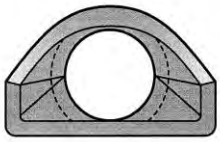
Denver Pipe Plant
8311 West Carder Court
Littleton, Colorado 80125
303.791.1600

Circular Reinforced Concrete Pipe

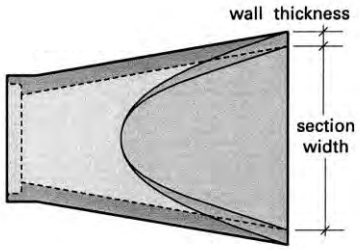
Flared End Sections



SIDE VIEW



END VIEW



TOP VIEW

Pipe I.D. (inches)	Wall Thickness (inches)	Section Length (feet)	Section Width (inches)	A dimension * (inches)	C dimension * (inches)
12	3	6	24	4	53
15	3	6	30	6	46
18	2.5	6.5	36	10	52
24	3	6.5	48	10	38
30	3.5	6.5	60	12	26
36	4	8	72	15	37
42	4.5	8	78	21	30
48	5	8	84	24	22
54	6.25	8	90	27	31
60	6.75	8	96	30	40
66	6.5	8	102	30	19
72	7.75	8	108	34	21

- *Additional information available upon request, product data subject to change without notice*
- *Flared End Sections to be produced with concrete meeting CDOT Class 0 sulfate resistance. The engineer shall confirm that this level of sulfate resistance is adequate to meet project requirements and notify Foley Products Company if a higher level of sulfate resistance is needed.*

** A dimension and C dimension are as defined by CDOT M603-10. Dimensions shown here may vary from CDOT M603-10.*

PRODUCTS FOLEY COMPANY

Denver Pipe Plant
8311 West Carder Court
Littleton, Colorado 80125
303.791.1600

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 18 2023

YRR Development Pad - Outflow Pipe Section 1

Invert Elev Dn (ft)	=	8057.50
Pipe Length (ft)	=	131.00
Slope (%)	=	25.50
Invert Elev Up (ft)	=	8090.91
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Mitered to slope (C)
Coeff. K,M,c,Y,k	=	0.021, 1.33, 0.0463, 0.75, 0.7

Embankment

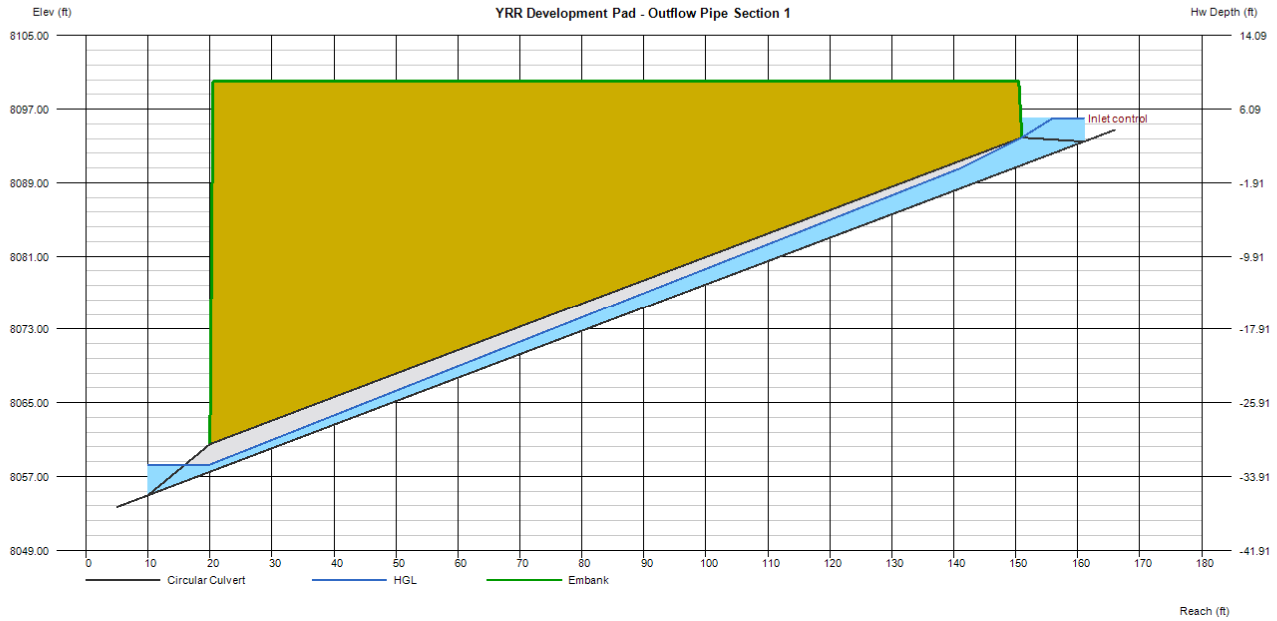
Top Elevation (ft)	=	8100.00
Top Width (ft)	=	130.00
Crest Width (ft)	=	50.00

Calculations

Qmin (cfs)	=	10.00
Qmax (cfs)	=	50.00
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	50.00
Qpipe (cfs)	=	50.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	34.25
Veloc Up (ft/s)	=	8.60
HGL Dn (ft)	=	8058.28
HGL Up (ft)	=	8093.21
Hw Elev (ft)	=	8096.01
Hw/D (ft)	=	1.70
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 18 2023

YRR Development Pad - Outflow Pipe Section 2

Invert Elev Dn (ft)	=	8050.00
Pipe Length (ft)	=	24.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	8050.48
Rise (in)	=	36.0
Shape	=	Circular
Span (in)	=	36.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Square edge w/headwall (C)
Coeff. K,M,c,Y,k	=	0.0098, 2, 0.0398, 0.67, 0.5

Embankment

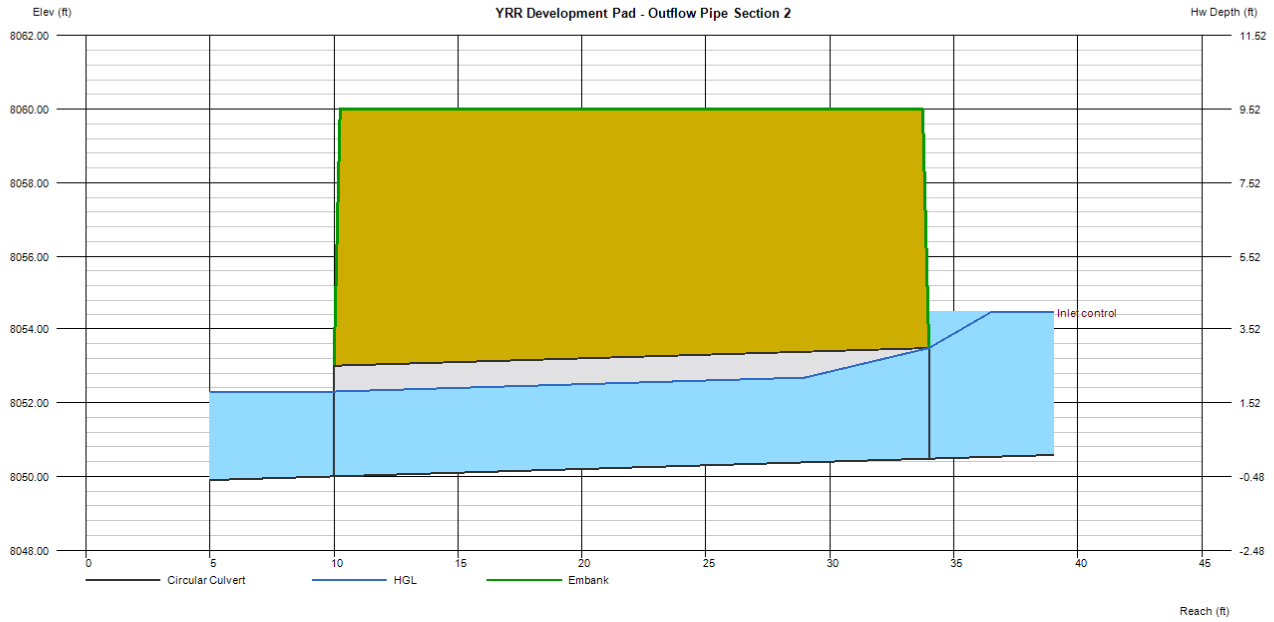
Top Elevation (ft)	=	8060.00
Top Width (ft)	=	23.50
Crest Width (ft)	=	50.00

Calculations

Qmin (cfs)	=	10.00
Qmax (cfs)	=	50.00
Tailwater Elev (ft)	=	Normal

Highlighted

Qtotal (cfs)	=	50.00
Qpipe (cfs)	=	50.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	8.60
Veloc Up (ft/s)	=	8.60
HGL Dn (ft)	=	8052.30
HGL Up (ft)	=	8052.78
Hw Elev (ft)	=	8054.45
Hw/D (ft)	=	1.32
Flow Regime	=	Inlet Control



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Oct 18 2023

Development Pad Discharge Outlet

Triangular

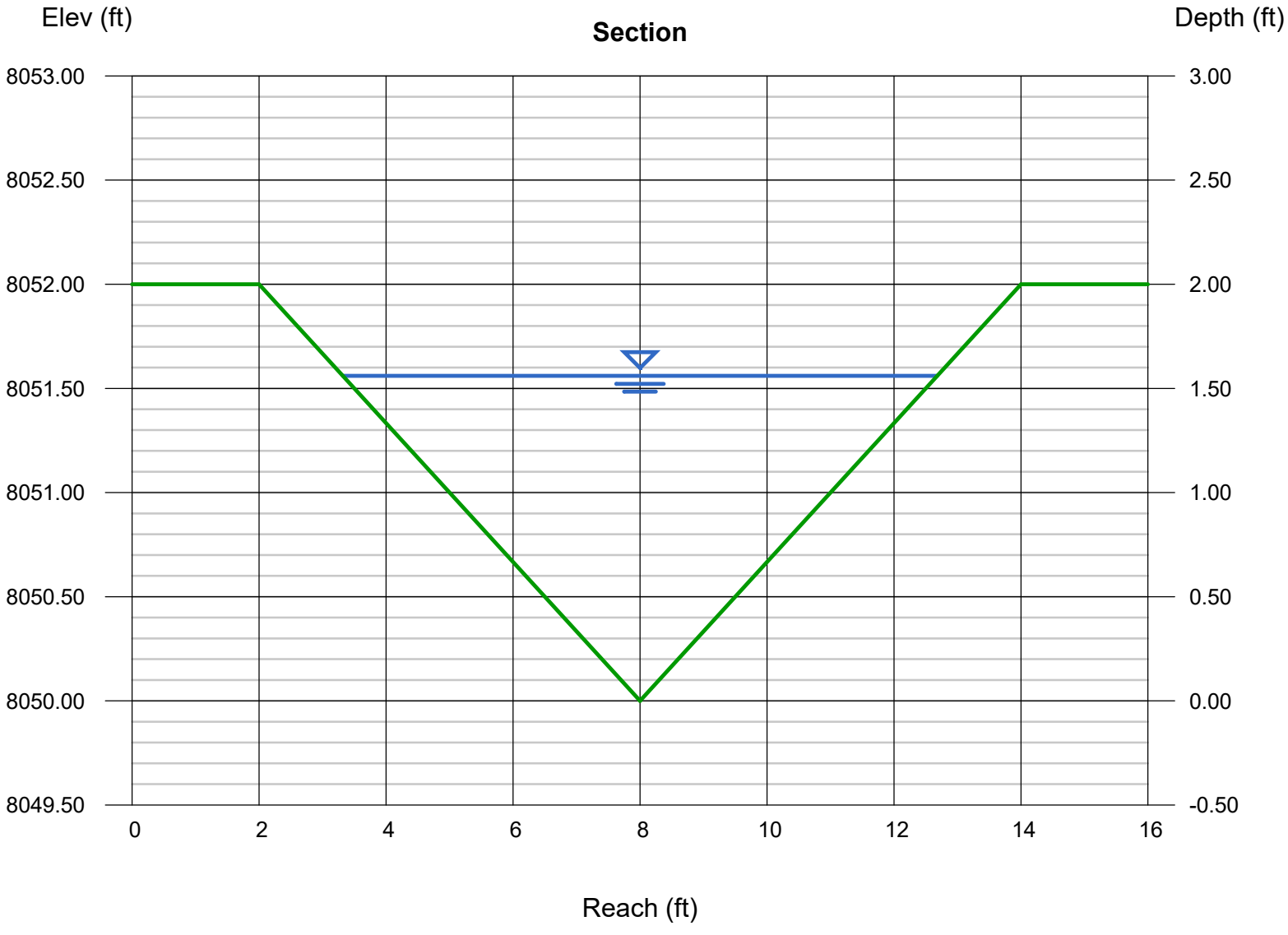
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 8050.00
Slope (%)	= 8.00
N-Value	= 0.050

Calculations

Compute by:	Known Q
Known Q (cfs)	= 50.00

Highlighted

Depth (ft)	= 1.56
Q (cfs)	= 50.00
Area (sqft)	= 7.30
Velocity (ft/s)	= 6.85
Wetted Perim (ft)	= 9.87
Crit Depth, Yc (ft)	= 1.77
Top Width (ft)	= 9.36
EGL (ft)	= 2.29



USACE Steep Slope Riprap Equation, *Hydraulic Design of Flood Control Channels, EM1110-2-1601*, (June 1994).

$g := 32.2$ $Q := 50$

$S := 0.08$ $q := \frac{Q}{0.1} \cdot 1.5$

$$D30 := \frac{1.95 \cdot S^{0.555} \cdot q^{\frac{2}{3}}}{g^{\frac{1}{3}}}$$

$D30 = 12.455$

$D30` := D30 \cdot 1.5$ D30 should be 18.7" when including a 1.5 safety factor.

$D30` = 18.682$

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Oct 23 2023

Central City Parkway Culvert 1 - 1000ft Northwest of Quarry Entrance

Invert Elev Dn (ft)	=	7850.00
Pipe Length (ft)	=	350.00
Slope (%)	=	41.43
Invert Elev Up (ft)	=	7995.00
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

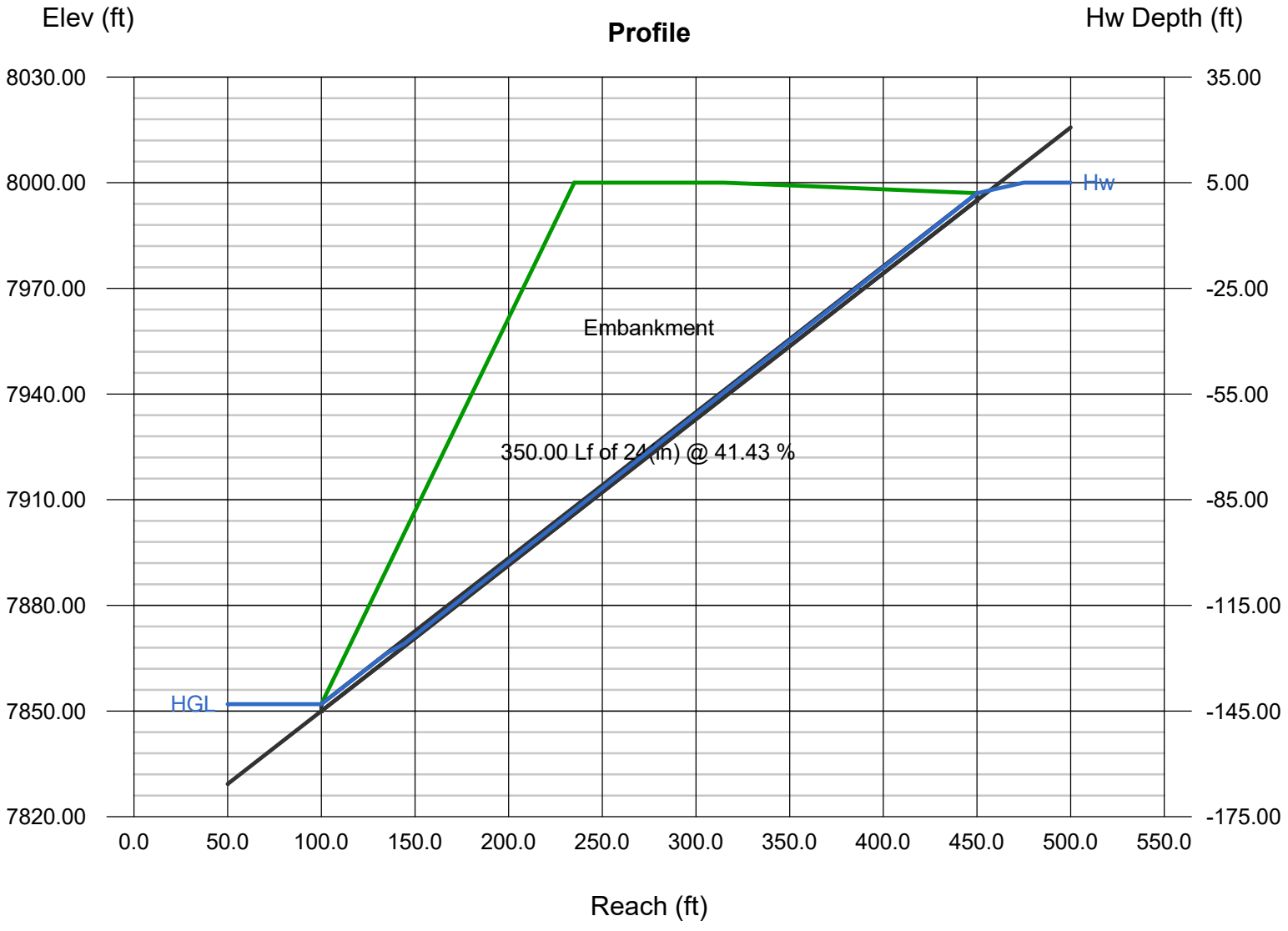
Top Elevation (ft)	=	8000.00
Top Width (ft)	=	80.00
Crest Width (ft)	=	400.00

Calculations

Qmin (cfs)	=	30.00
Qmax (cfs)	=	35.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	32.50
Qpipe (cfs)	=	32.39
Qovertop (cfs)	=	0.11
Veloc Dn (ft/s)	=	10.39
Veloc Up (ft/s)	=	10.53
HGL Dn (ft)	=	7851.95
HGL Up (ft)	=	7996.89
Hw Elev (ft)	=	7999.99
Hw/D (ft)	=	2.50
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Oct 23 2023

Central City Parkway Culvert 2 - 2000ft Northwest of Quarry Entrance

Invert Elev Dn (ft)	=	7850.00
Pipe Length (ft)	=	350.00
Slope (%)	=	41.43
Invert Elev Up (ft)	=	7995.00
Rise (in)	=	42.0
Shape	=	Circular
Span (in)	=	42.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Corrugate Metal Pipe
Culvert Entrance	=	Headwall
Coeff. K,M,c,Y,k	=	0.0078, 2, 0.0379, 0.69, 0.5

Embankment

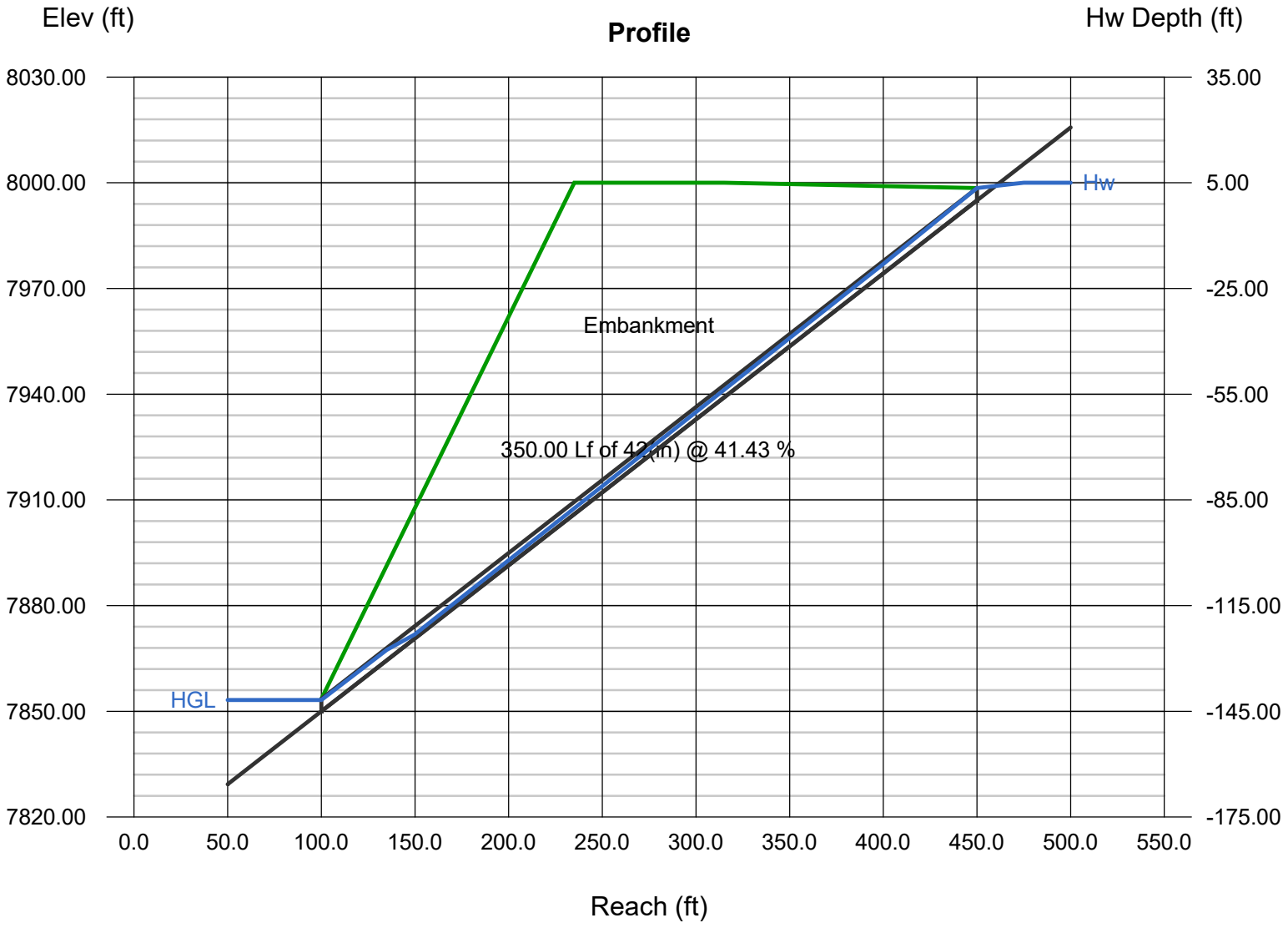
Top Elevation (ft)	=	8000.00
Top Width (ft)	=	80.00
Crest Width (ft)	=	400.00

Calculations

Qmin (cfs)	=	45.00
Qmax (cfs)	=	100.00
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	90.00
Qpipe (cfs)	=	90.00
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	9.72
Veloc Up (ft/s)	=	10.43
HGL Dn (ft)	=	7853.22
HGL Up (ft)	=	7997.94
Hw Elev (ft)	=	8000.01
Hw/D (ft)	=	1.43
Flow Regime	=	Inlet Control



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Oct 30 2023

CCP Roadside Ditch

Trapezoidal

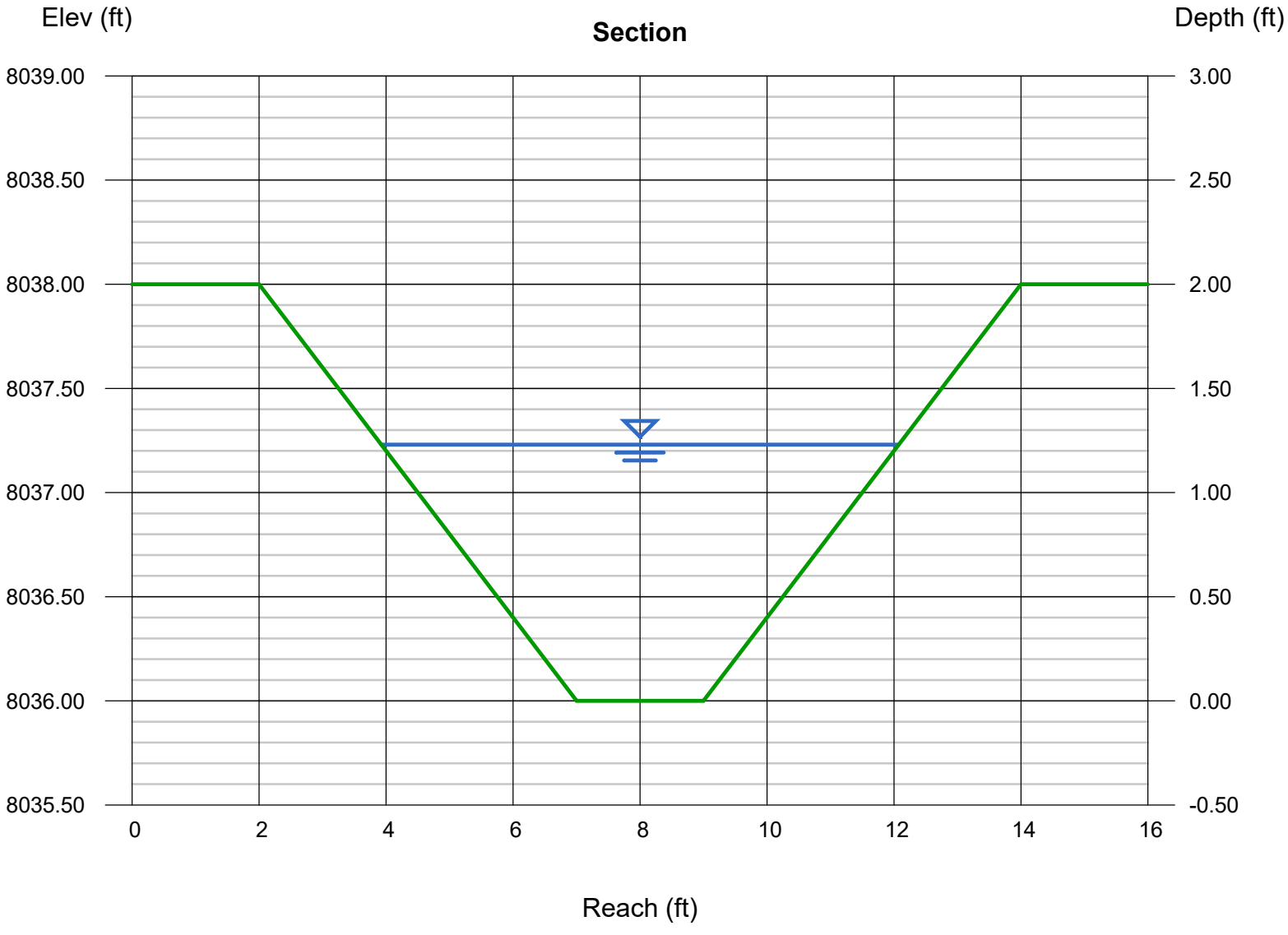
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 2.50, 2.50
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 8036.00
Slope (%)	= 7.30
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 50.00

Highlighted

Depth (ft)	= 1.23
Q (cfs)	= 50.00
Area (sqft)	= 6.24
Velocity (ft/s)	= 8.01
Wetted Perim (ft)	= 8.62
Crit Depth, Yc (ft)	= 1.56
Top Width (ft)	= 8.15
EGL (ft)	= 2.23



Young Ranch Resource Quarry

October 31, 2023

Blast Plan

By:

Young Ranch Resource, LLC

Represented by:

Lewicki & Associates

ENGINEERING | GEOLOGY | ENVIRONMENTAL

1. Introduction

The following represents the pre-blast survey, blast plan, monitoring plan, and mitigation plan for complaints and outlines the procedures and methods that will be used for all blasting, monitoring, and mitigation work at the Young Ranch Resource Quarry. The plans detailed below are adapted from the Hitch Rack Quarry M-2016-010 Colorado Department of Reclamation, Mining, and Safety ("DRMS") 112 permit application submitted in 2016. Slight modifications to this plan may occur at the direction of the chosen third-party licensed blasting contractor ("blasting contractor").

2. Pre-Blast Survey

As required by the Office of Surface Mining, Reclamation, and Enforcement ("OSM") Blasting Regulations, a pre-blasting survey is required at least 30 days before the initiation of blasting. A copy of the Pre-Blast Survey notification is included at the end of this blast plan. A pre-blast survey is used to document the existing conditions of a structure prior to the commencement of any blasting activities being conducted at any site. These surveys are used to identify and record the pre-existing visible cracks or other defects in a structure before blasting begins in the area. Pre-blast surveys also include measuring the flowrate and evaluating the water quality of existing wells on each property.

The operator shall notify, in writing, all residents or owners of dwellings or other significant structures located within ½ mile of the permit area of how to request a pre-blasting survey of their property. Structures within the survey area will be identified using all available information including aerial photographs, county assessor data, State Engineer records, and maps. Landowner interviews may also be conducted to identify structure and well locations. Structures, that will be considered in the pre-blast survey include houses or any other dwellings, garages, barns, outbuildings, cisterns, septic fields, and wells, etc. This list is not all inclusive and during the survey, the landowner may request that other structures on the property be surveyed.

The pre-blast survey is meant to protect both the neighbors and the operator. It does this by providing thorough documentation of the current and existing condition of the structures and wells. Once blasting has begun, this documentation will be used to compare any suspected changes that are reported to the original condition of the property.

The survey will be complimentary to the neighbor and will be conducted by an independent third-party firm. Included in the notification will be a description of the process that will take place on the day of the inspection, what the inspector will be looking for, and how the inspection will be documented. Also included with the notification will be a survey response form that each neighbor will complete and send back to the operator. This form will be used as consent to complete the survey or as a statement by the landowner declining the survey. A lack of response will be deemed to indicate their declining participation in the survey. Once the form is returned and a survey is requested, a representative from the independent third-party firm will contact the neighbor to schedule a date and time to complete the survey. It will be

recommended that the landowner collect any documents relevant to the structures or wells that will be evaluated; such as date and details on the structure construction, well drilling, and completion reports. Any surveys requested more than 10 days before the planned initiation of blasting shall be completed by the operator before the initiation of blasting.

On the day of the survey, a representative from the third-party firm will arrive on the property, introduce themselves, and conduct the inspection. Any documents provided by the owner will be reviewed at the start of the survey. The third-party representative will have a still photo camera and may include a video camera. The representative doing the inspection will photograph (and potentially video document, with voice comments) the exterior and interior of all structures located on the property. They will document the existing condition of all walls, doors, ceilings, windows and floors. The survey will include all levels of the structure including the basement and foundation. Areas that cannot be accessed during the inspection will be noted. The current conditions of the structure will also be recorded in the form of notes and sketches on a standard inspection form used by the third-party firm.

In addition to the structure inspection, the third-party representative will also assess the condition of any water wells within the established distance. If the well is accessible, this will include measuring the water level in the well and conducting flow rate testing. Flow rate testing consists of pumping the well for a minimum of 15 minutes to determine the production rate and water level. Water level measurements will not be performed if the well is not accessible. Flow rate testing will be performed if there is a spigot between the well and cistern/pressure tank. The representative will also collect a water quality sample. If the well production can be tested, then a sample to test water quality will be collected from the pumped flows of the well production test.

The operator and/or third-party firm may work with the landowner to have the representative open the well for testing, and this work may include removing the pump from the well. Regardless of accessibility, a water quality sample will be collected from the spigot closest to the well and/or cistern. A minimum of 1 gallon of water will be discharged prior to collecting the sample. The water quality monitoring parameter list is based on Domestic Water Supply numeric standards established by the Colorado Department of Public Health and Environment (“CDPHE”). This list is included as Table 1. The water sample will be sent to an independent Colorado state certified lab that will test for water quality.

Table 1. CDPHE Domestic Water Supply Numeric Standards				
Analyte*	Unit	Method	Holding Time	CDPHE Groundwater Standards**
Oxidation Reduction Potential - ORP (field)	mV	Field	NA	NA
pH (field)	SU	Field	NA	6.5-8.5
Specific Conductance (field)	µmhos/cm	Field	NA	NA
Temperature (field)	°C	Field	NA	NA
Turbidity (field)	NTU	Field	NA	NA
Aluminum (Al) Dissolved	mg/l	200.7	6 months	5
Antimony (Sb) Dissolved	mg/l	200.7	6 months	0.006
Arsenic (As) Dissolved	mg/l	200.8	6 months	0.01
Barium (Ba) Dissolved	mg/l	200.7	6 months	2
Beryllium (Be) Dissolved	mg/l	200.7	6 months	0.004
Beta and Photon Emitters	mrem/year	900	6 months	4
Bicarbonate	mg/l as CaCO3	2320B	14 days	NA
Boron (B) Dissolved	mg/l	200.7	6 months	0.75
Cadmium (Cd) Dissolved	mg/l	200.7	6 months	0.005
Calcium (Ca) Dissolved	mg/l	200.7	6 months	NA
Carbonate	mg/l	2320B	14 days	NA
Chloride	mg/l	300	28 days	250
Chromium (Cr) Dissolved	mg/l	200.7	6 months	0.1
Cobalt (Co) Dissolved	mg/l	200.7	6 months	0.05
Copper (Cu) Dissolved	mg/l	200.7	6 months	0.2
E Coli	mpn/100ml	Colilert	24 hours	NA
Fluonde (F)	mg/l	300	28 days	2
Free cyanide (CN)	mg/l	SM 4500 CN I	14 days	0.2
Gross Alpha Particle Activity	pCi/l	900	6 months	15
Hydroxide	mg/l as CaCO3	2320B	14 days	NA
Iron (Fe) Dissolved	mg/l	200.7	6 months	0.3
Lead (Pb) Dissolved	mg/l	200.7	6 months	0.05
Lithium (Li) Dissolved	mg/l	200.7	6 months	2.5
Magnesium (Mg) Dissolved	mg/l	200.7	6 months	NA
Manganese (Mn) Dissolved	mg/l	200.7	6 months	0.05
Mercury (Hg) Dissolved	mg/l	245.1	28 days	0.002
Molybdenum (Mo) Dissolved	mg/l	200.7	6 months	0.21
Nickel (Ni) Dissolved	mg/l	200.7	6 months	0.1
Nitrate as N (NO3-N)	mg/l	300	48 hours	10
Nitrite as N (NO2-N)	mg/l	300	48 hours	1
pH (lab)	SU	SM4500 h+	within 24 hours of receipt at lab	6.5-8.5
Potassium (K) Dissolved	mg/l	200.7	6 months	NA
Selenium (Se) Dissolved	mg/l	200.7	6 months	0.02
Silver (Ag) Dissolved	mg/l	200.7	6 months	0.05
Sodium (Na) Dissolved	mg/l	200.7	6 months	NA
Solids-Total Dissolved (TDS)	mg/l	SM2540C	7 days	400
Solids-Total Suspended (TSS)	mg/l	SM2540D	7 days	NA
Specific Conductance (lab)	µmhos/cm	SM2510B	28 days	NA
Sulfate (S04)	mg/l	300	28 days	250
Thallium (Tl) DISS	mg/l	200.7	6 months	0.002
Total Alkalinity	mg/l as CaCO3	SM2320B	14 days	NA
Total Colifoms	org/100ml	Colilert	24 hours	2.2
Total Petroleum Hydrocarbons	mg/l	8015B-DRO	7 days extraction/40 day after extraction	0.0005
Uranium (U) DISS	mg/l	200.7	6 months	0.0168-0.03
Vanadium /Y) Diss	mg/l	200.7	6 months	0.1
Zinc (Zn) DISS	mg/l	200.7	6 months	2
*All analytes will be analyzed at the same laboratory except E Coli and Total Colifoms. These parameters will be analyzed at a separate laboratory that specializes in bacteria analysis.				
** The abow standards onginated from the Colorado Department of Public Health and Environment Regulation NO 41. The more stringent standard will be used if more than one standard exists for a parameter.				

The landowner is encouraged to accompany the third-party representative r, point out items to be included in the documentation, and discuss any items included in the survey and report. The landowner may also document the survey using their own photographs, video camera, and notes. The landowner may choose to collect their own water quality sample and send their portion of the sample to a lab of their choice. If this choice is made, results from the test needs to be shared with the operator to be placed in each landowner's file. The operator may also request copies of any landowner photographs and notes to ensure a complete file of the survey is compiled.

Upon the completion of the pre-blast survey, the third-party firm will assemble all documentation collected and compile a comprehensive report stating their findings and the results of the water quality testing, as applicable. This report along with all photographic and video documentation will be digitally saved and shared with the property owner and the operator. A paper copy of the report will be kept on site for DRMS review, as needed.

3. Blast Plan

It is the goal of the site operator to complete all blasting activities safely and with minimal disturbance to the surrounding areas. The site operator plans to use a US Bureau of Alcohol, Tobacco, Firearms, and Explosives ("ATFE") blasting contractor or their internal licensed blaster to conduct all blasting activities on site to support the development and production of the quarry. Only qualified and licensed contractors will be allowed to interact with the explosives. This plan is prepared in accordance with Mine Safety and Health Administration ("MSHA") Code of Federal Regulations ("CFR") 30 Part 56 Subpart E – Explosives and Office of Surface Mining Reclamation and Enforcement ("OSM") Blasting Performance Standards.

Included in the preliminary blasting plan are:

- Blast pattern design and drilling plan
- Explosives types to be used
- Control of ground vibrations
- Storage of explosives
- Dates and times of blasting
- Notice of blasting
- Transportation of explosives
- Loading of explosives
- Signage
- Blast area clearing and firing procedures
- Post blast inspection procedures
- Misfire procedures
- Flyrock and air blast control plan

- Documentation

Copies of the blasting plan will be kept on file in the following locations:

- Site office
- Blasting contractor's office

4. Blast Pattern Design and Drilling

Personnel at the quarry will clear and prepare each area to be drilled and blasted according to the established quarry development sequence. The quarry manager, in consultation with the blasting contractor, will design an appropriate drill pattern to ensure safe and efficient production in each area of the quarry. This includes burden and spacing design, hole depth, number of holes, explosive densities, initiation sequencing pattern, stemming and other factors included in the general blasting practice as presented in Figure 1.

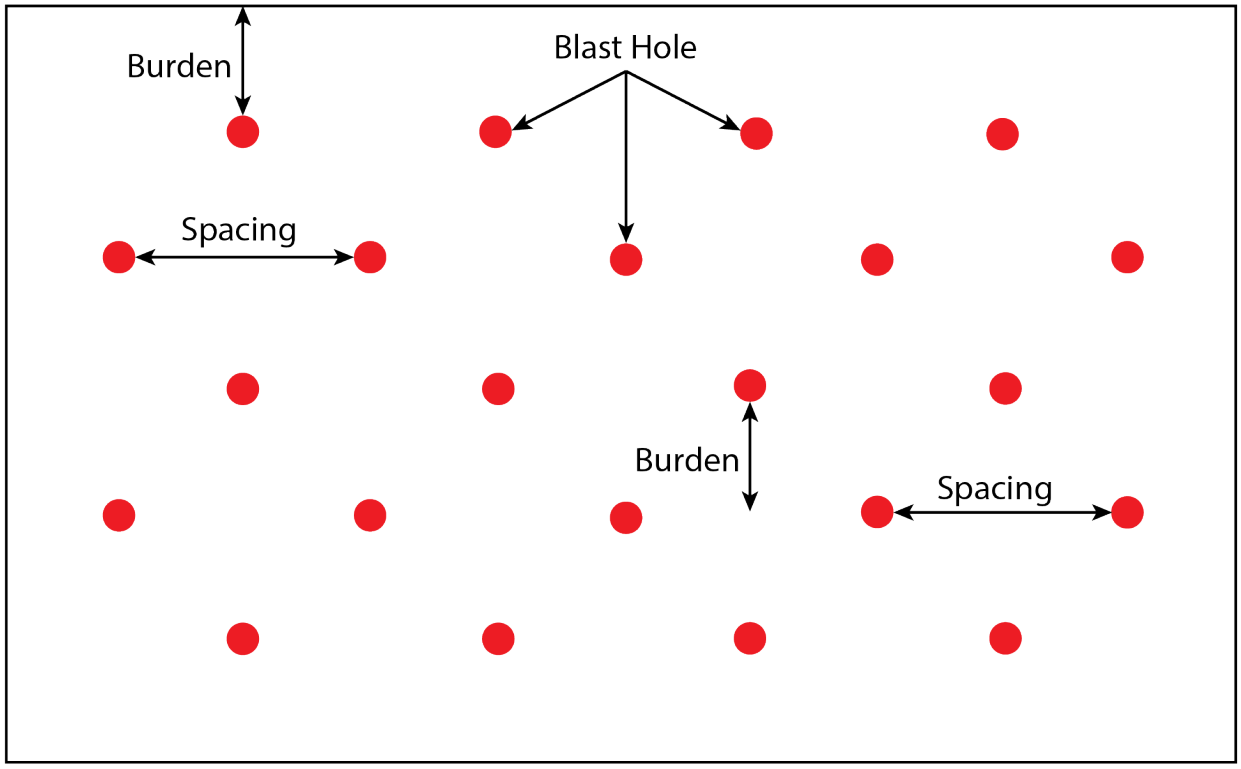


Figure 1. Blast pattern layout as described by burden and spacing.

Typical blast pattern designs anticipated are listed below; however, may be subject to change with each individual blast:

- Hole diameters will range from 3.5 inch up to 7.5 inch varying for pioneering, site development, and production blasts.

- Blast pattern dimensions will range from 6 feet x 6 feet up to 20 feet x 20 feet varying for pioneering, site development, and production blasts.
- Typically, hole depth ranges from 6 feet to 50 feet per bench including 10% of bench height to be added as sub drill depending on ground conditions and hole location.
- Typically, blast holes will be drilled in a vertical orientation for production. Holes will be angled as needed for specific design features such as the final wall configuration and if needed in production holes.
- The number of holes on each pattern will vary depending on the size of the area cleared and current needs of the operation.
- The powder factor will be varied to analyze the optimal energy input to achieve the desired fragmentation.

Drilling will be completed by a typical rotary/top hammer blasthole drill or down-the-hole ("DTH") hammer blasthole drill. Dust will be controlled via dust collection units and water mist sprays. It is anticipated that drilling will be undertaken initially as a third-party contract but may transition to a mining function undertaken by the primary site operator.

5. Types of Explosives Used

The typical blasting products to be used at the site are bulk explosives and blasting accessories. Bulk explosives will include the following agents:

- Straight emulsion: a slurry product consisting of liquid ammonium nitrate and diesel fuel;
- Ammonium Nitrate and Fuel Oil ("ANFO"): a typical bulk explosive used in blasting; and
- Blends of emulsion and ANFO;
- Any other products deemed necessary by third-party blasting contractor.

Blasting accessories will include:

- Detonator: NONEL or Electronic blasting caps which are small sensitive primary explosive devices used to denote a larger, more powerful, and less sensitive secondary explosive.
- Cast boosters: a sensitive explosive charge which acts as a bridge between the blasting cap and the bulk explosive and is appropriate to the hole size; and
- Any other products deemed necessary by the third-party blasting contractor.

6. Control of Ground Vibrations

When an explosive charge is detonated within rock, the charge converts instantly to a hot gas at extreme pressure. A steep wave front travels into the rock, crushing it for 2 to 4-hole diameters. Radial cracks start to form as the cavity is expanded. The expanding gases continue to work on the rock, which extends the cracks and moves the rock upward and outward. Breaking and movement takes place within the intended area of the blast. This activity consumes most of the blast's energy, but a small left-over portion leaves the blast area as elastic ground vibrations and air waves. Elastic is used to define that the waves no longer permanently deform the rock mass.

Regulatory limits to control ground vibration are met through the control of the maximum charge weight per delay relative to the distance to the significant structure. The further a significant structure is from the blast, the larger the allowable charge weight per delay can be.

The former United States Bureau of Mines ("USBM") was the lead agency in studying blast effects on low- rise, residential type structures from 1910 until its closure in 1996. One of the principal objectives of the agency was to obtain a wide spectrum damage criterion that could be adopted by civil regulatory agencies in fashioning blasting regulations that would prevent threshold damage. Threshold damage refers to the most superficial, marginally visible, hairline cracking of interior wallboard such as that which develops in all homes independent of blasting (Siskind, 2000). Threshold damage is not readily visible to the homeowner and often requires the use of special lighting and magnifying lenses to be seen by researchers.

The USBM prepared three comprehensive reports over a period of 40 years that culminated in the publication of USBM Report of Investigation ("RI") 8507 in 1980. This study involved new measurements and inspections that were combined with results of nine previous studies. In total, results of 718 blasts involving 150 structures were included. RI 8507 presents a criterion (Figure 2) that delineates safe blasting limits to prevent threshold vibration damage to low-rise, residential type structures for a wide spectrum of frequencies.

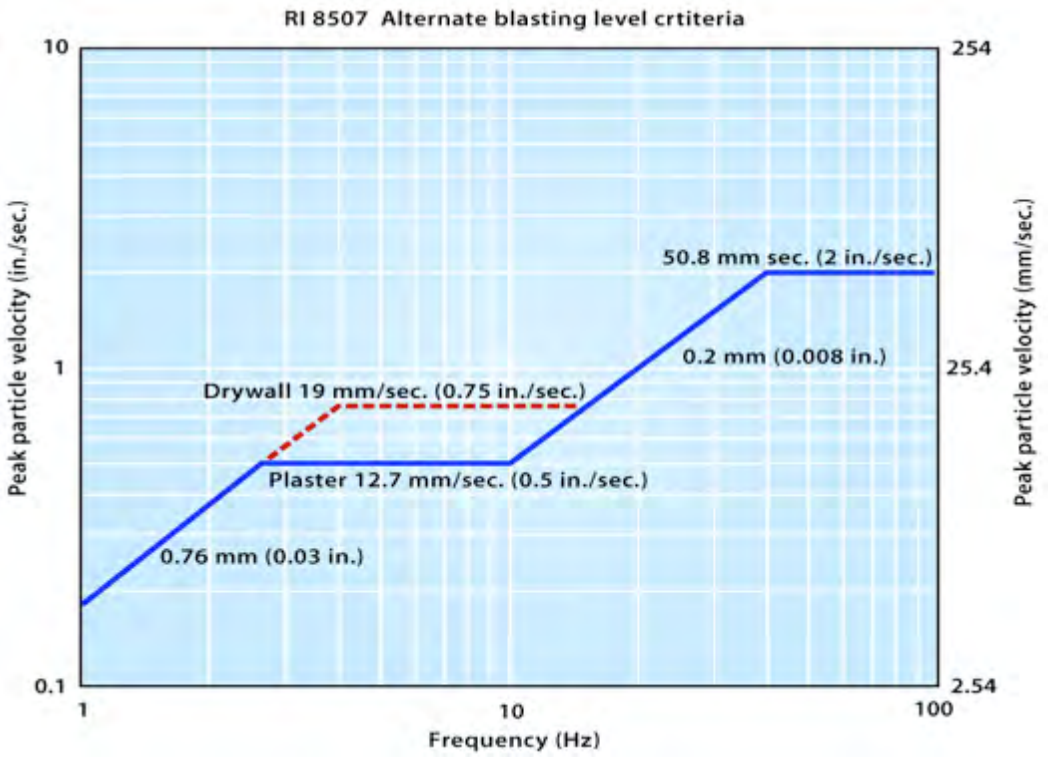


Figure 2. RI 8507 Threshold Damage Criterion.

Particle velocity of the ground near the residence is presented as the most suitable criterion for associating ground vibration with building damage. Per the RI 8507 report, two inches per second particle velocity is recommended as a safe vibration level. The limits imposed by this criterion are very conservative and contain a large margin of safety for the protection of various structures.

The blasting contractor will maintain the appropriate charge weight per delay to ensure that the USBM maximum particle velocity limits are not exceeded at significant structures. Blasts will be designed to stay within the recommended vibration limit of two inches per second at all significant structures including residential dwellings, businesses and water wells.

Generally, the closest structure to the blasts at the quarry will always be the Central City Parkway. Distance from any given mining phase to the Central City Parkway varies between a few tens of feet to greater than one thousand feet. Typically, blast induced vibrations do not affect roadways and highways. By design, roadways and highways are constructed for heavy traffic and vibrations generated by various sized vehicles (tractor trailers, heavy haul loads, and light duty vehicles).

Due to the lack of data regarding roadway and highway blast induced vibration damage, thresholds information found in the 18th Edition of the International Society of Explosives Engineers Blasters' Handbook ("Blasters' Handbook"), the 2016 version will be utilized. The Blasters' Handbook addresses blast vibration limits for mass concrete and references general specifications limiting vibrations in green concrete. This study was completed for the

Tennessee Valley Authority ("TVA") in 1976. In Table 2 below, the recommended maximum Peak Particle Velocity ("PPV") is given by the formula in the right-hand side of the table. To ensure the safety of the Central City Parkway, blasts will be designed to ensure vibrations will not supersede the recommended PPV (12 Inches per second) for concrete cured 10 days or more and with a distance greater than 250 feet (20 IPS x .6 DF = 12 inches per second).

Table 2. TVA Blasting Vibration Limits For Mass Concrete

TVA Blasting Vibration Limits For Mass Concrete	
Concrete Age From Batching	Allowable PPV = PV x DF mm/s (in./sec.)
0 to 4 hours	102 (4) x DF
4 hours to 1 day	152 (6) x DF
1 to 3 days	229 (9) x DF
3 to 7 days	305 (12) x DF
7 to 10 days	381 (15) x DF
10 days or more	508 (20) x DF
Distance Factor (DF)	
Distance meters (feet)	Distance Factor (DF)
0 – 15 (0 – 50)	1.0
15 – 46 (50 – 150)	.8
46 – 76 (150 – 250)	.7
>76 (>250)	.6

The closest non-well and non-road structure to the quarry appears to be ~1,000 feet to the south – the Sasquatch Gas Station and associated structures as well as the Black Hawk City Water Plant, as shown on Figures 3 and 4. Additional structures are detailed later in this plan.

Vibrational waves from blasting will not be felt at the structures surrounding the quarry. Blast generated vibrational waves travel radially outwards. A line drawn from the blast location to the southern gas station and Black Hawk City Water Plant, as shown on Figure 3, passes through the rock of the quarry initially then through the air prior to reaching the area. Vibrational waves from blasting cannot be transmitted through a mixed medium; therefore, property owners south of the quarry may hear blasting, but they will not feel vibration because of blasting.

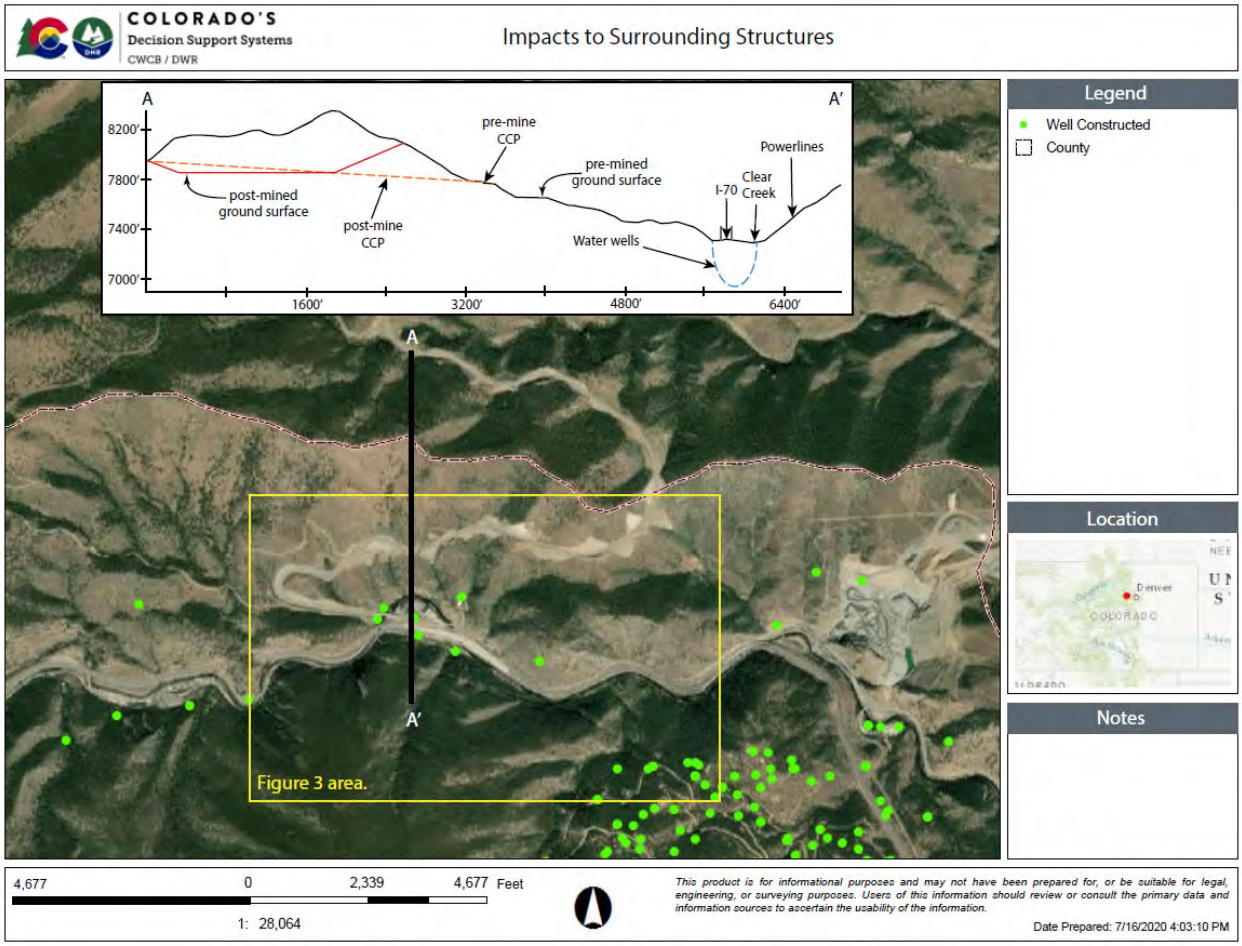


Figure 3. Impacts to surrounding wells from blasting at the Young Ranch Resource. Base image from the Colorado Division of Water Resources.

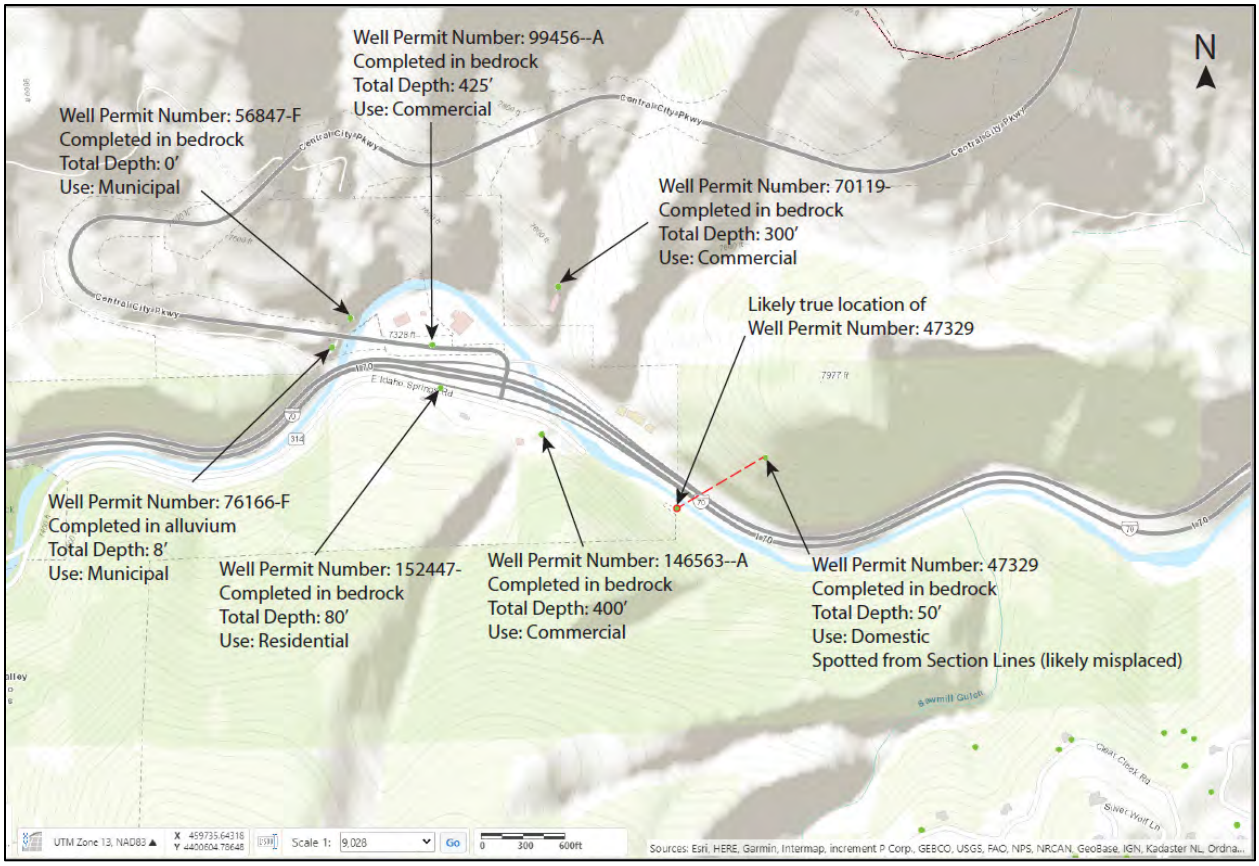


Figure 4. Water wells within 0.5 miles of the Young Ranch Resource. No water wells are located north of the site and within range. Base image from the Colorado Division of Water Resources.

7. Storage of Explosives

At no time will explosives be stored on site. A licensed third-party blasting contractor will bring to the site all bulk explosives and explosives accessories on the day of the blast. Any unused quantities of bulk explosives and explosive accessories will be taken off site at the end of the blast by the same contractor that brought them on site. While on site, all explosives will be closely monitored and supervised by qualified personnel.

8. Dates and Times of Blasting

After a pattern is drilled, the quarry manager will contact the third-party blasting contractor with the number of holes, hole diameter, pattern dimensions, hole depths, and condition of the holes. From this information the volume of bulk explosives and blasting accessories will be determined. The quarry manager and the blasting contractor manager will schedule the blast for an appropriate date and time. Blasting will occur between the hours of 9:00 AM and 5:00 PM. The number of blast events per week will be based on the maximum pounds of explosives

allowed in the site's Air Quality Permit. The volume of explosives used will not be greater than the approved daily volume approved through the Air Quality Permit.

The quarry manager will make every effort to schedule all blasts Monday through Friday; however, from time to time a blast may be necessary on Saturday or Sunday for reasons outside the operator's control (e.g., to mitigate unsafe terrain or features). The blasting schedule will be published and distributed according to Central City's standards detailed in Section 9 – Noticing of Blasting. If an unscheduled blast is required (exclusively due to public or operator health and safety), the operator shall notify residents within 1/2 mile of the blasting site using audible signals and document the reason for the unscheduled blast.

9. Noticing of Blasting

The blasting schedule will be published and distributed according to Central City's standards as outlined herein. The operator will publish the blasting schedule in a newspaper of general circulation in the locality of the blasting site at least 10 days, but not more than 30 days, before beginning the blasting program. The operator will distribute copies of the blasting notice to each occupant within 200-feet of the proposed blasting site property boundary (e.g., DRMS permit area) a minimum of 24-hours in advance of a blast..

The operator shall republish and redistribute the blast notice prior to initiating a new phase. The blasting notice will contain, at a minimum: the name, address, and telephone number of operator; identification of the specific areas in which blasting will take place; dates and time periods when explosives are to be detonated; methods to be used to control access to the blasting area; and the type and patterns of audible warning and all-clear signals to be used before and after blasting.

The local Fire Department – Central City – will be notified a minimum of 30-minutes prior to any blast initiation.

10. Transportation of Explosives

The transportation of explosives to and from the site will be handled by the same licensed third-party blasting contractor conducting blasting on site. On the day of the scheduled blast, the predetermined amount of bulk explosives and blasting accessories will be transported to site in vehicles that are specifically designed and equipped to carry explosives from site to site. After a blast is loaded and shot, any product not consumed in the day's blast are inventoried, volumes of bulk explosives and accessories used and unused will be documented, and surplus materials are transported back to the secure location in the same vehicles used to transport the explosive materials to site.

11. Loading of Explosives

On the day of a scheduled blast, the third-party blast crew and trucks will arrive at the site with bulk explosives and blasting accessories. The typical process for loading explosives for a production quarry blast is:

1) A NONEL or Electronic blasting cap and cast booster are placed into each hole with the down hole lead line secured at the collar or top of the hole.
2) With the cap and booster securely in the hole, the bulk explosives are loaded using the following techniques based on hole condition (Figure 5).
    a) If the hole is wet, the end of a hose, approximately 100 feet long, is placed at the bottom of the hole and a 100% emulsion product is pumped in from the bottom displacing the water in the hole.
    b) If the holes are not directly accessible by the bulk explosive blasting truck, the hose is moved from hole to hole. At this point, if the holes are dry, the 100% straight emulsion product is loaded from the top of the hole. If the holes are wet the same procedure is followed as noted above.
    c) If the holes are dry and the truck can access them, an emulsion and ANFO blend may be used. The emulsion/ANFO blend is loaded into the top of the hole directly from the blasting truck.
3) By design, the bulk explosive will not fully fill the blast hole. The remaining open portion of each hole will be filled with stemming (crushed stone) to contain the explosive (Figure 5).
4) The final step to the loading procedure is to connect each of the down hole lead lines together according to the blast timing design to provide a sequential blast.

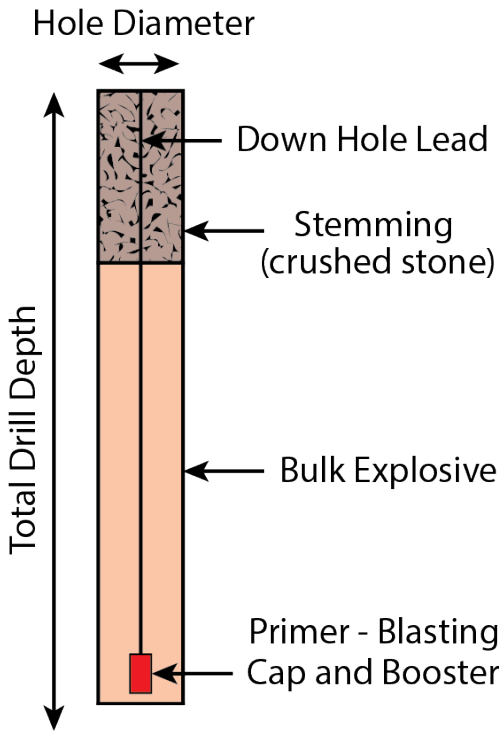


Figure 5. Typical drill hole loaded with explosives prior to blasting.

12. Signage

Blast notification signs will be placed by the operator or quarry manager at the site entrance and along the Central City Parkway to notify passersby of the blast schedule. The blasting area will be conspicuously flagged or marked within the immediate vicinity of the charge holes.

At all entrances to the permit area from public roads or highways conspicuous signs will be placed which state “Warning! Explosives in Use”. These signs will clearly explain the blast warning and all clear signals that are in use and explain the marking of blast areas and charged holes within the permit area.

13. Blast Area Clearing and Firing Procedures

Prior to a blast being initiated, all quarry personnel, visitors, vendors, and customers will be removed from the mining, processing, and other active areas and stationed at the entrance to the permit area. The site manager or lead blaster (from the third-party blasting contractor) will inspect the mining, processing, and other areas to confirm all personnel are cleared from the blast area. The site manager or operator will confirm either visually or through communication with Central City personnel that the Parkway will be clear during the firing of the shot.

Blast guards will be posted at all entrances to the permit boundary to make sure the access corridors through the active mining area are secure during the blast process. Blast guards will be in contact with the lead blaster via two-way radio on a channel to be determined at the time the operation begins construction. Blast guards will have the authority to stop the blast at any time, up to the time when the blast is initiated. In the case of an emergency, blast guards will notify the lead blaster and stop the blast until the emergency situation is resolved.

Access corridors will only be secured for the length of time needed to successfully complete the blast. The typical length of a blast is less than 30 minutes. Upon blast completion, access corridors will be released for normal use. The length of time the access corridors will be secured and guarded will be kept to a minimum and only done so to ensure the safety of all persons using them.

Audible blast signals, originating from a vehicle mounted siren or handheld airhorn, will be utilized according to the following schedule:

- Three (3) short siren soundings 5 minutes prior to shot,
- Two (2) short siren soundings 1 minute prior to shot, fire in the hole
- One (1) long siren sounding for all clear.

Once all personnel are accounted for, all blast guards are in place, and the blast area has been confirmed to be clear, the lead blaster will initiate the blast.

14. Post Blast Inspection Procedures

After the blast is completed, the lead blaster will re-enter the blast area and inspect the entire blast to make sure all holes were detonated. No one will be allowed back into the mining, processing, or other active areas until the lead blaster has inspected the blast and confirmed that it is safe to resume work. At this time the ‘All Clear’ audible signal will sound – One (1) long audible siren blast will be completed by the blasting contractor and blast guards will release their blocks and corridors will be open again for travel. Personnel will then be allowed back to work and customers will be allowed back to the product loading area while business returns to normal.

15. Misfire Procedures

A misfire is the complete or partial failure of a blast hole to detonate as planned. With advancements in product quality and blast technology, misfires rarely happen; however, in the event of a misfire, the lead blaster will not release the immediate blast area for return to work. The lead blaster will wait 30 minutes for the electronic initiation system and 15 minutes for the NONEL initiation system before completing a more thorough investigation of the cause of the misfire. Depending on the location of the blast, the lead blaster, at his discretion, can release areas not in the immediate area of the blast while waiting the required 30 minutes for electronic

initiation system and 15 minutes for NONEL initiation system. This may include the access corridors and other facilities on the site.

If the investigation reveals the detonator can be re-used and re-shot, the blast area will be cleared again, blast guards reestablished, the blast warning procedure will be reinitiated, and the detonator blasted. If the detonator cannot be re-used and blasted, the area will be secured, and all mining personnel warned of the hazard. The area will be carefully excavated under the supervision of the lead blaster or Quarry Manager until the blasting cap and booster are located.

16. Flyrock and Air Blast Control Plan

Flyrock is defined as dirt, mud, stone, or fragmented rock that is propelled from the blasting area by the force of the blast. Flyrock is never expected in a blast, but due to the nature of explosives, it can happen. Flyrock can be minimized and eliminated by following the basic blasting guidelines below. Typically, air blast issues are directly related to the same issues as fly rock. An air blast is the detonation of explosive where the explosive's energy is not directed into the rock mass but is allowed to escape. The operator will adhere to these guidelines for all blasting completed on site.

Proper blast pattern design will be used including proper burden and spacing based on hole size and efforts will be made to ensure there is adequate space in front of the pattern to allow fractured material to move horizontally. Proper blast hole loading and adequate hole quality will ensure explosive column height and stemming material heights meet calculated requirements for safety. Appropriate blast pattern timing sequences will be used so the pattern is shot systematically and in proper order.

17. Documentation

The third-party blasting contractor will prepare a paper or electronic record of each blast completed at the quarry. Copies of each blast report will be kept on file in the scale house/office and the third-party contractor's office. All records, including blast statistics and blast monitoring, will be kept on file for a minimum of 3 years. The following information will be recorded:

- The name of the operator conducting the blast
- Location, date, and time of the blast
- Name, signature, and certification number of the blaster
- Identification, direction, and distance, in feet, from the nearest blasthole to the nearest significant structure outside the permit area
- Weather conditions, including those which may cause possible adverse blasting effects
- Type of material blasted
- Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern

- Diameter and depth of holes
- Types of explosives used
- Total weight of explosives used
- Maximum weight of explosives detonated within any 8 millisecond period
- Maximum number of holes detonated within any 8-millisecond period
- Initiation system (method of firing and type of circuit)
- Type and length of stemming
- Mats or other protections used
- Type of detonator used and delay period used
- Seismographic and air blast records to include:
    - Type of instrument, sensitivity, and calibration signal or certification of annual calibration
    - Exact location of instrument and the date, time, and distance from the blast
    - Name of the person and firm taking the reading
    - Name of the person and firm analyzing the seismographic record
    - The vibration and air blast level recorded
- Reasons and conditions for each unscheduled blast

18. Blast Monitoring Procedure

The number of seismographs used to monitor blasts will be stipulated following the Scaled Distance Table 4 below taken from the Colorado Department of Labor and Employment, Division of Oil and Public Safety, Explosives Regulations, 7 C.C.R 1101-9, May 1, 2019.

When seismic monitoring is not performed, the maximum weight of the explosive detonating within any 8-millisecond time period shall not exceed the amount allowed by a calculation using the scaled distance factors given in Scaled Distance column of Table 6-10.

The following equation shall be applied when utilizing the scaled distance calculations to control blast-induced vibration.

$$W = \left(\frac{D}{D_s}\right)^2$$

Where: Ds = Scaled distance ($ft/lb^{0.5}$)

D = Distance to the nearest structure (ft)

W = Weight of explosive detonated within any 8 millisecond window (lb)

Example Maximum Charge Weight per Delay (W) Calculation:

Given: Ds = 55 ($ft/lb^{0.5}$)

D = 500 ft.

therefore

$W = (500 / 55)^2 = 82.6$ lb

Table 4.*	**Blasting Vibration and Air Over-Pressure Standards**
Distance From Blast (Ft)	**Option 2 Scaled Distance Factor Units Are $Ft/Lb^{0.5}$**
0 to 300	50
301 to 5000	55
5001 and Greater	65

*Table 4 is Table 6-10 from the Colorado Department of Labor and Employment, Division of Oil and Public Safety, Explosives Regulations, 7 C.C.R 1101-9, May 1, 2019.

Seismic instrument(s) will be used to measure ground vibration and peak particle velocity. Measurements will be taken at the closest significant structure (home, building, well, etc.). Monitoring equipment will have an upper frequency range of 200 Hz or greater. With the exception of the Central City Parkway, the site will utilize the USBM Threshold Damage Criterion maximum peak particle velocity limits shown in Figure 2. All attempts will be made to keep peak particle velocities well below the proposed maximum allowable limits.

Microphone(s) mounted on the seismograph(s) will be used to measure air over pressure (air blast) and noise. Measurements will be taken at the closest significant structure (home, building, road, well, etc.). The site will utilize the OSM maximum over pressure limits shown below in Table 3. All attempts will be made to keep over pressure well below the proposed maximum allowable limits.

Table 3. OSM Peak Over Pressure Limits

Lower frequency limit of measuring system (Hz ± 3 dB)	**Maximum level (dB)**
2 Hz or lower—flat response	133 peak
6 Hz or lower—flat response	129 peak

19. Structure Complaints

If after blasting activities are completed, a neighbor discovers potential damage to their structures (i.e. foundation or wall cracking, broken windows, rock falls, etc.), the neighbor should notify the operator. A complaint may also be filed with the Colorado DRMS. An operator's representative will typically visit the structure to start the investigation by the next business day. Based on the results of the initial investigation, the operator will arrange for additional data collection. A follow up survey of the structure condition will be conducted as needed to compare to the pre-blast survey. The inspection will, again, be recorded in the same fashion it was for the initial pre-blast survey. The new survey and the original survey will be compared to identify new versus pre-blast existing features. During the investigation, the DRMS, the neighbor, and operator will also review the blast monitoring results prepared by the independent contractor. Other data and reports may be reviewed as necessary to help determine the cause of the damage.

If the damage is determined to have likely resulted from blasting, the operator will review the blasting log of the recent blasting activity and make modifications to future blasting to reduce ground vibration and air over pressure instances. The operator, neighbor, and DRMS will monitor the damage over the course of 30 days (or longer if necessary) to determine if further damage occurs and to determine the proper course of repairs to the structure and the responsibility for any repairs. During this monitoring period, the operator will place a blast monitoring device on the property of the concerned neighbor to log vibration and air overpressure near the structure.

20. Identified Structures within ½ Mile of the Permit Area

Structures within 200 feet of the permit area were identified in Exhibit S of the DRMS application. All of these structures are shown on Map C-1. The landowner boundaries can also be found on Map C-1. Additional structures are outside the 200-foot offset but within a ½ mile offset of the permit area.

Structure agreements are signed by the operator and were either hand delivered to and signed by the recipient or delivered via certified mail for all structure listed in Exhibit S of the DRMS 112 permit application. A list of OSM defined structures that qualify as significant and require the pre-blast inspection process are included in the blast plan located in the site office. The owners of these structures will be notified prior to 30 days before blasting.

LEGEND

BOUNDARIES
- County or equivalent

BUILDINGS AND RELATED STRUCTURES
- Building
- Fence

LAND SURVEYS
- Public Land Survey System
- Range or Township line
- Range or Township labels — R1E T2N
- Section line
- Section numbers — 1-36
- Mining claim or property boundary
- Mining claim or property monument

ROADS AND RELATED FEATURES
- Highway
- Light duty road, paved
- Light duty road, gravel
- Unimproved road

RIVERS, LAKES, SHORELINES, AND CANALS
- Perennial stream/ditch
- Perennial river
- Intermittent stream/ditch
- Perennial lake/pond
- Intermittent lake/pond
- Buried aqueduct, flume, or conduit
- Waterwell — Well Name
- Drainage Basin

VEGETATION & SOILS
- Woodland

TRANSMISSION LINES AND PIPELINES
- Power transmission line; pole; tower
- Telephone/data line, above ground

MINING FEATURES
- DRMS Permit Boundary
- 200' Offset of DRMS Permit Boundary
- Fixed Structures
- Mobile Structures
- Mining Phases
- Berm/windrow
- Mine road

BASELINE CONTOURS
- Index — Approximate of indefinite
- Intermediate — Approximate of indefinite
- Supplementary

POST-MINING CONTOURS
- Index — Approximate of indefinite
- Intermediate — Approximate of indefinite
- Dump

Central City Property
Overhead Power
Existing Billboard
Culvert Typ.
Russell Gulch
Central City Parkway
Central City Culvert
Existing Billboard
Central City Culvert (inlet buried, no longer in use)
SEDIMENT CONTROL SUMP
Mine Site Entrance Lat=39.75894 Long=-105.45051
Extents of Development Pad
WASH PONDS
OFFICE & PARKING
MINE EXIT
FINISHED DEVELOPMENT PAD ELEVATION 8098'
MINE ENTRANCE
PROCESSING PLANT & SCALES
FINES CONVEYOR & UNDERPASS
Central City Parkway
Road to the top of Phase 1 area.
Gilpin County & Clear Creek County Line
Overhead Power
Central City Culvert
Existing Fence Gate
Existing Fence Gate
Existing Billboard
EXPANDED DEED RESTRICTED WILDLIFE MIGRATION CORRIDOR POST PHASE 2 MINING 19.2 ACRES
DEED RESTRICTED WILDLIFE MIGRATION CORRIDOR 77 ACRES
DEED RESTRICTED WILDLIFE MIGRATION CORRIDOR
Central City Culvert
Overhead Power
Central City Culvert
Central City Culvert
Central City Culvert
Central City Culvert
Central City Parkway
Central City Culvert
Clear Creek
Well Permit Number: 70119
Well Permit Number: 56847-F
Well Permit Number: 99456-A
Well Permit Number: 76166-F
Frei Gate
Buried Utilities
North Clear Creek
Overhead Power
State Highway 119

C-2 MINE DEVELOPMENT

Young Ranch Resource

DRMS Permit Number: M-2021-009 — Young Ranch

Mine Entry Location:	Latitude: 39.75894	Longitude: -105.45051
State: CO	County: Gilpin	Nearest Town: Central City
Section: 28	Township: 3S	Range: 72W PM: 6th
Major Watershed:	Clear Creek	**MSHA ID:** --

Map Scale: 1" = 100

0 100 200

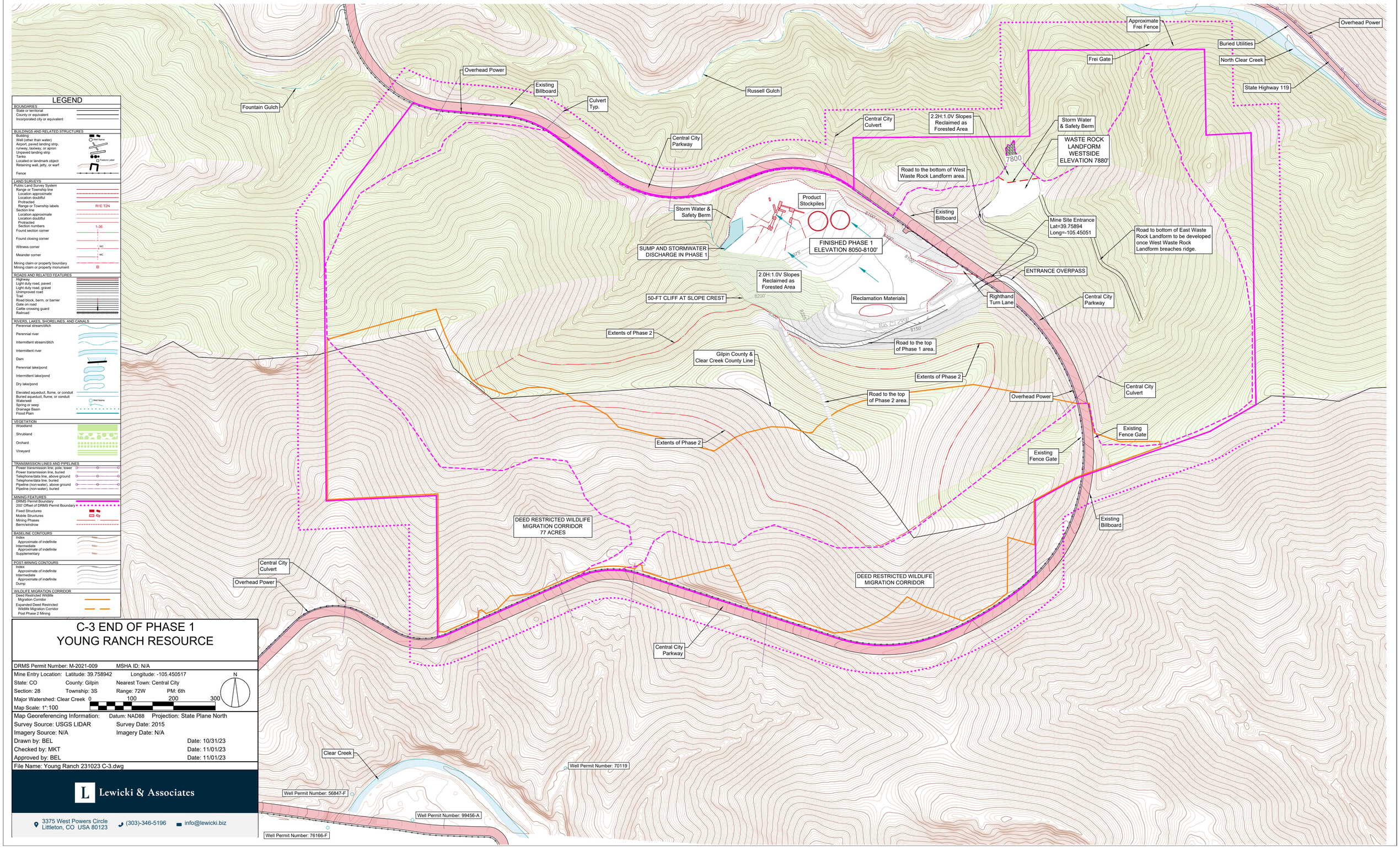
N

Map Georeferencing Information:	**Datum: NAD 83**	**Projection: CO NORTH**
Survey Source: County LiDAR	**Drawn by:** BEL	Date: 10/31/23
Imagery Source: Google	**Checked by:** BEL	Date: 10/31/23
Survey Date: 2016	**Approved by:** BEL	Date: 10/31/23
Imagery Date: 10/09/23		

File Name: Young Ranch 231018 C-2 Dev Pad

Lewicki & Associates

3375 West Powers Circle Littleton, CO USA 80123 (303)-346-5196 info@lewicki.biz



LEGEND

BOUNDARIES
- State or territorial
- County or equivalent
- Incorporated city or equivalent

BUILDINGS AND RELATED STRUCTURES
- Building
- Well (other than water) — Well Name
- Airport, paved landing strip, runway, taxiway, or apron
- Unpaved landing strip
- Tanks
- Located or landmark object — Feature Label
- Retaining wall, jetty, or warf
- Fence

LAND SURVEYS
- Public Land Survey System
- Range or Township line
  - Location approximate
  - Location doubtful
  - Protracted
  - Range or Township labels — R1E T2N
- Section line
  - Location approximate
  - Location doubtful
  - Protracted
  - Section numbers — 1-36
- Found section corner
- Found closing corner
- Witness corner — WC
- Meander corner — MC
- Mining claim or property boundary
- Mining claim or property monument

ROADS AND RELATED FEATURES
- Highway
- Light duty road, paved
- Light duty road, gravel
- Unimproved road
- Trail
- Road block, berm, or barrier
- Gate on road
- Cattle crossing guard
- Railroad

RIVERS, LAKES, SHORELINES, AND CANALS
- Perennial stream/ditch
- Perennial river
- Intermittent stream/ditch
- Intermittent river
- Dam
- Perennial lake/pond
- Intermittent lake/pond
- Dry lake/pond
- Elevated aqueduct, flume, or conduit
- Buried aqueduct, flume, or conduit
- Waterwell — Well Name
- Spring or seep
- Drainage Basin
- Flood Plain

VEGETATION
- Woodland
- Shrubland
- Orchard
- Vineyard

TRANSMISSION LINES AND PIPELINES
- Power transmission line; pole; tower
- Power transmission line, buried
- Telephone/data line, above ground
- Telephone/data line, buried
- Pipeline (non-water), above ground
- Pipeline (non-water), buried

MINING FEATURES
- DRMS Permit Boundary
- 200' Offset of DRMS Permit Boundary
- Fixed Structures
- Mobile Structures
- Mining Phases
- Berm/windrow

BASELINE CONTOURS
- Index — 8200'
- Approximate of indefinite
- Intermediate — 8250'
- Approximate of indefinite
- Supplementary — 8250'

POST-MINING CONTOURS
- Index
- Approximate of indefinite
- Intermediate
- Approximate of indefinite
- Dump

WILDLIFE MIGRATION CORRIDOR
- Deed Restricted Wildlife Migration Corridor
- Expanded Deed Restricted Wildlife Migration Corridor
- Post Phase 2 Mining

C-3 END OF PHASE 1
YOUNG RANCH RESOURCE

DRMS Permit Number: M-2021-009 MSHA ID: N/A

Mine Entry Location: Latitude: 39.758942 Longitude: -105.450517

State: CO County: Gilpin Nearest Town: Central City

Section: 28 Township: 3S Range: 72W PM: 6th

Major Watershed: Clear Creek

Map Scale: 1":100 (0 100 200 300)

N

Map Georeferencing Information: Datum: NAD88 Projection: State Plane North

Survey Source: USGS LIDAR Survey Date: 2015

Imagery Source: N/A Imagery Date: N/A

Drawn by: BEL Date: 10/31/23

Checked by: MKT Date: 11/01/23

Approved by: BEL Date: 11/01/23

File Name: Young Ranch 231023 C-3.dwg

Lewicki & Associates

3375 West Powers Circle
Littleton, CO USA 80123
(303)-346-5196
info@lewicki.biz

EXHIBIT D MINE PLAN

1. General Mining Plan

Map C-1 shows the current conditions of the Young Ranch Resource; all maps are located in Appendix 1. Mine access is via the CCP from Interstate 70. The total mined area will be 248.9 acres, the total affected and disturbed area to be reclaimed is 335.1 acres, and the permitted acreage will be 469.7 acres.

The Young Ranch Resource Quarry will produce gravel and metamorphic rock derived construction materials. Mining activities are expected to occur all months of the year and processing operations, which include washing (optional), screening and crushing of gravel, will occur concurrently. Mining will occur to the phase limits shown on Map C-2 and will progress as shown on the Exhibit C maps.

Expected annual average production is 1,000,000 tons during the first phase of mining. During phase 2-5, the Young Ranch Resource will produce between 2-3.5 million tons annually. Actual production rates will fluctuate based on market conditions. Raw material will be processed and sold as various commodity products: crushed rock, chip, ballast, riprap, landscape materials, and road base. “Naturals” or sandy fines from the screening operation are expected to make up approximately 15-30% of the raw material mined and when unsold, will be disposed of in the site’s main waste rock landform (WRL) or reused as substitute growth medium and overburden during reclamation. The WRL will be located northeast of the site on the east side of the CCP (Maps C-2 through C-7 and F-1). Access to and from the WRL is detailed later in Exhibit D.

The site is partially bound by fencing, which may be modified or expanded during various phases of mine development. The entire boundary of the site will be signed but may remain unfenced. Prior to opening a new mining phase, the operator may install fencing designed to segregate cattle grazing in the western adjoining parcels from the mining area. The wildlife corridor may not be fenced on the northern edge adjacent to the active mining areas while the southern boundary of the wildlife corridor will likely be fenced along the CCP and additional wildlife mitigation structures installed during phases of the mine’s development. The Ecological Resources Consultants, Inc. (ERC) Wildlife Mitigation Plan included in Appendix 2 details specific wildlife mitigation structures and their phased installation relative to mining.

Throughout every phase of mining, the south facing and most southerly face of the permit area adjacent to the CCP will be left unmined except those areas mined to create the internal mine access road. The ridgeline buffer will serve as the wildlife corridor and will include multiple new wildlife mitigation structures that include wildlife crossings, wildlife fencing, and exit ramps (Appendix 2). The wildlife corridor will remain for the full duration of the mine life and will begin as a 77.2-acre area as shown on Map C-2. Following Phase 5 mining, the wildlife corridor will be expanded to encompass an additional 54.3 acres resulting in a final 131.5 acres of unobstructed rangeland-seeded and forested wildlife habitat. Additionally, some of the Young Ranch, LLC-held land west of the permit area in the SE ¼ of Section 29, within Clear Creek County, will continue to be maintained as mixed forest and rangeland thus creating a combined 160+/- acre corridor for wildlife migration along CCP between mile markers 0.5 and 2.5. It should be noted that wildlife corridor outside of the proposed permit boundary is not intended to be mined or included in the permit as affected lands. Wildlife mitigation structures will also be installed along the CCP north of the site entrance and along CCP mile markers 3-6. The wildlife corridor, combined with wildlife maintained Young Ranch, LLC land and additional structures north and west of the active mining area, will represent extensive wildlife mitigation structures and wildlife habitat preservation along the CCP.

The final wildlife corridor will rise to >8100-foot elevation north of and above the Parkway at its highest point and will be 7450 feet in elevation north of the parkway at its lowest point and is shown on Maps C-2 and F-1. Wildlife habitat and structures are further detailed in Exhibit H: Wildlife Information and Appendix 2. The resultant wildlife corridor's 131.5 acres contain >120 million tons of unmined metamorphic bedrock. Safeguarding this landform in its undisturbed state, both maintains the existing wildlife migration corridor/habitat along this portion of the CCP and allows the undisturbed portion of this natural landform to function as a shield for the mine area as seen from the I-70 corridor. The wildlife corridor, therefore, also helps to preserve the overall mountain aesthetic as viewed from the I-70 corridor.

The geologic units to be mined are Precambrian metamorphic bedrock, Cretaceous intrusive rocks (Kqm), and a Neogene boulder gravel (Tbg). The gravel overlies the bedrock units and is thickest along the center of the site near the CCP in the eastern extents of the quarry and thins to 0 feet along the western extent of the site. The underlying Precambrian interbedded felspar-rich

(Gnmi), hornblende (Gnmh), and biotite gneiss (Gnbs) is cut by a Cretaceous intrusive porphyry. Talus (Qt) sporadically overlies the above detailed units. Figure 1 shows cross sections through the site with expected bedrock contacts. Cross section alignments are shown on Map C-1.

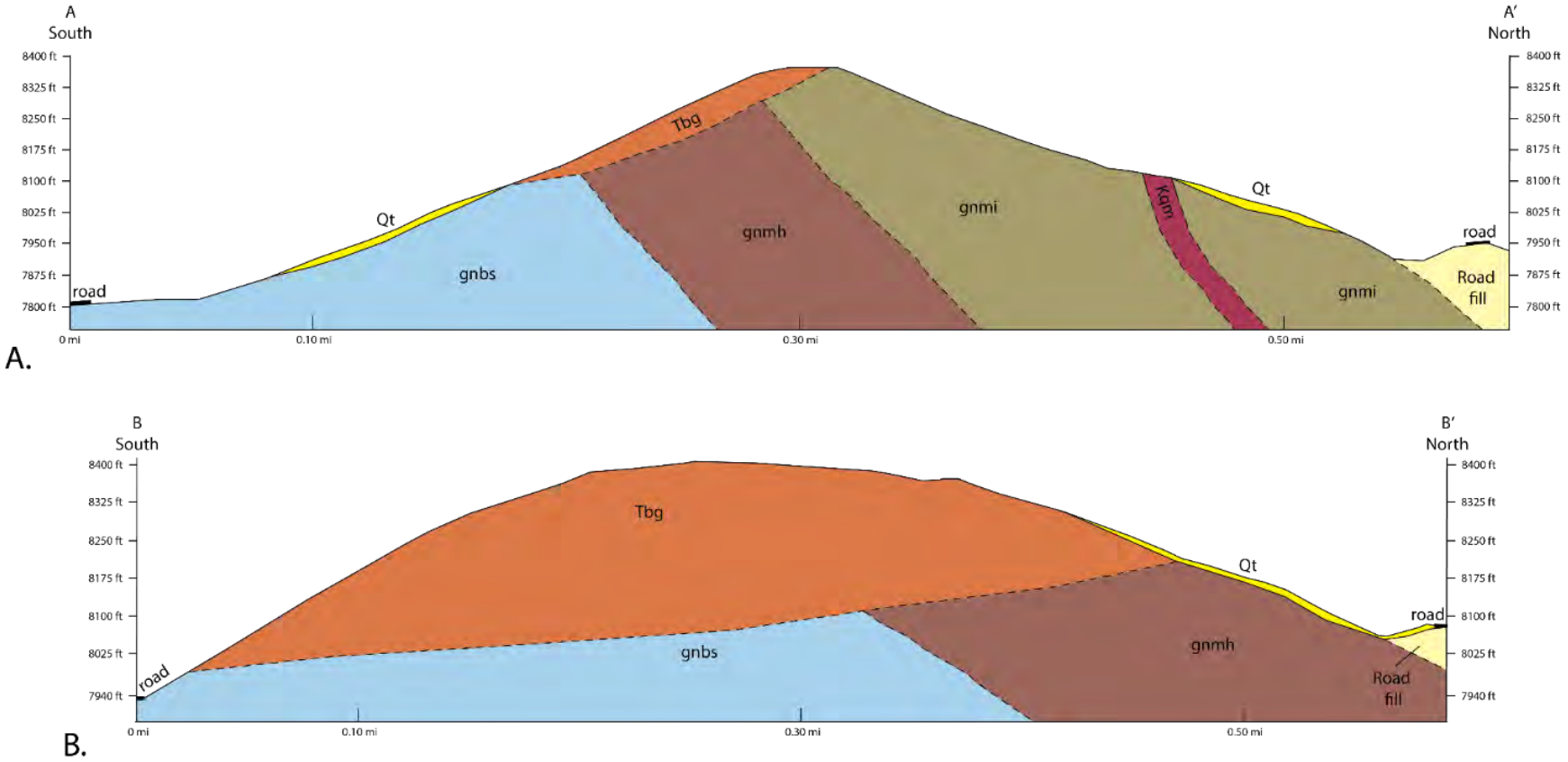


Figure 1. Schematic Young Ranch Resource cross sections. Geologic Units are identified in text. Cross section orientations are shown on Map C-2.

6.4.4(a)

The majority of this site and all bedrock material will be mined using drill and blast techniques. In general, each new mining phase will be mined by first excavating vegetation and 0-24 inches of decomposed plant material ("forest litter") and sandy loam with front-end loaders, excavators, and bulldozers from the first horizontal bench.

After forest litter and sandy loam surface horizons are removed, the underlying metamorphic bedrock and previously exposed cliff faces will be drilled and blasted to a specified rough sized product (an average size of 3-foot minus), transported to the onsite processing area, processed, and sorted. Each subsequent bench will be stripped just in time to create the new working bench.

The initial processing area will be created by filling the drainage southwest and adjacent to the mine site entrance off the CCP. Fill will be composed of initial stripped material from the start of Phase 1 mining. Whole trees stripped prior to mining will be used to provide mulchy growth medium, as possible. The processing area will include a portable crushing and screening plant, material stockpiling, fuel tanks, truck scales, main office, and related structures (Map C-2). At the crushing and screening plant, various sizes of product will be created and sorted into separate stockpiles. As equipment and stockpiles will be extremely portable throughout this time, such associated structures are not shown on Map C-2.

Mining will occur in five phases; Table 1 details expected rates, tonnage, and disturbance by phase. Phases will begin with initial mining and the creation of the site processing area as Phase 1 (Map C-3), followed by mining Phase 2 to elevation 8275' (Map C-4). Phase 3 will mine further down to elevation 8050' (Map C-5). Phase 4 will finish at elevation 7925' where a central mine access road will be created to convey equipment and materials from the eastern side of the quarry to the west half of the site (Map C-6). This central and internal mine access road may be converted into a realigned CCP at the sole discretion of Central City; realignment of the CCP is further discussed later in Exhibit D. Phase 5 will finish the quarry from the west side creating a uniform final elevation of 7850' excepting the central mine access road (Map C-7).

Table 1. Mining Phase Dimensions

Phase #	Map	Final Mined Surface (acres)	Total Disturbed Area (acres)*	Anticipated Recoverable Tons (millions)	Cumulative WRL (acres)	WRL Storage (million Tons)	Duration (years)**	Reclamation Timeframe (years from beginning)
Pre-mine/ Opening Fill	C-2	N/A	24.3	0.0	0.0	0.0	1	Absorbed in later phases
1	C-3	26.7	43.6	5.9	2.5	0.2	6	Concurrent to mining; absorbed in later phases
2	C-4	64.0	122.7	18.2	18.5	3.7	7	Concurrent to mining; absorbed in later phases
3	C-5	154.2	208.8	75.1	36.7	6.3	30	Concurrent to mining; absorbed in later phases
4	C-6	126.1	298.9	65.2	60.8	19.0	26	Concurrent to mining; end of mine life
5	C-7	120.2	335.1	106.8	66.9	6.2	43	Concurrent to mining; end of mine life

***Total disturbed/affected area includes mining slopes and flat surfaces, WRL slopes and flats, roads, and material and equipment processing and storage areas. **Phase 1 duration is based on 1M ton/annual rate; Phases 2-5 duration is based on 2.5M ton/annual rate. Actual rate is subject to market conditions.**

Final mining setbacks are shown on Map C-7. Mining setbacks relative to the permit boundary are as follows: 15’ – western extent; 0’ – southern extent along central mine access road; 20’ – eastern extent; 30’ – northern extent at the eastern toe of the WRL; 25’ – northern extent at the western toe of the WRL; 10’ – northern extent adjacent to the CCP.

Following the excavation of the Phase 1 road, resultant excavated material will be used to fill the low area south and west of the existing CCP in the processing area location.

Phase 1 mining will quickly follow the initiation of the site and the creation of the site access area. The initial opening, as shown on Map C-2, includes construction of the access road, processing area, and mobilization of portable processing equipment, site office, and truck scales. The first impacted filled low area that will become the main processing area will be stripped of vegetation and growth medium prior to blasting. Large trees will be segregated and chipped for mulch to be used in reclamation. Segregated plant debris (compacted mixed trees and sandy loam/forest litter) will be temporarily stored as reclamation materials intended to be used quickly during concurrent reclamation (Maps C-3 through C-7).

Creation of the processing area by filling the drainage depression adjacent to the main site access road will occur prior to shipping commercial loads of material. During Phase 1, portable processing equipment will be utilized within the processing area and will move from time to time to optimize operations. Following the creation of the processing area pad and mobilization of processing equipment, the remainder of Phase 1 will be mined in vertical 25’ benches (Figure 3, Map C-3). The access road used to reach the top of Phase 1 will be extended to reach the top of Phase 2 prior to the completion of Phase 1 mining. The north facing sloped resulting from Phase 1 mining will be reclaimed concurrently as shown in Figure 1 to a 2.0H:1.0V stable slope. Concurrent reclamation will occur on all slopes including slopes that will be remined in later phases. Reclaiming all slopes will further stabilize the landscape and minimize the visual impact of the Young Ranch Resource over the course of the mine’s life. Additionally, rapid reclamation will provide the added benefit of sound dampening and dust mitigation from previously mined hard rock slopes. Where possible, materials used in earlier phase reclamation and disturbed in later phases of mining, will be recollected and used in concurrent reclamation of said later phase.

Phase 2 will be mined following the completion of Phase 1 (Map C-4). The Phase 2 area will be mined vertically down from the top of the phase in nearly vertical 25’ benches to create a final 2.0H:1.0V slope (Figure 3 and Figure 4). Both bedrock and gravel will be mined during Phase 2. Where applicable, gravel will first be mined by dozer and/or front-end loader and will not require blasting. Following the removal of surface gravels, the underlying metamorphic bedrock will be mined in the same way as detailed in Phase 1. As the overlying Neogene Boulder gravel is mined, remnant gravel may be used as backfill. All gravel benches will be mined at a 1.0H:1.0V slope with final reclamation to a uniform 2.0H:1.0V slope consistent with bedrock mining final reclamation slopes. Features (e.g. rock outcrops) will be left on each mined bench as part of reclamation to create a ‘natural’ rough surface (Figure 2). Additionally, sporadically placed 25-foot ‘bench height’ intentional roughened faces, slopes and/or cliff bands will provide additional desired habitat for local ungulates that desire such cliff faces for protection from the elements and from predators. Areas not left as features will be backfilled and reclaimed prior to completion of mining in the bench below the reclaimed bench (Figure 3). Backfill will include comingled crushed rock, boulders, and waste fines generated on site.

Figure 2. View to the west of sporadically located cliff bands along the south face of Young Ranch and Young Ranch Resource properties. Photo captured May 6, 2020.

Phase 3 will mine both the overlying Neogene Boulder gravel and the underlying metamorphic bedrock (Figure 3, Figure 4, Map C-5). Phase 3 gravel and bedrock will be mined in the same manner as described in Phases 1 and 2 mining.

Phases 4 and 5 will be mined in the same manner as Phases 1 through 3 and will be composed exclusively of blasted bedrock. Excess waste fines and surface debris from all phases of mining will be permanently stored in a WRL located north and east of the processing area and the CCP.

Realignment of the CCP is an option that will be analyzed and approved at the discretion of Central City. We feel strongly that this is a desirable option for the City but have not received official guidance from the City regarding their current interests in pursuing this option. Designs shown on Maps C-6 and C-7 include grading designs that will accommodate the realignment. If

the city chooses not to pursue the realignment option, the grading plan will remain internal to the mine and no public access will be allowed off of the CCP at either end of the proposed road realignment corridor; said road corridor will continue to be used exclusively as an internal mine road. In the event the Young Ranch Resource seeks additional future mine access points that utilize this grading plan and alignment, the Young Ranch Resource understands that doing so would require both an access agreement with the city and CDRMS approval through their Technical Revision (TR) process. The internal mine road will remain post reclamation and serve as access to the area for post reclamation use and management and may, pending City approval, contain private Young Ranch Resource access points that connect the internal mine road directly to the CCP. If the City chooses to realign the CCP, the Young Ranch Resource, LLC will submit final, city approved, road design specifications and drawings to the Division for review and approval through the appropriate approval process prior to construction of any changes to the current design. A realignment of the CCP would require final design specifications that may include, among other things, a wildlife overpass and fencing in the area of the wildlife corridor and an underpass and on/off ramps to accommodate mine access to the realigned CCP.

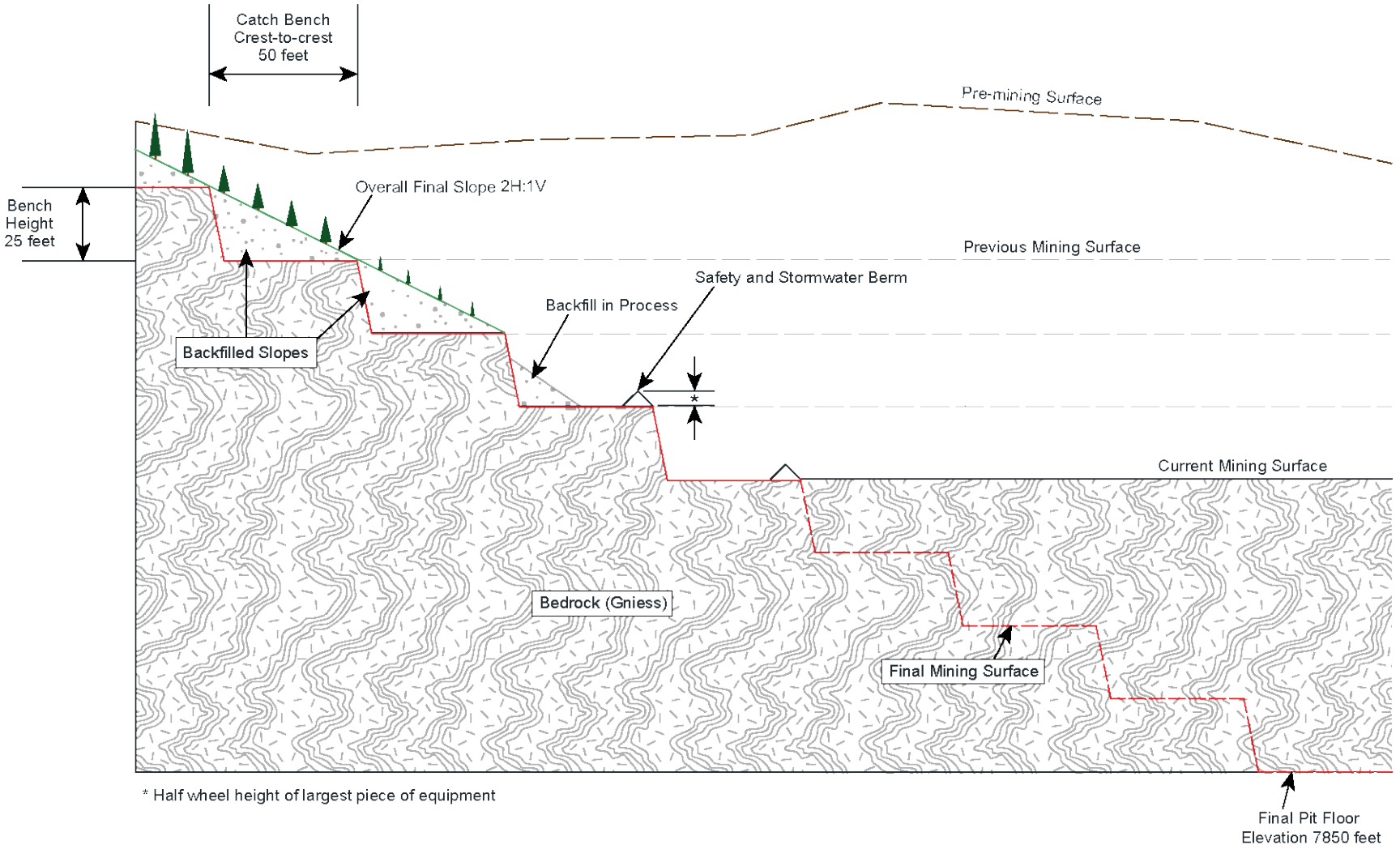


Figure 3. Schematic typical cross section of the Young Ranch Resource mine plan.

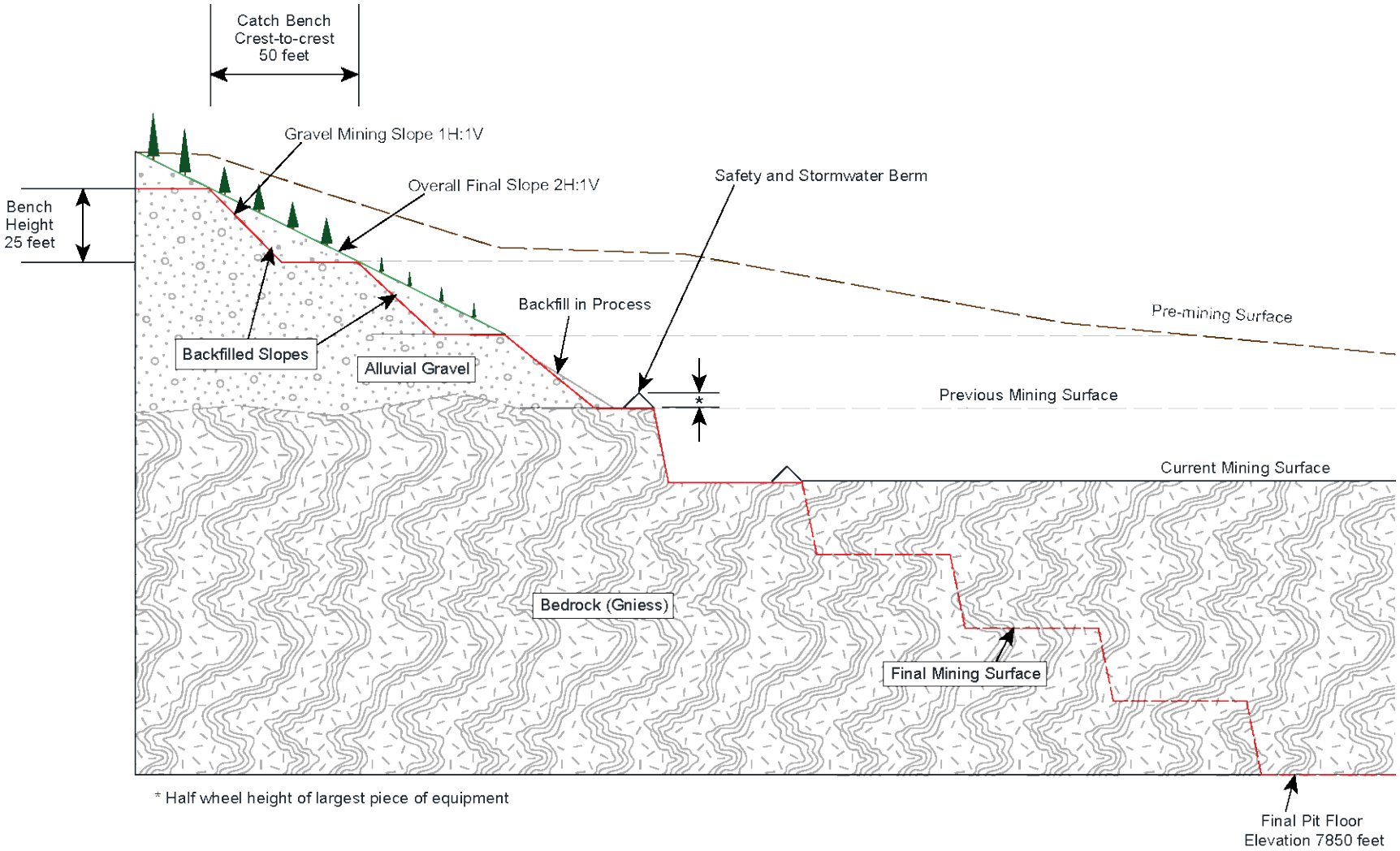


Figure 4. Schematic typical cross section of the Young Ranch Resource mine plan with the overlying Neogene boulder gravel included.

6.4.4(b)

Earthmoving will be performed in a variety of ways using many different types of equipment. Portable mining equipment such as loaders, dozers, trucks and excavators will be serviced on an as-needed basis onsite. Upon reclamation, all portable equipment will be removed from the site. The following list is the best estimate of equipment and vehicles that will be used onsite throughout the mine life:

- 2-4 front end loaders
- 1-3 bulldozers
- 1-3 large excavators
- 1 street sweeper
- 1 4000-gallon water truck
- Haul (dump) trucks (number will depend upon production needs)
- 15 and 24 ton on-road haul trucks (number will depend upon production needs)

A summary of fixed and portable installations that may exist on site at any given time is listed below.

- Portable asphalt plant with associated tanks
- Portable concrete plant with associated tanks
- Portable truck scales
- Portable office trailer
- Equipment parking and maintenance area
- Overflow resource stockpiling area
- Portable crusher and screening plant (may include washing)
- Portable conveyors
- Portable 10,000-gallon diesel fuel tank in secondary containment (110% of tank capacity)
- Portable lights with a generator for emergency after hours maintenance support

No true overburden is found at the site as bedrock underlies all rocky substandard plant growth medium. Significant growth medium is also absent throughout the site with decomposed plant

material on the north facing slopes and very gravely broken surface bedrock on the south facing slopes. Rough sandy loam is irregularly found across south facing slopes interspersed with bare bedrock and coarse native rock. Growth medium required for reclamation will be created from partially decomposed plant material, sandy loam, and site derived tree mulch paired with crusher fines, as needed. This method of creating substitute growth medium will reuse site derived nutrients and will serve as adequate growth medium in lieu of otherwise absent true growth medium stripped from pre-mined areas. In the event that recovered/composted plant debris medium proves inadequate for seed germination, mulch derived from site harvested trees as well as 'rock mulch' will be used to further enhance and protect substitute growth medium material from erosion. 'Rock mulch' is created from onsite coarse blasted rock and serves to reduce soil erosion and provide 'micro-climates' for seed germination by increasing shade, moisture retention, and protection from drying winds.

Material destined for the WRL will be hauled by trucks from the processing area via the underpass beneath the CCP. General designs for the underpass beneath the CCP are shown on Maps C-2 through C-7 as an approximate location, orientation, and dimensions. This underpass will be at least two-lanes wide and capable of safely housing two passing dump trucks during all seasons of the year. Final underpass designs and construction details will be approved by Central City and their engineers. Final designs and Central City approvals will be supplied to the Division as a TR prior to beginning construction on said design. Construction of the CCP underpass will occur as Phase 1 mining is underway and the processing area is developed.

The WRL will be constructed by edge dumping in lifts of approximately 50 feet in height. This will create an initial 1.0H:1.0V slope, which will then be bulldozed to the final 2.2H:1.0V slope to reclaim each WRL lift. A typical cross-section detailing the construction and final reclamation geometries of the WRL slope is detailed in Figure 5 and WRL reclamation is further detailed in Exhibit E: Reclamation Plan.

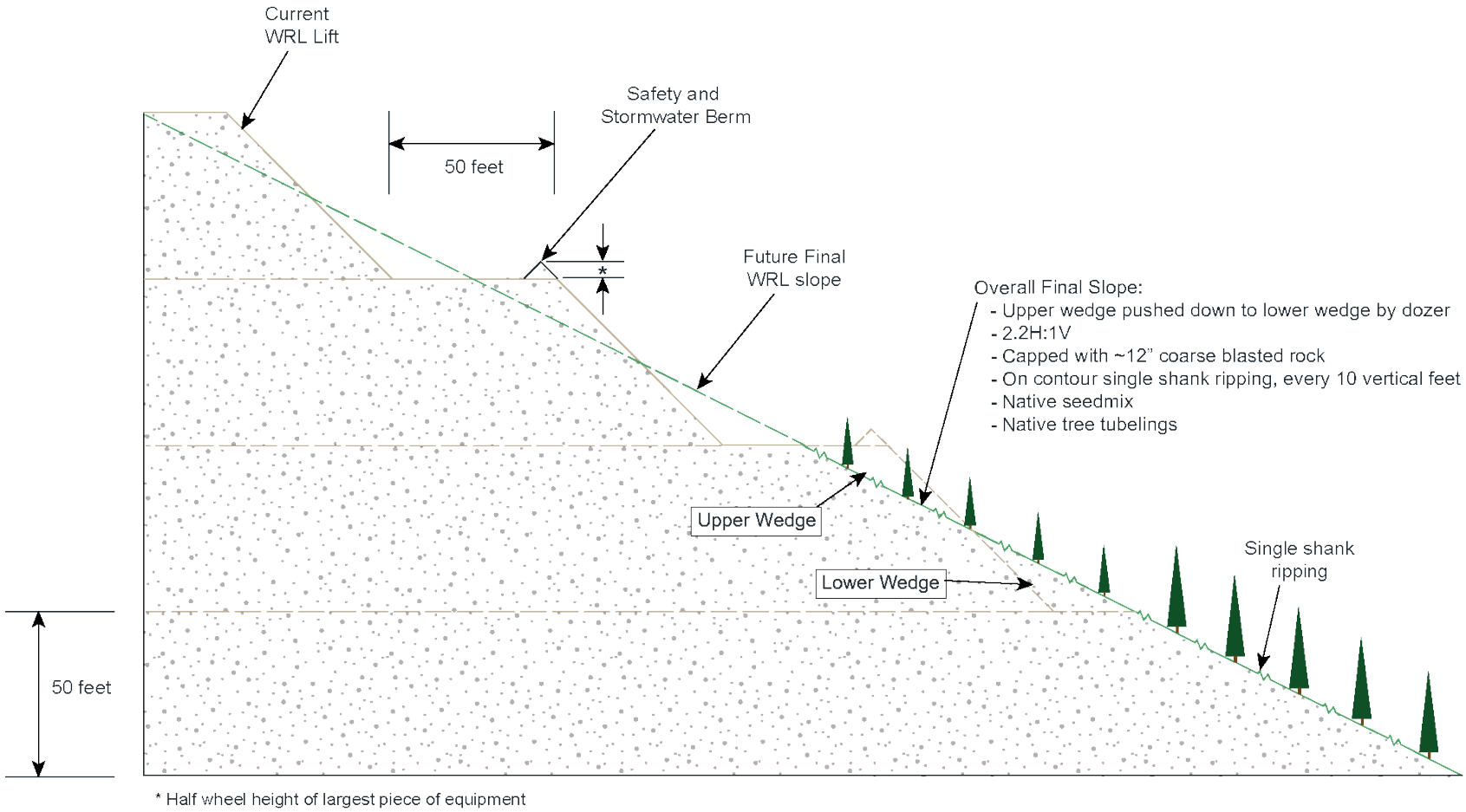


Figure 5. Schematic cross section of the WRL construction and reclamation designs.

During Phases 1-3, the WRL will have two areas, a western and eastern area which fill two respective low-lying areas (Maps C-3 through C-5). During Phase 4, the two areas of the WRL will be merged to one combined WRL (Map C-6 and C-7). Both WRLs will be constructed from excess waste fines and overlying weathered rock encountered during pre-mining stripping. The western WRL will be created first and a road will be created down to the first lift at the base of the WRL. Following creation of the road, the first lift, and each subsequent WRL lift, will be created in 50-foot steps that will be reclaimed to a 2.2H:1.0V slope as the lift is completed. Regardless of area and throughout the mine life, the WRL is designed with 2.2H:1.0V slopes, see Maps C-3 through C-7 and F-1; Figure 5; and Rule 6.5 – Geotechnical Stability Exhibit for additional design details. Stormwater drainage and further designs of the WRL are included in Exhibit G.

Designed reclaimed slopes of 2.0H:1.0V will remain constant across the mine. The 2.0H:1.0V finished slopes will preserve the ridgeline and slope topography similar to pre-mine conditions. All post-mining slopes will mimic the natural landforms surrounding the mine area thereby allowing the reclaimed mine area to blend naturally with the existing pre-mine landforms.

6.4.4(c)

The Phase 1 processing area will be gently sloped to the west to control surface stormwater flows; see Map C-3 for sump locations and drainage flow directional arrows. The processing area will be surfaced with compacted coarse aggregate. It is expected that all surface water that does not settle near the northern stormwater berm will percolate into underlying groundwater within 72 hours. In the event that pooled water is observed adjacent to the northern stormwater berm within 24-hours of the end of a storm event, excess water will be pumped and travel along a pipe through the CCP underpass, down the WRL drainage slope, and onto the active lift of the WRL where it will infiltrate into the porous WRL. By using this method, no excess stormwater will accumulate within the mining area beyond 72 hours; an event that is highly unanticipated and non-the-less prepared for. Maps C-3 through C-7 detail stormwater berms, sumps, and pumped water pipe locations for each phase. Mining traffic will avoid sump areas.

As a new mining bench is opened, a safety and stormwater berm will be installed along the upper crest of the 50-foot-wide bench to collect and direct stormwater from above to dedicated

drainage pathways maintained and transitioned throughout the site as mining progresses. In addition to controlling stormwater from the bench above in reclamation, the berm will serve to catch rock material from above as well as provide safety control for heavy mining equipment completing reclamation. Therefore, each benches' stormwater and safety berm will be constructed to a 1.0H:1.0V slope to half wheel height of the largest piece of equipment on site as per MSHA regulations. Figure 3 and Figure 4 shows these berms along the mining benches.

6.4.4(d)

Blasting and mining will occur in 25-foot lifts, ~50-foot-wide, along 500-foot lateral extents. The final blasts along the mining extent will be excavated and promptly backfilled to create a 2.0H:1.0V slope. Therefore, the maximum active highwall during mining will be 25 feet tall and ~500 feet long (Figure 3). See Rule 6.5 – Geotechnical Stability Exhibit. Once a bench is reclaimed, it is no longer considered a highwall. Therefore, as mine maps include 'tall' post-mined slopes, they are graded and reclaimed to 2.0H:1.0V and thus not considered a highwall.

The elevation of each bench will dictate its lateral extents with higher elevation benches being smaller than lower elevation benches. In higher elevation initial mining areas, an entire bench may be mined at once while lower elevation benches may be mined in stages. Following higher elevation mining, lower elevation mining areas (which are inherently larger within a phase) will be developed in approximately 20-acre portions. Where possible, the overlying gravel will be mined by front-end loader into trucks for transport to the onsite crusher and screening plant.

A blasting plan is included as Appendix 3.

6.4.4(e)

Mining will be completed based on market conditions over five phases. Mining will begin with initial opening and the creation of the site processing area as Phase 1, followed by mining Phases 2-5. Phases may be mined out of numerical order. Exhibit C maps detail the mine plan by projected phase and F-1 features the Reclamation plan.

The mining schedule is planned to minimize disturbance by reclaiming mined-out areas as new mining phases become active. Note: if large contracts are awarded to the site, production could

increase and reduce the life of the quarry. Conversely, if contracts are less than anticipated, the life of the quarry could be extended.

Approximate projected acreage, anticipated recoverable tons, duration of mining, and WRL acreages are shown in Table 1 for each phase. To calculate anticipated recovered tons, a mining rate of one-million tons per year was used for Pre-mining/Opening and Phase 1 approximations. While for Phases 2 – 5, including bedrock and gravel mining, a rate of 2.5-million mined tons per year was used to approximate the duration of mining.

6.4.4(e)(i)

See Table 1. Mining Phase Dimensions.

6.4.4(e)(ii)

See Table 1. Mining Phase Dimensions.

6.4.4(f)(i)

Metamorphic rock blasting and mining will reach a depth of approximately 7,850-foot elevation. This is below the pre-mine ground surface (Maps C-7 and F-1). Mining depths with respect to the highest ridge point are included on Table 2. Mining Depths. The highest pre-mining ground surface elevation will be approximately 8,500 feet and the final post mine elevation is 7,850 feet. The thickness of the deposit is beyond what will be mined under this permit. The gravel overlies the bedrock units and is 350 feet thick along the center of the site near the CCP and thins to 0 feet along the western extent of the site (Figure 1).

Table 2. Mining Depths

Phase #	Starting Elevation (feet)	Final Elevation (feet)	Elevation Delta (feet)
Pre-mine/ Opening Fill	7975	8098	-123
1	8275	8050	225
2	8500	8275	225
3	8275	8050	225
4	8050	7925	125
5	8500	7850	650

6.4.4(f)(ii)

The entire site is composed of metamorphic bedrock; therefore, the final excavated surfaces and footprint of the mine will be blasted metamorphic bedrock and fines.

6.4.4(g)

The primary materials to be mined are aggregates for use as construction materials in the Front Range. Gravel cobble and large boulders may be marketed and sold as landscape materials. Material will be crushed and further processed with respect to size and sorted into piles accordingly. Aggregate will be screened onsite in the processing area to blend the desired final product. Sorted and stockpiled final saleable material will be hauled off site primarily to the Colorado Front Range market. Fill material, diverted from the WRL, may be sold from this site as a commodity. Asphalt, concrete, and washed rock may also be sold from this site.

6.4.4(h)

Gold may be recovered during overlying gravel mining. Potentially gold bearing gravel will be processed through a traditional placer gold mining equipment (e.g. trommel, sluice, and horizontal deck wash plant) prior to entering the bulk crushing equipment located in the Processing Area. Exact locations of gold storage will not be disclosed as gold is a sensitive and

valuable commodity; however, any recovered gold will be handled exclusively by a competent party. No chemical processing treatments will be used on site; only water is used in processing gold and gravel.

6.4.4(i)

Explosives will be used. See the preliminary blast plan is included in Appendix 3 – Preliminary Blast Plan. Blasting will be completed by a contract licensed operator who will provide a detailed final blast plan to the Division prior to any blasting as a part of mining.

6.4.4(j)

Roadways

The site will use existing on-site roads, where possible and until they are mined, and will create new onsite roads as mining progresses throughout the site. Current onsite roads are shown on Map C-1, roads created during mining are shown on Maps C-2 through C-10 and final reclamation roads are shown on Map F-1. The majority of haul traffic will exit the site and travel towards Interstate-70. The intersection of the CCP and I-70 is a full-service interchange.

Initial mining required to open the quarry will include development of the road to reach the top of Phase 1 (Maps C-2 and C-3).

Onsite mining roads and roads built during various phases of the WRL development are detailed on Maps C-3 through C-10.

While Phase 4 is mined and once the appropriate elevations are met, a central and internal mining access road will be created trending north-south through the middle of the site. The resultant mining central access final road grade will have an 5% slope. The road corridor will be constructed ~100-foot wide and finished as a gravel surface to remain following final reclamation (Map F-1). Additional comments detailing a potential CCP realignment are included on page D-9.

EXHIBIT G WATER INFORMATION

6.4.7(1) and 6.4.7(2)

Surface Water

The northern extent of the site, the WRL area, is within 300 feet of North Clear Creek. Russell Gulch runs sub-parallel to the northern extent of the site. The Clear Creek County parcels of the site are well outside of FEMA identified floodplains while the Gilpin County parcels do not have available digital data. Various wetlands are identified within the site; please refer to the Aquatic Resource Delineation included as Appendix 7 for additional information regarding wetlands. Additionally, the Aquatic Resource Delineation has been submitted to the United States Army Corps of Engineers in pursuit of a Jurisdictional Determination of the known wetland resources within the site. No aquifers will be impacted by the operation. Maps C-1 and G-1 show surface water information for the pre- mine conditions of the area.

Protection of the prevailing hydrologic balance with regard to surface water is achieved by:

- Ensuring that offsite discharge is the same or less following mining;
- Ensuring that offsite discharge velocity is equal or less than pre-mine;
  OR
- Ensuring that offsite discharge velocity for new discharge paths is non-erosive (<5 fps).
- Preventing an increase in sediment discharge from the site.

In conjunction with these goals, water quality is ensured during mining by complying with required CDPHE discharge permits. Finally, protecting the prevailing hydrologic balance means ensuring that no area water rights are injured through runoff diversion. The water handling plans for the Young Ranch Resource Quarry have all been designed to accomplish these goals.

Pre-mining Surface Hydrology

Surface flows that do not occur within the active mining area will be diverted around the disturbed area via ≥ 2-foot-tall isolation berms and will infiltrate into the native soils of the undisturbed areas of the site within 72 hours. Designated sumps are shown on Maps C-2 through

C-7 that indicate where stormwater will accumulate, as required. Map G-1 shows the approximate direction of drainage throughout the site prior to mining, during mining, and post-mining during reclamation. Each mining map in Exhibit C shows the stormwater berm and sump configuration for each given phase of mining.

The hydrologic conditions at the Young Ranch Resource consist mostly of surface water drainage along long-established pathways and areas. Site soils are identified in NRCS surveys as rock complexes that are predominantly hydrologic soil group D. There are portions of the Tahana-Legault-Complex (roughly 40%) that are hydrologic soil group B. This soil unit corresponds strongly with greater tree density. Therefore, in drainage areas where the Tahana-Legault-Complex is the majority soil, the hydrologic soil group will be assumed to be B. Based on the NRCS method of calculating the surface water runoff volume and peak discharge for the existing areas, the curve numbers of the baseline drainages are either 79 (hydro soil group D) or 70 (hydro soil group B). Appendix 4 lists the curve numbers for each area in the pre-mine conditions. Appendix 4 lists all storm event data for each area. The basin/area numbering on that table correspond to the numbering found on Map G-1 – Surface Hydrology: Baseline Conditions.

During Mining Surface Hydrology

During Phase 1, the entire mining area will act as a ‘sump’ that allows stormwater to infiltrate into the porous processing area pad, see Map C-3. A primary sump and discharge point will be located at the west end of Phase 1 for clean water discharge. Fine sediment will be removed from the lowest settling area of the pad, as needed. Surface water within the disturbed area of the site will be controlled by perimeter berms which border the disturbed area paired with sumps. All runoff from a 100 year 24-hour rain event will be trapped on site and water will infiltrate the processing area floor within 72 hours.

The typical 24-HR events for this area are listed below:

Table 6. Area Storm Events.

Event Probability	Event Rainfall (inches)
100-YR 24-HR	4.44
25-YR 24-HR	3.26
10-YR 24-HR	2.60

Surface water within the disturbed mining area will be trapped within the quarry following storm events and will coalesce in the lowest area of the processing area pad, aka the sump. This designated sump may move as mining phases are opened over time; Maps C-2 through C-7 show designed locations for sumps at final mined elevation for each phase. Most stormwater within the quarry will evaporate or infiltrate the processing area pad across phases and through the life of the mine. Water captured onsite that does not evaporate or infiltrate after 24 hours will be discharged from the site via the pathways identified on the mining maps. During Phases 1 through 4, stormwater will be pumped via a pipe through the CCP underpass to flow down the CCP fill slope to enter the working surface of the WRL or discharged into the CCP roadside ditches. Stormwater will flow across the WRL and infiltrate its porous structure enroute to the CDPHE discharge points located at the WRL toe. In this way all stormwater runoff is returned to the natural water system within 72 hours, thus protecting local water rights. During Phase 5 and in final reclamation, the quarry floors will discharge via the mine ramp/haul road to drainages to the south, as the underpass will now be significantly higher in elevation.

All stormwater discharges during mining are via CDPHE discharge outfalls. Exhibit C maps show the stormwater handling for each stage. Map G-1 shows the location of the discharge points.

WRL Surface Water Handling

The creation of the WRL just northeast of the quarry will modify the pre-mine drainage area where the WRL will be constructed. The areas created by these activities within the mining area

can be seen on Map G-1 – Surface Hydrology: Mining Conditions. A curve number of 89 is applied to disturbed areas during mining. A curve number of 79 is applied to areas that have seen recent reclamation. Once vegetation is established, the pre-mine curve numbers are then applied. Appendix 4 lists the mining storm event data for each area. The basin/area numbering corresponds to the numbering found on Map G-1 – Surface Hydrology: Mining Conditions.

All water that falls on the stabilized surfaces of the WRL will infiltrate through the porous material of the WRL. All stormwater which falls on the active working lift of the WRL will infiltrate within the porous working lift within 72 hours. The paired lift and berm configuration (Figure 8) creates a stormwater containment sump on the active lift behind that lift's stormwater berm that is greater than the maximum amount (based on 100-YR event) of stormwater that could fall on the active lift. Map G-2 – WRL Surface Hydrology: Typical Waste Embankment Bench Cross Section shows how this is achieved. Sediment ponds will not be installed at the WRL toe to allow subsurface drainage. Positive drainage of the WRL during mining and following reclamation, coupled with 2.2H:1.0V final reclamation slope conditions, ensures slope stability. No diversion structures will be in place along the east or west perimeter of the WRL. The WRL is designed to safely convey surface water runoff through or across the top of its slope. Discharge points will be monitored and located as shown on Map G-1 – Surface Hydrology: Mining Conditions.

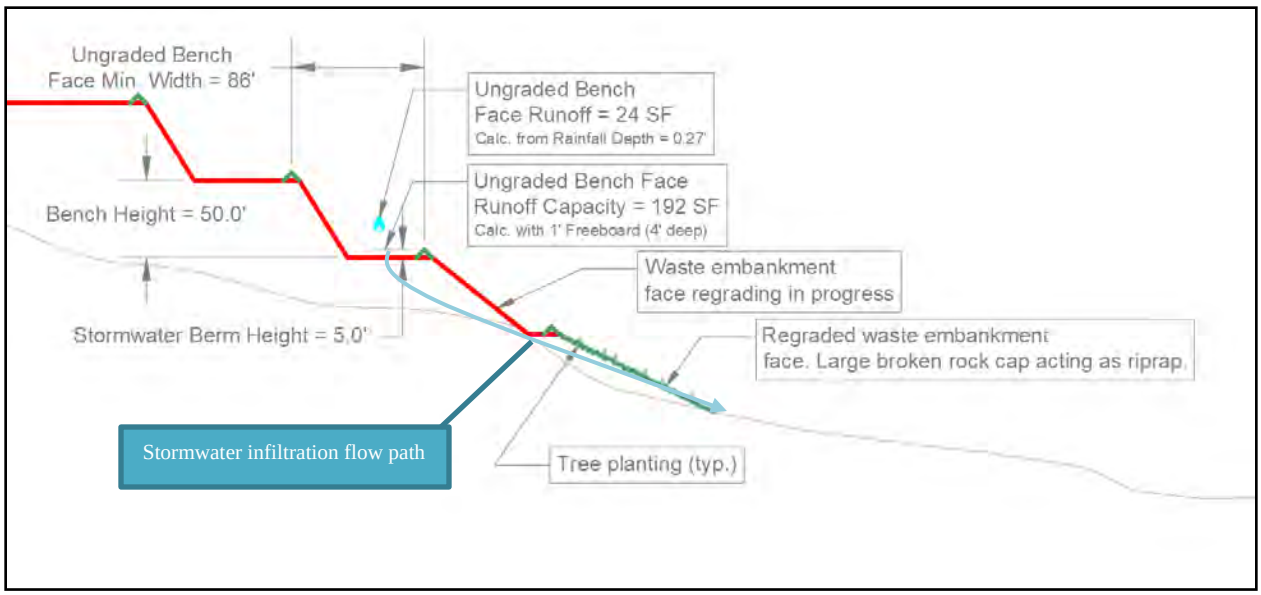


Figure 8. WRL Bench Construction and Surface Water Control (taken from Map G-2).

As the WRL will be reclaimed to similar conditions as present adjacent to the CCP (see Exhibit E for details), the final 2.2H:1.0V slope conditions will consist of coarse broken rock slopes with vegetation as tree tubelings, native shrubs, and broadcast seeding amongst the rock covered slope. Currently, the drainage to become the WRL is a 1.0H:1.0V slope composed of road fill topped by coarse blasted rock and volunteer vegetation (Figure 6). The coarse broken rock derived from the quarry will be similar to riprap, like the natural talus slope, and will act as armor for the slopes at this mid-high altitude. Coarse broken rock will be installed according to the specifications shown on Map G-2 – WRL Surface Hydrology: Waste Embankment Plan View and as detailed in Appendix 1. It should be noted that D50 rip-rap specifications were chosen to model the WRL's drainage as an effective stand in for the coarse blasted rock from the quarry. Coarse rock sized similar to or greater than the D50 specifications will be used. Since the WRL slope and the adjacent hillsides are acting as a channel for stormwater, the size of capping rock will be larger at the toe of each slope of the WRL than the rock size further up the slope. Figure 9 shows this concept from Map G-1.

[1] SEDCAD Reports: WRL Slope Armoring - 25'/50'/75' Channel Bottom

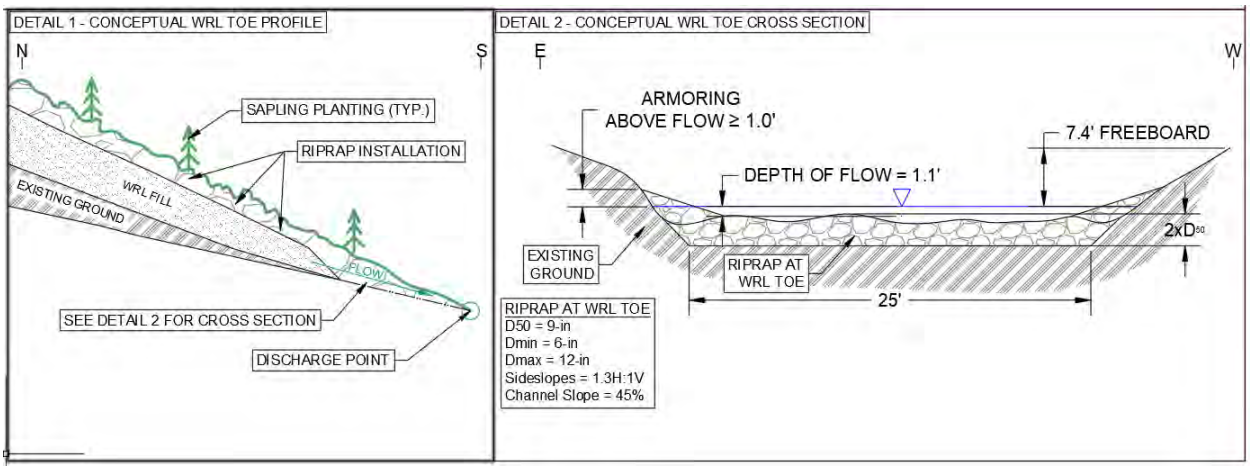


Figure 9. WRL Slopes and Cap Rock D_{50} (taken from Map G-2).

The armoring of the WRL will extend at least 1-ft above the waterline along each of the WRL slope, in accordance with US Bureau of Reclamation recommendations.[2]

Capping the WRL with coarse angular rock will protect it from eroding into the drainage above North Clear Creek. Surface water that infiltrates into the WRL will be cleaned of sediment as the WRL will act as a sand and gravel filter. These two features of the WRL will ensure that sediment and loose material is not discharged into North Clear Creek. During initial construction of the WRL toes, temporary sediment controls such as silt fences or erosion control logs will be installed. These structures will be redundant and removed as the finished WRL lifts are installed up the drainage. The end result will be a WRL that is an improved version of the road fill slopes found along the CCP: modest slope of broken rock freely draining into natural drainages covered with trees and vegetation.

Table 7 shows a comparison of the pre-mine and post-mine discharge velocity at each discharge outfall. These velocities were calculated using SEDCAD/Civil 3D analysis of the drainage feed each outfall at the peak discharge of the 100-YR 24-HR event. The post mine velocity will be

[2] Figure 7-1: Recommended freeboard and height of bank of lined channels. *Open-Channel Hydraulics.* Chow. 1959. pg. 160.

lower than the pre-mine discharge, ensuring that discharges from the drainages will not lead to erosion into the North Fork of Clear Creek.

Table 7. WRL Discharge Comparison.

	Pre-Mine Discharge Velocity (fps)	Post Mine Discharge Velocity (fps)
Outfall 001-A	12.0	11.0
Outfall 002-A	17.7	5.61

Overall slope stability is addressed in the Geotechnical Stability Exhibit.

After Reclamation

Reclaimed conditions include revegetation across the entire site that will create the same conditions as baseline pre-mining vegetation. Within the quarry area, due to the changes of slopes and grades, surface water runoff will infiltrate into the reclaimed area when precipitation falls above the reclaimed area and will further encourage revegetative success within reclaimed areas. The WRL will be built to achieve final grade and revegetation over time, creating a final condition of coarse blasted rock topped slopes with trees (Figure 1). The curve number for all reclaimed areas is assumed to be no greater than that of baseline conditions. The lack of compaction of material beyond that provided by tracked equipment during slope grading in reclamation within either the WRL or the quarry area will lead to greater infiltration of surface water runoff than baseline conditions. However, the curve number is assumed to be 70 or 79, as the baseline condition is, to be conservative within the designs. As reclaimed surfaces will not be compacted, Best Management Practices will be used throughout the quarry's life to mitigate erosion, as needed.

The final quarry floor will discharge along the mined ramp to the south from discharge points on either side, once mining reaches its maximum extents at the completion of Phase 5. On either side of the central mine access road, the final quarry floor elevation will daylight onto the mine ramp/central road and allow discharge of surface water to the south. Changes to the topography within the mining area will increase the drainage basins that discharges to the south via the

quarry floor (Map G-1, Reclaimed Conditions). The quarry floor will act as a natural sump and discharge control structure due to the size of flat area it encompasses. Stormwater runoff will collect on each side of the mine ramp and flow slowly out along the mine ramp. Map G-1 details the discharge points. The SEDCAD reports East Quarry Bottom Sump and West Quarry Bottom Sump each detail how the quarry bottoms will function during reclamation. It is important to note that these analyses reflect conditions after reclamation work is complete, not during mining. Both the West and East Quarry Sumps are designed to discharge following reclamation, and thus all stormwater berms will have been removed. Table 8 shows the pre mine discharge to the south from this area (Basin 3) and the post mine discharge at the same location. The post mine discharge is less than the pre-mine discharge. The velocity of the post mine flow is <5 fps, making it non-erosive.

Table 8. Mine Ramp/Central Road South Discharge.

Pre Mine Discharge (cfs)	Post Mine Discharge (cfs)*
229.0	53.3

* Total discharge of East Quarry Sump and West Quarry sump in reclaimed condition. See SEDCAD for each sumps individual discharge.

Each side of the mine ramp will act as a large shallow sump and detention pond. This will allow storm water to collect on either side of the mine ramp and then flow naturally towards the discharge point on either side of the mine ramp.

Groundwater

Expected groundwater levels are known to be greater than 500 feet below the pre-mined ground surface based on well and spring data in the surrounding area. Well data is further detailed in Appendix 3 of this application. No known aquifers exist within the deposit to be mined, and there are no water rights associated with it. No non-tributary, not non-tributary, or tributary water rights are fed by groundwater flows from this site. See the Aquatic Resource Delineation in Appendix 7 for additional information regarding tributary water on the site.

South of the site, Clear Creek is ~500 feet lower than the lowest pre-mined surface at the quarry. The North Fork of Clear Creek to the north of the site is ~600 feet lower than the Phase 1 and 2 processing area surface. However, in the very unlikely event that groundwater is encountered

during mining, excavation will immediately stop and the area will be backfilled with at least 2 feet of overburden type material to cover any exposed water. No pit dewatering will take place as the groundwater table is below the bottom of the quarry elevations (pre-mine and post-mine) shown on Maps C-1 and F-1. Map G-3 shows cross of the mining area and the elevation of groundwater based on well data.

According to searches on the Division of Water Resources (DWR) database, there are 3 sampling and monitoring wells permitted within 600 feet of the Young Ranch Resource permit boundary. These monitoring wells have a permit but do not have construction or any other records listed with the DWR digital data platform. Additional constructed wells are located within 1 mile of the permit boundary and are detailed in the Preliminary Blast Plan included as Appendix 3.

Table 9. Wells within 600' of Permit.

Applicant	Permit ID	Total Depth (feet)	Purpose
Camp Dresser and McKee	15369-MH	30	monitoring/sampling
Black Hawk/Central City San District	38596-MH	20	monitoring/sampling
Texaco Refining and Marketing	36500-M	26	monitoring/sampling

The WRL, by its nature, will not risk any negative impact to the area groundwater. There is no expected change to groundwater during or after reclamation.

A cross section (Map G-3) showing the mine extents in relation to the highest measured groundwater level in a known well can be found attached to this exhibit. Furthermore, the location of seeps observed by CDRMS during a site inspection are shown on both the cross section and Map G-1. These seeps both sit in the WRL area and as such will be buried by the WRL. Given the measured elevation of groundwater in area wells and the relative shallowness of the talus and soils atop bedrock in the WRL area, these seeps are most likely seasonal and intermittent. The WRL design allows for the free infiltration, subsurface flow, and discharge of precipitation, as there is no installation of any groundwater flow barrier as part of the WRL

construction. See the Aquatic Resource Delineation in Appendix 7 for additional information regarding seeps within the WRL drainage.

6.4.7(3)

Water during the initial development of the quarry and into Phase 1 mining will be supplied by trucked in water from a legal source. 40,000-50,000 gallons a day (approximately 36-46-acre feet per year) is a high and conservative estimate of daily use, in peak production conditions, encompassing dust control, drilling, incidental product washing and other uses. Gravel washing may occur during material processing.

Following initial development and when economically appropriate, a well or other legal source of water may be developed. Alternatively, water may be pursued and supplied via pumps and pipes from either Clear Creek or the North Fork of Clear Creek. All future sources of water will be permitted and legal sources of water.

Dust will be controlled by water on a day-to-day basis, though additional dust mitigation on roadways includes bi-annual or as needed applications of magnesium chloride. Water will be used as needed to eliminate any problem dust areas and to be used in a spray bar during initial crushing.

6.4.7(4)

The legal source of water will be through leased fully consumable water rights to begin the operation. The site lies within multiple water district areas with currently available leasable water.

The site will not affect existing water rights. The quarry will not expose groundwater and will not store stormwater for more than 72 hours. After reclamation, stormwater encountered in the mining area will continue to infiltrate or evaporate.

6.4.7(5)

The operator will apply for and receive a CDPHE CDPS permit prior to commencing mining for all surface water discharge points.