

DELTA COUNTY PLANNING COMMISSION

**Delta County Board of County Commissioner's Room
560 Dodge St., Delta, CO 81416
Wednesday, February 23, 2022 @ 5:30 p.m.**

**Tom Kay, Chair
Tate Locke, Vice-Chair
Carl Holm, Director**

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The public can join the meeting remotely by registering in advance of the meeting at:

<https://us02web.zoom.us/meeting/register/tZUpfuiugDgsEtDfRLf9jxoLnISzt9Y4S0IP>

After registering, you will receive a confirmation email containing information about joining the meeting.

REGULAR AGENDA

5:30 P.M. – CALL TO ORDER

ROLL CALL

DISTRICT 1

Cindy Watson

Steve Schrock

Steve Shea

Michelle Roberts, Associate

DISTRICT 2

Layne Brones

Tate Locke, Vice Chair

Hardy Hutto

Vacant, Associate

DISTRICT 3

Jacob Gray

Tom Kay, Chair

Kate Darlington

David Marek, Associate

A. PUBLIC COMMENTS

This is time set aside for the public to comment on matters not on the agenda. The Chair may set a time limit for speakers.

B. AGENDA ADDITIONS, DELETIONS, AND CORRECTIONS

The Planning Commission Secretary will announce if there are any changes to the agenda that arose after posting of the agenda.

C. SCHEDULED ITEMS

1. Meeting Minutes

a. February 9, 2022

RECOMMENDATION: Approve the action minutes as presented

2. PLN21-001/Miller (Alliance Ready Mix)

Continued from October 27, 2021. Consider a Conditional Use Permit (CUP) to operate a Mobile Concrete Batch Plant in the A-5 zone.

CERTIFICATION OF POSTING

On February 16, 2022, at 4:00 PM, Kim Henderson did post the above AGENDA as public notice of the February 23, 2022 meeting. The official notice is placed on the front entrance of the Delta County Courthouse located at 501 Palmer, Delta, Colorado and a courtesy copy is sent to the Delta County website at www.deltacounty.com.

RECOMMENDATION: Recommend that the Board of County Commissioners:

- a. Find that PLN21-001 complies with the Land Use Code; and
- b. Approve PLN21-001, a Conditional Use Permit for a Mobile Concrete Batch Plant at 19337 F Road, Delta (Parcel: 345522300015), subject to conditions.

3. PLN21-039/TDS Telecommunication

Continued from February 9, 2022. Consider options for a Conditional Use Permit to install a 60-foot-tall wireless facility in the County Right-of-Way adjacent to 38590 Stucker Mesa Road (Parcel: 3443-023-00-055).

RECOMMENDATIONS:

- a. Table the Stucker Mesa portion of the application (PLN21-039) to pursue Administrative Review of the DMEA co-location design; and
- b. Consider draft Resolution for PLN21-039.

D. COMMISSIONER COMMENTS, REQUESTS AND REFERRALS

This is time set aside for the Commission to comment, request, or refer a matter that is not on the agenda for future consideration.

E. DEPARTMENT REPORT

This is time set aside for the Director to report on matters affecting the Department.

ADJOURNMENT

Next Meeting: Wednesday, March 9, 2022 at 5:30 pm, Maloney House (Delta County Fairgrounds) 575 S River Ln, Hotchkiss, CO,

CERTIFICATION OF POSTING

On February 16, 2022, at 4:00 PM, Kim Henderson did post the above AGENDA as public notice of the February 23, 2022 meeting. The official notice is placed on the front entrance of the Delta County Courthouse located at 501 Palmer, Delta, Colorado and a courtesy copy is sent to the Delta County website at www.deltacounty.com.



**DELTA COUNTY PLANNING COMMISSION MEETING MINUTES
MALONEY HOUSE (DELTA COUNTY FAIRGROUNDS)
575 S RIVER LN, HOTCHKISS, CO 81419
February 9, 2022**

Chairman Tom Kay called the meeting to order at 5:30 p.m. in the Delta County Board of County Commissioner's Meeting Room.

ROLL CALL

Planning Commission Members in Attendance:

Tom Kay	Michelle Roberts (Associate)
Steve Schrock	Hardy Hutto
Jacob Gray	Kate Darlington
Layne Brones	David Marek (Associate)

Absent Members:

Tate Locke
Steve Shea
Cindy Watson

With member(s) absent from District 1, Michelle Roberts is a voting member.

Staff in Attendance:

Delta County Community Development & Natural Resource Director, Carl Holm
Delta County Community Development Planner I, Kate Kelly
Delta County Community Development Planner I, Angie Kemp
Delta County Planning & Community Development Administrative Assistant, Kim Henderson
Delta County Attorney, John Baier

ANNUAL MEETING

Consider: Election of officers for 2022, consideration of any special projects to address in 2022, and the 2022 Planning Commission meeting schedule.

RECOMMENDATION: Staff recommends that the Planning Commission:

A. Elect Officers (Chair & Vice-Chair) for 2022

Motion/Second: Steve Schrock made a motion for Tom Kay to remain as Chair and Tate Locke as Vice-Chair. Layne Brones seconded the motion.

Kate Darlington nominated Jacob Gray as Chair.

Action: Tom Kay received 4 votes; Jacob Gray received 2 votes. Tom Kay remains Chair.

Kate Darlington nominated Jacob Gray as Vice-Chair.

Action: Tate Locke received 4 votes; Jacob Gray received 2 votes. Tate Locke remains Vice-Chair.

B. Consider special projects for 2022

Motion/Second: Director Holm reminded the Planning Commission of the Land Use Code and Master Plan are scheduled to be reviewed this year. Steve Schrock requested Affordable Housing be a project that gets discussed this year. Layne Brones requested the County be proactive with the Code Enforcement Officer regarding junk/rubbish. Kate Darlington would also like to pursue the Affordable housing topic. Tom Kay would like to address the Land Use Code "place-holders".

Action: No action needed.

C. Consider a Meeting Schedule for 2022



DELTA COUNTY

PLANNING & COMMUNITY DEVELOPMENT

295 W 6th Street
Delta, Colorado 81416
planning@deltacounty.com
970.874.2110

Action: There was a consensus of the Planning Commission to a meeting schedule of two meetings per month. The second Wednesday a month will be held in Hotchkiss and the fourth Wednesday a month will be held in Delta. There will be no regular meeting scheduled the 4th Wednesday of the month in November or December due to the holidays.

PUBLIC COMMENT

None

AGENDA ADDITIONS, DELETION, AND CORRECTIONS

None

SCHEDULED ITEMS

Item #1: Meeting Minutes
a. January 12, 2022
b. January 26, 2022
RECOMMENDATION: Approve the action minutes as presented

Steve Schrock requested the January 12, 2022 minutes be amended to reflect the County Administrator speak with the County Treasurer regarding the sales tax matter and not the applicant.

Motion/Second: Kate Darlington moved to approve the action minutes as amended. Layne Brones seconded the motion.

Action: Motion carried unanimously

6:07pm Commissioner Cindy Watson joined the meeting via Zoom.

Item #2: PLN21-039/TDS Telecommunications
Continued from 12/8/2021. Consider: Conditional Use Permits to install and operate two wireless communication facilities: A) 60-foot-tall pole in the County Right of Way adjacent to 38590 Stucker Mesa Road approximately 2.1 miles west of Paonia (Parcel: 324302300055); and B) 50-foot-tall pole within a TDS easement at 39025 Cottonwood Creek Road approximately 3.6 miles north of Crawford (Parcel: 344914103001).
RECOMMENDATION: Staff recommends that the Planning Commission recommend that the Board of County Commissioners:
a. Find that PLN21-039 meets standards of 2021 Delta County Land Use Code.
b. Approve PLN21-039A, a Conditional Use Permit to install a 60-foot-tall wireless facility in the County Right-of-Way adjacent to 38590 Stucker Mesa Road (Parcel: 3443-023-00-055).
c. Approve PLN21-039B, a Conditional Use Permit to install a 50-foot-tall wireless facility within a TDS easement located at 39025 Cottonwood Creek Road (Parcel: 3449-141-03-001).
d. Attach recommended conditions of approval.

Motion: Hardy Hutto moved to deny PLN21-039A/Stucker Mesa Rd location.
Second: Layne Brones seconded the motion.

Substitute Motion: Steve Schrock moved to continue PLN21-039A/Stucker Mesa Rd location for 2 weeks (February 23, 2022) to explore the feasibility of an option to co-locate the microwave dish on the KVNf tower and install a smaller pole in the easement.

Second: Kate Darlington seconded the motion.

Action: Action carried 4-3
Ayes: Steve Schrock, Dave Marek, Kate Darlington, Cindy Watson



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Nays: Michelle Roberts, Hardy Hutto, Layne Brones
Absent: Tate Locke
Chairman Tom Kay did not vote
Jacob Gray recused himself from voting due to a potential conflict of interest.

Motion: Kate Darlington moves to approve PLN21-039B/Cottonwood Creek Rd with Staff
Recommendations as well as the condition of a decommission plan.
Second: Steve Schrock seconded the motion.
Action: Motion carried unanimously

COMMISSIONER COMMENTS, REQUESTS AND REFERRALS

None

DEPARTMENT REPORT

None

ADJOURNMENT

The next meeting will be held on February 23, 2022 at 5:30pm in the Delta County Administration Building, Delta, CO.

Meeting adjourned at 9:13 p.m.

Respectfully submitted by:
Administrative Assistant, Kim Henderson



STAFF REPORT

Delta County Planning Commission

**Delta County Administrative Building
560 Dodge Street, Delta, CO 81416**

Wednesday, February 23, 2022 @ 5:30 p.m.

PLN21-001/Miller (Alliance Ready Mix)

Continued from October 27, 2021. Consider a Conditional Use Permit (CUP) to operate a Mobile Concrete Batch Plant in the A-5 zone. The project is located on the north side of F Road, between 1900 Road and 2000 Road, Delta (Parcel 345522300015).

PROJECT INFORMATION:

Property Owner: Kyle Miller
Applicant: Jonathan Plank
Site Address: 19337 F Road, Delta, CO 81416
Location: Section 22, Township 15S, Range 95W, 6thPM
Parcel ID/Acct: 345522300015/R024344
Parcel Size: 39.70 Acres
Zoning: A-5

RECOMMENDATION:

Staff recommends that the Planning Commission recommend that the Board of County Commissioners:

- a. Find that PLN21-001 complies with the Land Use Code for a Rural Medium Industry (Conditional) Use; and
- b. Approve PLN21-001, a Conditional Use Permit for a Mobile Concrete Batch Plant at 19337 F Road, Delta (Parcel: 345522300015), subject to six (6) conditions.



SUMMARY:

Kyle Miller owns a 39.70-acre parcel (Parcel #345522300015) with frontage along the northern boundary of F Road about 2.5 miles east of the City of Delta. Right-of-Way (ROW) has been dedicated along the western boundary for possible future extension of 1900 Road.

Staff finds that a Mobile Concrete Batch Plant would qualify as Rural Medium Industrial land use due to the outdoor storage and operation. Rural Medium Industry is a Conditional Use in the A-5 zone.

On October 27, 2021, the PC held a public hearing on the subject project. Multiple neighbors attended and provided comments. The PC voted unanimously to continue this matter requesting additional information (stormwater, noise, dust, traffic routes, traffic study, etc.).

In January 2022, the applicant submitted a package of information including: Business Plan, geology/soils, stormwater/drainage, dust, noise, water, traffic and reclamation (See Discussion below). The Site Plan shows utilizing an existing access and creating a loop around the existing shop structure. The mobile batch plant would be located at the apex of this loop for trucks to drive through, load and exit (one-way traffic). Materials would be stored around the batch plant. The intent would be to operate on this site for a number of years and move the operation if needed at that point.

Staff finds that this project complies with the Land Use Code, as conditioned. Conditional Use Permits go before the Planning Commission (PC) that will make a recommendation to the Board of County Commissioners (BoCC) at noticed public hearings.

DISCUSSION:

On March 30, 2021, Kyle Miller (Owner) and Jonathan Plank (applicant) submitted a pre-application form (PLN21-001/Miller CUP) for a Mobile Concrete Batch Plant in Delta County that would be run by Alliance Ready Mix. A pre-application conference was held on April 5, 2021 with County staff from Planning, Engineering, and Road & Bridge.

There is one (1) existing shop building (approximately 40' x 50') with an existing gravel driveway that will be extended to accommodate the Batch Plant. Access will be from F Road to the shop (19337 F Road). Drainage runs through the property from north to south on the eastern 1/3 of the property. In addition, aerial imagery shows irrigation water flowing to the southwest corner of the property.

This property has been zoned as A-5 per the Delta County Land Use maps. Staff finds that this use would qualify as Rural Medium Industrial land use due to the outdoor storage and operation. This type of use in the A-5 zone is a conditional use. Conditional Use Permits go before the Planning Commission (PC) that will



make a recommendation to the Board of County Commissioners (BoCC) at noticed public hearings.

An Application Packet was sent to the applicants on April 12, 2021 summarizing the pre-application conference and explaining the process. This packet included a Land Use Application, Application checklist, and a Site Plan checklist. This application, along with the required fees, was to be filled out and submitted to the Planning Department to assist in assessing if the application complies with the Land Use Code (LUC).

On October 27, 2021, the PC held a public hearing on the subject project. Multiple neighbors attended and provided comments. The PC voted unanimously to continue this matter requesting additional information (stormwater, noise, dust, traffic routes, traffic study, etc.). Mr. Miller (applicant) submitted documentation in response to the PC comments, and staff has summarized the information as follows (See attachments for more detail):

Business Plan (attached) including the following:

- Location of the Bohringer Portable Concrete Batch Plant (19337 F Road, Delta, CO 81416).
- Equipment. The equipment is used to weigh and mix material for concrete production. There will be four (4) mixer trucks and a semi with an end dump trailer located on site.
- Facilities. The project site will include a 24' x 40' building for miscellaneous equipment and an office space.
- Product output. Estimated product output is 150 to 300 yards of concrete daily.
- Hours of Operation. The proposed hours of operation will be from 6:00 AM to 5:00 PM. It is unclear what days operations will take place.

Stormwater Management Plan (SWMP) (attached):

Elevations at the site range from 5141 feet in the south to 5131 feet at the northern edge of the property. The site has not apparently been previously disturbed and is poorly vegetated with native grasses, and shrubs. Average slope across the site is <2%.

The total area contributing to the detention basins is approximately 10 acres and the peak developed runoff is estimated to be 9.92 cfs for the proposed development. This is the same as pre-development conditions since the site will generally not be cleared of vegetation for the proposed development. One linear stormwater detention basin is proposed in the central portion of the site. This basin is capable of holding a total approximately 16,000 cubic feet which will temporarily detain anticipated stormwater runoff from the 100-year, 24-hour recurrence event based on soil conditions.



The primary potential pollutant to stormwater runoff is sediment from storm runoff during construction, which will be collected on site and allowed to dry by evaporation in-situ. No potential non-storm water discharges are expected since all runoff will be retained in the linear detention basin described above.

Potential pollutants shall be controlled by the following methods:

- **Fugitive Dust Prevention.** As part of the site's Fugitive Dust Control Plan, haul roads and material storage piles will be watered as needed to minimize dust potential.
- **Vehicle Maintenance.** Routine vehicle maintenance will be performed at the site during project construction. Emergency vehicle repair will include measures for limiting, containing and removing potential pollutants from the site after such repairs.

Potential non-Stormwater Discharges shall be controlled by the following methods:

- **Wash Water.** No unnecessary vehicle or equipment washing shall occur on-site. If it becomes necessary to clean equipment or vehicles on site to prevent sedimentation of adjacent roadways, the wash shall occur in an area with appropriate sediment and wash water controls.
- **Water line flushing.** After construction, water lines will be flushed to the site detention basin to allow chlorine to dissipate naturally through the proposed sand filter at the floor of the detention basin.
- **Ground Water Discharge.** No ground water discharge is anticipated for the site.
- **Concrete Washout.** As shown on the Erosion Control Plan (attached) in Appendix A and in the project construction drawing set, a lined concrete washout basin, per CDOT SWMM standards, shall be installed on site to limit potential groundwater impact by concrete wash water. A proposed location is shown on the erosion control plan but may be re-located as required by final site layout of the batch plant.

Geologic and Soils Report (attached):

Buckhorn Engineering, Inc. (BEI) has prepared a Geologic and Soils Report for the proposed Alliance Ready Mix Batch Plant. The report is as follows:

- **Geotechnical Evaluation.** Three test pits were excavated on the property to evaluate the soils for construction of the batch plant and the OWTS. Test Pit #1 (TP#1) was located at the batch plant site and TP#2 and TP#3 were located in the OWTS leach field site.
- **Geologic Hazards.** Based on the analysis of the topography, geology, soils at this site and available mapping, geohazards that are relevant to this site and potential mitigation (avoidance, mitigation, or no practical mitigation) are discussed below:
 - o **Expansive and Collapsible Soil and Rock.** Recommendations for mitigating this hazard from the differential movement of soils under a foundation, is to remove at least 1-foot of the fine-grained native soil or shale and replace it with a compacted structural fill. This



creates a uniformly dense bearing surface that is not reactive with water and it also allows the foundation to not be in direct contact with the native soils that are commonly corrosive to concrete. Although the batch plant will not have a permanent foundation, this method will help reduce the potential for movement of the batch plant. If any other permanent structures are planned, a site-specific analysis should be performed at that location prior to design so that foundation recommendations can be made specific to the loading patterns of the new structure.

- o **Erosion.** As evidence by rills and deep gullies through the Adobe region and on this site, these fine-grained soils are susceptible to erosion. Following the site grading and drainage plan and dispersing (not concentrating) runoff from roofs or anywhere on-site will be important in reducing soil loss from this site and therefore mitigating this hazard. The detention basin collects and slows runoff which also reduces erosion. The detention basin will need to be cleaned out and/or regraded after storm events that fill it with mud and debris so that it maintains a storage capacity. The planting of native grasses, forbs and low drought-tolerant shrubs that don't require additional water would also help to bind the soil, absorb runoff, and reduce erosion.
- o **Mudflows and Debris Flows.** Generally, the alluvial mudflow and valley fill (Qamf) landform in this region is susceptible to sheetflow flooding and mudflows/debris flows from the nearby shale outcrops. However, at this site, since the drainage is to the north and northeast, runoff from uphill of the site (south of F Road) is intercepted by F Road (which is elevated above the adjacent land) and the water is carried along bar ditches to the unnamed drainage on the east side of the proposed improvements. Therefore, this type of hazard is significantly reduced because of the presence of the road and associated drainage channels. No additional mitigation is required other than notifying the County Road and Bridge department if the road ditches and culverts become plugged with soil and debris.
- o **Seismic Effects.** Delta is in the Colorado Plateau Seismotectonic Providence in Colorado, where maximum credible earthquakes are estimated to be on the order of magnitude 5.5 to 6.5, which is equivalent to Modified Mercalli (MM) V to VIII (CGS Bulletin #43, Earthquake Potential in Colorado). According the USGS online map of Quaternary (geologically recent) faults, the closest mapped faults to the site are an unnamed fault at Little Dominguez Creek, roughly 15 miles to the west, and the Monitor Creek Fault, roughly 15 miles to the south-southwest. The Uncompahgre Valley is considered to have low seismic risk and most faults are considered old and inactive.



- o **Radioactivity.** Radon gas is produced by decay of radioactive minerals contained in subsurface rock and soil. An EPA map of Radon Zones indicates that virtually all of western Colorado, including Delta County, is in Zone 1. Although there is no known safe level of radon, Zone 1 is the zone of highest risk for exposure to radon gas. The EPA does not specifically address testing and management of radon in commercial structures. However, owners should be aware of the potential health implications of constructing upon radon emitting soils, assess risks, and take appropriate action. The Colorado Department of Public Health and Environment (CDPHE) recommends assuming that radon is present and build passive radon mitigation into building plans.
- o **Soils and Soil Suitability.** Based on the observations of the test pits and the results of the laboratory testing presented in the Geotechnical Evaluation section, findings are consistent with the mapped soils. Mitigation for foundations of lightly loaded structures typically involves an over-excavation of the soils and replacement with compacted structural fill and to design greater rigidity in the foundation system so that it resists differential movement. A geotextile separation fabric at the base of the fill is also recommended to separate the native soil from the coarser fill materials to keep the fines from migrating into the fill. Since the portable batch plant is not on a permanent foundation, any adjustments to the structure based on settlement or heave of the soil can be made on a periodic basis. Providing a thick gravel base placed on geotextile separation fabric, just as recommended for a traditional structure, would be prudent to support the batch plant to minimize the need for leveling adjustments.
Regarding infrastructure, the construction of utility trenches and gravel roads do not require extraordinary means or methods. Due to the fine-grained nature of the soil and the vibratory loads of haul trucks and cement mixers, the use of larger fill material (such as pit run containing cobbles and larger gravels) at the base of the gravel road section is recommended to provide a more massive base that resists settlement into the native soil. Use of a uni-directional geogrid can also improve the structural support of the soil under base course and can reduce the amount of base course and road base used for the gravel road.
Based on observations and the test pits and laboratory testing of the OWTS site, a wastewater system is suitable for this site. Slow percolation rates due to the stiff clays is anticipated and the system is designed accordingly. As part of the drainage plan, a linear detention basin has been designed for the area between the OWTS and the drainage channel. This will intercept sheetflow from the shop/office and OWTS areas and slow the infiltration of large runoff events and reduce erosion at the site.



The soils at the building foundations and structures, infrastructure, OWTS are suitable for the intended construction.

Drainage Report (attached):

Buckhorn Engineering completed a Preliminary Drainage Report for Alliance Ready Mix Batch Plant (19337 F Road) on November 18, 2021. The report addresses the historic drainage system, proposed drainage system, and conclusions of the site.

Dust Suppression and Noise Mitigation (attached):

- **Dust Suppression:** Sand and gravel brought to the site and stockpiled for concrete production will be moist material. Cement and fly ash will be delivered in enclosed trucks and transferred through a closed system into storage silos equipped with filters to capture particulate emissions. All roads and parking areas used for the operation within the property boundary will be graveled and maintained in conformance with the Colorado Air Quality Control Commission Regulation No. 1 as it applies to the regulation of fugitive particulate emission and the measurement of opacity and off-property transport of fugitive particulate emissions, along with all associated equipment. The operator has filed an Air Pollution Emission Notice and Permit Application with the Colorado Air Quality Control Commission and will maintain dust control in conformance with the approved plan.
- **Noise Mitigation:** Noise levels will not exceed Colorado Noise Statute levels as measured at a distance of 25 feet from the property line. The nearest occupied residence is more than 800 feet from the property line. Distance-activated backup alarms will be installed on applicable equipment used in this operation. The generator used to provide power for the operation will use a large industrial muffler and will be positioned to minimize sound emanating from the site. All other equipment powered by internal combustion engines operating on the site will be equipped with functional industrial mufflers. Material stockpiles will be positioned to help reduce movement of sound toward residential areas.

Domestic Water: Projects are required to provide proof of adequate water supply for the proposed use. Comments from UVWUA note that this property has irrigation water. A water tap has been purchased through Tri-County Water (Tap #7970). The applicant will need to provide a plan for how water will be provided for domestic purposes (office) and dust control (Condition #4). Pursuant to the Land Use Code, cisterns are not considered an adequate water supply for residential uses. Staff finds that this also applies to new development such as a CUP or subdivision.

Level 1 Traffic Impact Study (TIS) (attached):

A Level I Traffic Study is required as part of a conditional use permit and shall include, at a minimum, the information required by this Table 5.a, *Traffic Impact*



Study Scope, based on the level of study required. A Level 1 Traffic Impact Study has been completed by Buckhorn Engineering (dated November 2021). The study addresses the County Road access, existing road network, trip generation, and includes a truck routing map. Condition #3 requires a Truck Routing Plan for the use of semi-trailers, dump trucks, trash hauling trucks, or comparable heavy trucks as they may be disruptive to nearby property owners and could potentially cause damage to County Roads. Although the TIS addresses the truck route, it is in a general sense. A Truck Routing Plan is still required and will need to address the type of vehicles that will be used for this operation, the frequency of both arrivals and departures, approximate hours of truck traffic, and any hazardous materials/hazmat being transported.

Reclamation Plan (attached):

The site is bounded to the west by agricultural property and undeveloped native land. To the north, the parcel is bounded by undeveloped, native land used for livestock. The eastern boundary of the property is also undeveloped natural land used for agriculture. To the south, the property is bounded by irrigated agricultural property. The southern half of the site was previously used for irrigated crop production but has not been farmed since before 2005 according to anecdotal information and review of historic Google Earth images dating back to 1996.

Upon completion of the concrete batch plant operations, that portion of the site will be reclaimed as follows:

- All remaining imported aggregates will be removed from the site or used on any gravel access road to remain to the permanent office building.
- All components of the portable batch plant, including cement and fly ash transport containers ("pigs") and liquid admixture tanks will be removed from the site.
- Any temporary buildings associated with batch plant operations will be removed from the site.
- The site will be graded and the soil scarified to receive hydro-seeding of an approved native seed mix. The disturbed areas will be prepped and seeded during the fall or spring to coincide with the seasonal rains or snow for the best possibility of seed germination and growth. Due to the paucity of native vegetation on the site and surrounding, non-irrigated, properties, successful revegetation will be achieved if greater than 30% of the disturbed area has successful vegetation.
- In lieu of native vegetation, the site may, at the discretion of the owners, be returned to irrigated agricultural production for seasonal crop production.

Chapters 3-6 of the LUC establish standards to assess with this type of development application. The Planning Commission report from 10/27/2021 identifies these standards (**Attached**). Staff has reviewed all documents submitted by the applicant and finds that the project meets the LUC standards.



Therefore, Staff is recommending approval of the Miller Conditional Use Permit (PLN21-001).

OTHER AGENCIES INVOLVED:

Planning Staff sent the Site Plan along with a summary to the Review Agencies for comment on September 15, 2021. Adjoining Property Owners (within a 200-foot radius from Parcel #345522300015) were also sent a Public Notice for this application, including the applicant. Comments received during this comment period were: UVWUA, the Delta County Engineering Department, City of Delta, CDOT, and Colorado Parks and Wildlife (CPW), along with multiple neighbor comments (**Attached**).

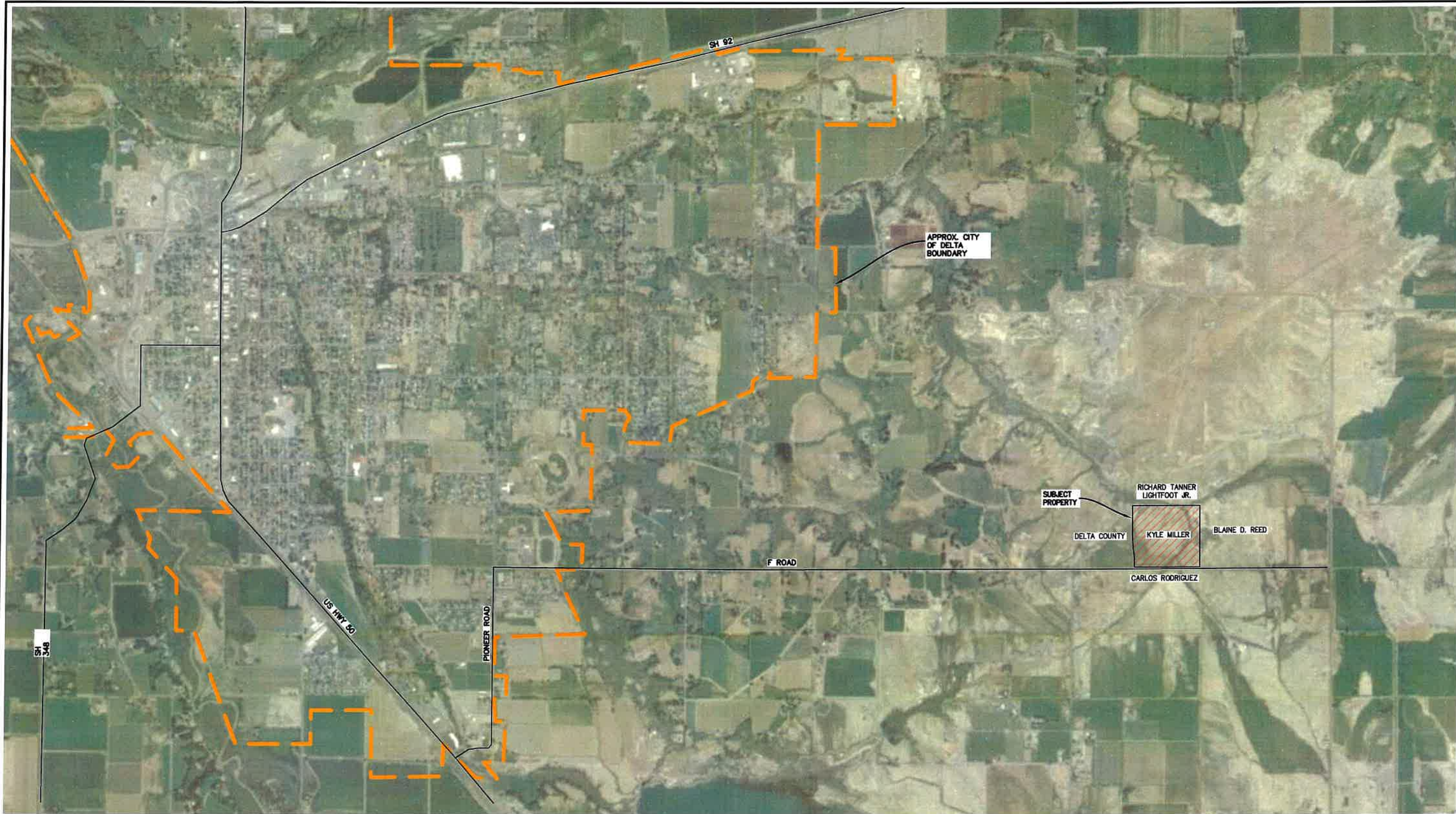
Planning Staff sent notice for this hearing on February 23, 2022 to the same list of Adjoining Property Owners (within a 200-foot radius from Parcel #345522300015) on February 9, 2022. Planning Staff have not received any additional feedback in regards to this application.

Prepared by: Kate Kelly, Planner I
970.874.2110
kkelly@deltacounty.com
February 15, 2022

Attachment(s):

- Site Plan (dated 12/17/21)
- Recommended Conditions of Approval
- Alliance Ready Mix Business Plan
- Stormwater Management Plan (SWMP) (dated November 2021)
- Geologic and Soils Report (dated December 21, 2021)
- OWTS Design Plans (dated December 2021)
- Preliminary Drainage Report (dated November 18, 2021)
- Drainage Design Plans (dated December 2021)
- Noise Mitigation and Dust Suppression
- Level 1 Traffic Impact Study (dated November 2021)
- Reclamation Plan (dated December 2021)
- 10/27/2021 Planning Commission Report (no attachments)
- Public Comments

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BOUNDARY DESCRIPTIONS:

PART OF THAT CERTAIN PARCEL OF LAND DESCRIBED BY THE DEED RECORDED AT RECEPTION NO. 661080 OF THE DELTA COUNTY REAL ESTATE RECORDS BEING PART OF THE S1/2 SW1/4 OF SECTION 22, T 16 S, R 98 W, NORTH PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF SAID SECTION 22, THENCE EAST ALONG THE SOUTH LINE OF SAID SECTION 22, S 89°54'56" E, A DISTANCE OF 1336.11' TO A POINT ON F ROAD CENTERLINE. THENCE N 00°11'31" E, A DISTANCE OF 50.00' TO A POINT ON THE NORTH SIDE OF F ROAD RIGHT-OF-WAY WHICH IS ALSO A POINT ON THE EAST SIDE OF 1900 ROAD RIGHT-OF-WAY AND IS THE POINT OF BEGINNING. THENCE ALONG SAID 1900 ROAD RIGHT-OF-WAY N 00°11'31" E, A DISTANCE OF 96.75'; THENCE ALONG A CURVE TURNING TO THE LEFT WITH AN ARC LENGTH OF 233.62', WITH A RADIUS OF 1598.00', WITH A CHORD BEARING OF N 04°01'22" W, AND A CHORD LENGTH OF 233.41'; THENCE N 08°14'14" W, A DISTANCE OF 70.73'; THENCE WITH A CURVE TURNING TO THE RIGHT WITH AN ARC LENGTH OF 215.13', WITH A RADIUS OF 1498.00', WITH A CHORD BEARING OF N 04°02'20" W, AND A CHORD LENGTH OF 214.94'; THENCE N 00°09'33" E, A DISTANCE OF 648.80' TO A POINT ON THE NORTH LINE OF SAID S1/2 SW1/4; THENCE ALONG SAID NORTH LINE S 89°59'15" E, A DISTANCE OF 43.75'; THENCE S 89°58'20" E, A DISTANCE OF 1334.85' TO THE EAST LINE OF SAID S1/2 SW1/4; THENCE S 00°07'21" W, A DISTANCE OF 1208.53' ALONG SAID EAST LINE TO A POINT ON THE NORTH SIDE OF F ROAD RIGHT-OF-WAY; THENCE FOLLOWING SAID RIGHT-OF-WAY N 89°54'56" W, A DISTANCE OF 1336.18' TO THE POINT OF BEGINNING, CONTAINING 39.70 ACRES, MORE OR LESS, AS DESCRIBED.



VICINITY MAP



PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
REV	DATE	DESCRIPTION	BY
1	12/17/2021	REVISED PER COUNTY COMMENTS	DQ

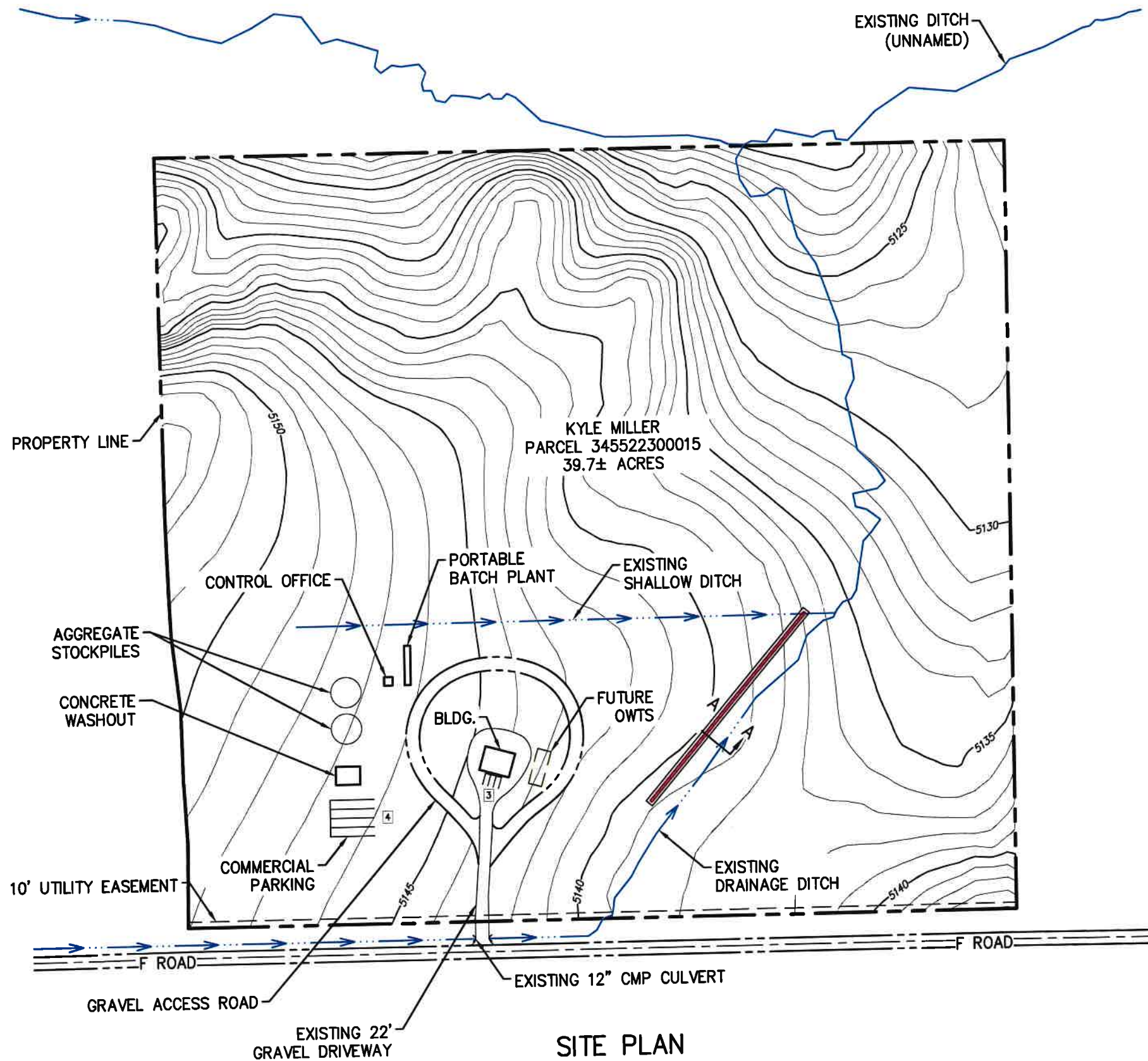
BUCKHORN	
ENGINEERING	
222 South Park Avenue Montrose, Colorado 81401 970-249-6828	

ALLIANCE BATCH PLANT	
PARCEL: 345522300015 AT 19337 F ROAD	
DELTA COUNTY, COLORADO	
VICINITY MAP	

PROJECT	2021-103-CIV
DATE	12/17/2021
DRAFTER	DL
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BUCKHORN ENGINEERING	
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C-1	
1 OF 3	

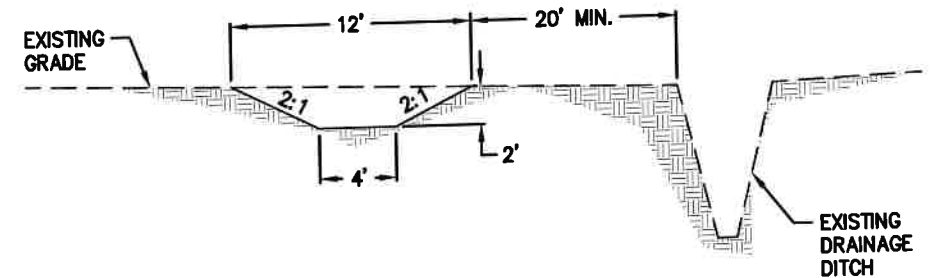
BUCKHORN ENGINEERING 222 South Park Avenue Montrose, Colorado 81401 970-249-6828				ALLIANCE BATCH PLANT PARCEL: 345522300015 AT 19337 F ROAD DELTA COUNTY, COLORADO EXISTING CONDITIONS			
PROJECT	2021-103-CIV			DATE	12/17/2021		
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BUCKHORN ENGINEERING							
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				2 OF 4			

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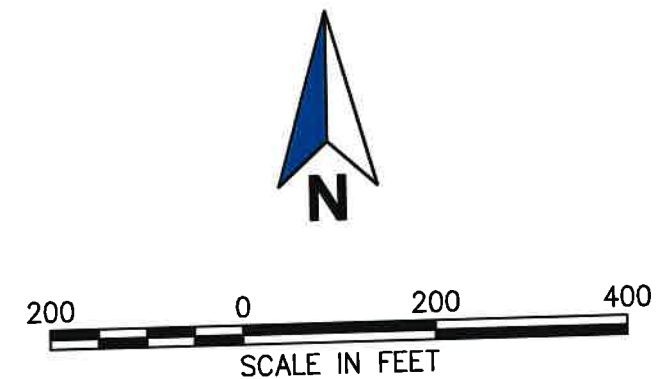


SITE PLAN

- LEGEND**
- DITCH/CHANNEL
 - EXISTING GRAVEL DRIVEWAY
 - PROPOSED GRAVEL ACCESS ROAD
 - PROPERTY LINE
 - PROPOSED DETENTION
 - STRUCTURE
 - PARKING & NUMBER OF SPACES (ON GRAVEL SURFACE)
2
 - SPACE DIMENSIONS:
9'x19' VEHICLE PARKING
15'x72' COMMERCIAL TRUCK PARKING



AA
C-1 DETENTION BASIN
NTS TYP. CROSS-SECTION

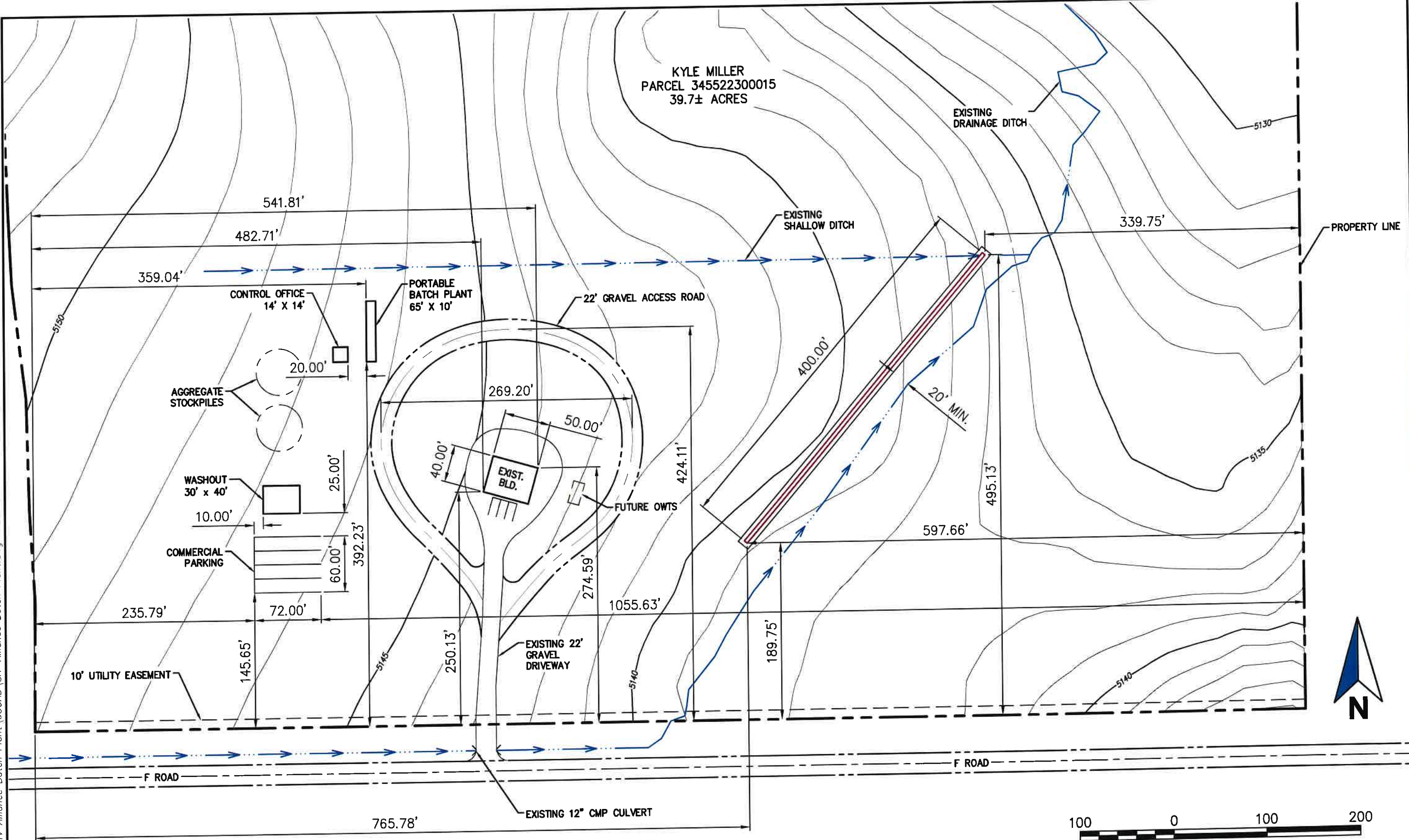


PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS		DESCRIPTION	DATE	BY	DO
1	12/17/2021	REVISED PER COUNTY COMMENTS			

BUCKHORN ENGINEERING		222 South Park Avenue Montrose, Colorado 81401 970-249-6828
ALLIANCE BATCH PLANT		PARCEL: 345522300015 AT 1937 F ROAD DELTA COUNTY, COLORADO
SITE PLAN		
PROJECT	2021-103-CIV	
DATE	12/17/2021	
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BUCKHORN ENGINEERING		
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3 OF 4		

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DETAILED SITE PLAN



PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS			
REV	DATE	DESCRIPTION	BY
1	12/17/2021	REVISED PER COUNTY COMMENTS	DQ
PROJECT 2021-103-CIV			
DATE 12/17/2021			
DRAFTER DL			
CHECKED DQ			
BUCKHORN ENGINEERING			
SHEET			
C-4			
4 OF 4			

BUCKHORN ENGINEERING
222 South Park Avenue
Montrose, Colorado 81401
970-249-6828

ALLIANCE BATCH PLANT
PARCEL: 345522300015 AT 19337 F ROAD
DELTA COUNTY, COLORADO
DETAILED SITE PLAN

Conditions of Approval
Miller (Alliance Ready Mix) CUP (PLN21-001)
PC, February 23, 2022

1. Development and Operation of the Miller Mobile Concrete Batch plant shall be in accordance with approved plans and supplemental documentation to the satisfaction of the Director of Community Development and Natural Resources, including but not limited to:
 - a. Site Plan (dated 12/17/21)
 - b. Alliance Ready Mix Business Plan
 - c. Stormwater Management Plan (SWMP) (dated November 2021)
 - d. Geologic and Soils Report (dated December 21, 2021)
 - e. OWTS Design Plans (dated December 2021)
 - f. Preliminary Drainage Report (dated November 18, 2021)
 - g. Drainage Design Plans (dated December 2021)
 - h. Noise Mitigation and Dust Suppression
 - i. Level 1 Traffic Impact Study (dated November 2021)
 - j. Reclamation Plan (dated December 2021)Any significant modification shall require an amendment to be considered by the Planning Commission and Board of County Commissioners.
2. Irrigation for this parcel is delivered by the Uncompahgre Valley Water Users Association (UVWUA). No new water delivery structures will be allowed or constructed. Any irrigation water for this tract of land will need to be delivered through the existing head gate, as determined by UVWUA. [UVWUA]
3. A Truck Routing Plan shall be submitted to the Planning Department, for review and approval to address the use of semi-trailers, dump trucks, trash hauling trucks, or comparable heavy trucks as they may be disruptive to nearby property owners and could potentially cause damage to the County Roads. Said Plan will also need to address the type of vehicles that will be used for this operation, the frequency of arrivals/departures, approximate hours of truck traffic, and any hazardous materials/hazmat materials being transported. [Engineering]
4. Prior to beginning operations, the applicant shall submit a Final Plan for how water will be provided for domestic purposes (office) and dust control for review and approval by the Director of Planning. [Planning]
5. Outdoor lighting shall be hooded or shielded (cut-off) so as to not cast light or glare onto adjacent properties or upwards in a manner that dilutes the night sky. [Planning]
6. The applicant shall be responsible to keep the site, and surrounding areas, in a neat and orderly condition at all times, including any cost to address trash generated at the Project

site, or by Project employed personnel while on site, if the trash is blown or transported off site. [Planning]

Alliance Ready Mix Co.

Alliance Ready Mix Co is an LLP formed by Cascade Construction and Miller Concrete

Alliance Ready Mix will use the property located at 19337 F Road, Delta, CO 81416 for their concrete ready mix plant.

The property will be used to set up a Bohringer Portable Concrete Batch Plant. This equipment is used to weigh and mix material for concrete.

The facilities will also include a 24x40 building for miscellaneous equipment and office.

There will be four (4) mixer trucks and a semi with an end dump trailer.

The estimated product output is 150 to 300 yards concrete daily.

Hours of operation are 6:00 AM to 5:00 PM

BSLS-150



All specifications are current as of this printing but are subject to change without notice.
Production capacities will vary depending on mix designs, job site restrictions, and logistics. Cement storage is based on theoretical value using a cement density of 94lbs per cubic foot. "All Rights are Reserved".

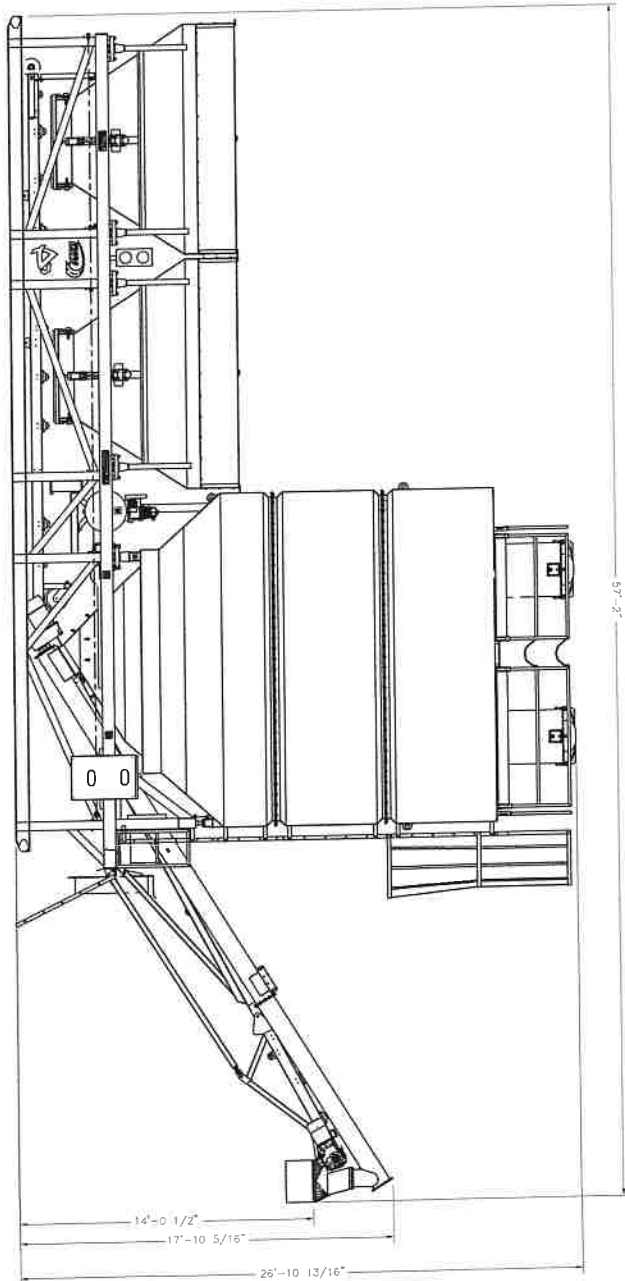
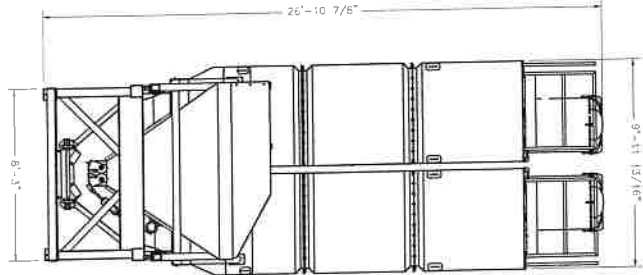




CONCRETE EQUIPMENT



4.1.1.2



WORK MODE

ITEM	DESCRIPTION/MATERIAL	FEET	INCHES	WT
1	B100S LAY OUT DRAWING ~ B100SD900	49.200		140620
2	SILCO			33062
2	AUGER			128662
3	SMD			3671
4	CONNECTOR			8473
5	AG BIN			
6	B100-5 INSERTS			5770

REV#	DATE	DESCRIPTION	REV'D BY	CHK'D BY	AUTH'D BY	REV#	DATE	DESCRIPTION	REV'D BY	CHK'D BY	AUTH'D BY
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BOHLINGER

THE INFORMATION INCLUDED IN THIS DOCUMENT IS
 PROPRIETARY AND SHALL NOT BE REPRODUCED,
 TRANSFERRED OR DISCLOSED TO OTHERS, FOR ANY
 PURPOSE WHATSOEVER, WITHOUT THE WRITTEN
 AUTHORIZATION OF BOHLINGER GROUP.

SCALE 3/8" = 1'-0"	TITLE B1005 WORKING MODEL
DRAWN BY DATE	CHECK'D BY DATE
T52 B1005	B100-S REV 3



STORM WATER MANAGEMENT PLAN (SWMP)
Alliance Batch Plant
Delta County, Colorado
November 2021

PREPARED FOR: Cascade Construction, LLC
501 East Main Street
Delta, CO 81416
Contact: Jon Plank
(970) 417-4361

PREPARED BY: Buckhorn Engineering, Inc.
222 South Park Avenue
Montrose, CO 81401
Contact: Dan Quigley, PE
(970) 497-8852

TABLE OF CONTENTS

Section	Description	Page
1.0	DESCRIPTION OF PROPOSED PROJECT	2
2.0	SITE CHARACTERISTICS	2
3.0	EXISTING AND DEVELOPED STORM RUNOFF	3
4.0	POTENTIAL POLLUTANTS AND NON-STORM WATER DISCHARGES	3
5.0	BEST MANAGEMENT PRACTICES FOR CONSTRUCTION ACTIVITIES	4
6.0	PERMANENT STORM WATER CONTROLS	6
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APPENDICES

APPENDIX A – EROSION CONTROL PLAN

APPENDIX B – NRCS WSS SOILS INFORMATION

APPENDIX C – BEST MANAGEMENT PRACTICES FOR THE SITE

1.0 Description of Proposed Project

The proposed project is the installation and operation of a mobile ready-mix concrete batch plant in Delta County Colorado. The site is located at 19377 F road approximately 3.5 miles east of the City of Delta. The site is located in Section 22 of Township 15 South, Range 95 West of the 6th Prime Meridian.

The specific activities for the site and their general order are as follows:

- (1) Mobilize on site and construct the batch plant pad and associated roads, driveways, utilities and other required infrastructure.
- (2) Restore and reclaim disturbed areas to pre-construction condition after each phase of construction per Delta County development standards.

The following controls and principles of storm water management shall be implemented over the entire area of disturbance and throughout the entire period of construction:

- (1) All vehicle and equipment maintenance areas, fueling and fuel storage areas, and material storage facilities shall be clearly identified as such and surface runoff contained for appropriate disposal. Vehicle and equipment maintenance, fueling and fuel storage, and material storage will be strictly confined to designated areas.
- (2) As a matter of best management practice, the areas of disturbance will be managed such that the time period from initial disturbance to stabilized condition is limited. Disturbed areas shall be considered stabilized when vegetative coverage is in place to prevent surface erosion.
- (3) The initial re-vegetation of a disturbed area should be done as soon as practical after the initial stabilization of that area. For example, at the next best opportunity for effective germination of seed.

2.0 General Site Characteristics

The Alliance Batch plant site is located on the at 19377 F Road east of the City of Delta in generally undeveloped, arid gently sloped terrain. Elevations at the site range from 5141 feet in the south to 5131 feet at the northern edge of the property. The site has not apparently been previously disturbed and is poorly vegetated with native grasses, and shrubs. Average slope across the site is <2%.

C. The project area has been mapped by the NRCS on their Web Soil Survey (WSS) online site to contain three (3) soil units which are:

- Montrose Silty clay loam (Map unit 701) which comprises approximately 95% of the property and forms slopes from 0 to 2%. This unit is classified as a Hydrologic Soil Group (HSG) type C

soil, which indicates poorly well drained soil with a low infiltration rate and moderately high runoff potential.

- The Sagers silty clay loam (Map Unit 703) comprises approximately 1.1% of the site and forms slopes from 2 to 7% and is classified as an HSG C unit with low infiltration potential and moderately high runoff potential due to the impervious nature of the soil.
- The Persayo-Fruita Complex (map Unit 740) comprises approximately 3.9% of the property and forms slopes from 0 to 12% and is in the HSG D with high runoff potential and low infiltration potential.

The site is characterized by storm water sheet flows across the entire portion of the site and concentrates in irrigation wastewater ditches on the eastern portion of the property. That drainage connects to an unnamed waste ditch along the northern boundary of the site.

3.0 Existing and Developed Storm Water Runoff

Typically, peak runoff at the site will occur due to localized summer precipitation events can also produce intense, short duration, runoff events. The developed runoff coefficient was estimated to be 0.57 since the site will generally not be cleared of vegetation for the proposed development. The pre-developed runoff, using the Rational Method, was calculated to be 9.92 cfs. The total area contributing to the detention basins is approximately 10 acres and the peak developed runoff is estimated to be 9.92 cfs for the proposed development. One linear stormwater detention basin is proposed in the central portion of the site. This basin is capable of holding a total approximately 16,000 cubic feet which will temporarily detain anticipated storm water runoff from the 100-year, 24-hour recurrence event.

4.0 Potential Pollutants and Non-Storm Water Discharges

The primary potential pollutant to storm water runoff is sediment from storm runoff during construction, which will be collected on site and allowed to dry by evaporation in-situ. No potential non-storm water discharges are expected since all runoff will be retained in the linear detention basin described above.

Potential pollutants shall be controlled by the following methods:

- **Education:** All on-site personnel shall be informed of the required protection of the storm water system. All sub-contractors shall be made aware of the SWPPP and agree to work in accordance with the plan. Such information shall include instruction on any required controls to prevent pollution of the surface and storm water.

- **Fugitive Dust Prevention:** As part of the site's Fugitive Dust Control Plan, haul roads and material storage piles will be watered as needed to minimize dust potential.
- **Vehicle Maintenance:** Routine vehicle maintenance will be performed at the site during project construction. Emergency vehicle repair will include measures for limiting, containing and removing potential pollutants from the site after such repairs.

Potential Non-Storm Water Discharges shall be controlled by the following methods:

- **Wash water:** No unnecessary vehicle or equipment washing shall occur on-site. If it becomes necessary to clean equipment or vehicles on site to prevent sedimentation of adjacent roadways, the wash shall occur in an area with appropriate sediment and wash water controls.
- **Water line flushing:** After construction, water lines will be flushed to the site detention basin to allow chlorine to dissipate naturally through the proposed sand filter at the floor of the detention basin.
- **Ground water discharge:** No ground water discharge is anticipated for the site.
- **Concrete Washout:** As shown on the Erosion Control Plan in Appendix A of this report and in the project construction drawing set, a lined concrete washout basin, per CDOT SWMM standards, shall be installed on site to limit potential groundwater impact by concrete wash water. A proposed location is shown on the erosion control plan but may be re-located as required by final site layout of the batch plant.

5.0 Best Management Practices for Construction Activities:

Activities at the site include necessary site clearing, batch plant construction, access road construction, utilities installation, and material stockpiling. Additionally, construction vehicles of varying types will be used to deliver the raw materials for concrete production.

The order of the actions required for erosion and sediment control compliance shall be as follows. Refer to the erosion and drainage plan in Appendix A of this report for erosion and sediment control specifications and Best Management Practices (Appendix C).

Prior to earthwork:

- Stake limits of disturbance and place markers for definition. *Note: No disturbance is allowed outside the staked limits.*
- Install erosion and sediment controls sufficient to protect existing wetlands and Environmentally Sensitive Areas (ESA's) outside the limits of disturbance.

- Construct storm water inlet controls for existing drainages and place erosion logs in accordance with Best Management Practices.
- Construct a lined concrete washout area (CWA) to limit potential pollution of the groundwater and the unnamed waste ditches that border the site.

Preliminary Site Construction Activities:

- Strip topsoil in area of immediate batch plant pad and access road construction. Stockpile topsoil that is to be reused. A proposed area is shown on the erosion control plan in Appendix A.
- To limit potential erosion and sediment transport stockpiled topsoil, fill, or other materials should have flattened tops with side slopes terraced if steeper than 2:1. Slopes should not exceed 2:1. Surface erosion control measure such as mulching or track walking should be implemented on stockpiled material that is to remain untouched for more than 30 days to prevent erosion, sediment transport, and contamination of pile. Sediment control measures such as silt fence, diversion and retention structures, and velocity dissipation devices shall be installed on or around stockpiles as necessary to prevent contamination of drainage ways. Any excess material shall be removed off site.
- Leave any disturbed surfaces in a roughened state. If areas are to remain untouched more than 30 days then implement temporary surface erosion controls including, but not limited to silt fencing at pile bases and slope stabilization by vegetation or other acceptable means.
- Install erosion controls as shown on the erosion control plans.
- Establish orderly staging and storage area, do not store any materials that may contaminate storm water outside the storage area.
- Establish a protected inside area for the storage of any materials with potential to contaminate storm water. Provide spill containment as necessary for stored materials.

Ongoing Maintenance and Inspection:

- Maintain site clean of trash and debris, provide regular service for trash dumpster and temporary toilet facility.
- Inspect aggregate storage areas on daily basis to check for any potential for storm water contamination and correct.
- Inspect all sediment and erosion controls a minimum of once every 2 weeks and after each storm event. Repair as necessary and institute additional controls as necessary. Remove any sediment at sediment controls when it exceeds the available storage capacity. During seasonal periods of higher runoff, inspection and maintenance shall be performed on a daily basis if necessary.
- Inspect all disturbed areas and re-track to roughen and apply additional mulch as necessary to prevent erosion and sediment transport.
- Educate all on-site personnel regarding the erosion and sediment control plan and the importance of storm water quality protection. Prohibit any dumping of waste materials (concrete, paint etc.) outside of designated areas.

- Implement additional erosion and sediment controls as necessary, based on visual inspection, as work progresses.
- Maintain daily logs of inspection, maintenance and implementation of SWMP.

Completion of Batch Plant Construction Activities:

- As areas of the site achieve final or subgrade elevations, place topsoil and vegetation per landscape plan. Leave temporary erosion and sediment controls in place until vegetation is well established.
- When site work is complete, and final surface is stabilized, remove and reclaim erosion and sediment controls and construct permanent controls as required.
- Review site and remove any trash or construction debris and repair any areas of erosion.
- Continue to inspect and maintain erosion and sediment controls at a minimum of once per week and after any storm event.

6.0 Permanent Storm Water Controls

The permanent storm water control for erosion and sediment for the site is the linear storm water detention basin shown on the drainage plan prepared Buckhorn Engineering. All areas should be inspected at a minimum of twice annually and after every significant storm event. Any damaged areas should be repaired and temporary controls (such as mulch or silt fencing) implemented as needed. Also, the Owner should be aware that no non-storm water discharges should be allowed on the site, do not dispose of any household waste, cleaners, paints or other non-storm water items to the ground or drainage structures, contact local agencies for appropriate disposal methods.

7.0 Responsible Parties

The Owner and General Contractor, Cascade Construction, shall be responsible for implementing, maintaining and monitoring effectiveness of the Storm Water Management Plan during construction and during post-construction operation of the senior living facility. The owner and contractor shall supplement or revise the plan as necessary to control all on-site erosion as site conditions develop and to ensure all site runoff is treated by the storm water controls. Cascade Construction is responsible for actions of all sub-contractors as they relate to the Storm Water Management Plan and shall ensure all sub-contractors are aware of the plan and the intent of site controls and maintain such intent.

The general contractor selected for the construction of the project, Cascade Construction, shall keep detailed records of the SWMP on site at all times. This includes the storm water discharge permit, SWMP (report and drawings), inspection reports and certificates, other project related permits and SWMP plan change reports.

**BUCKHORN
ENGINEERING**

Cascade Construction shall keep all documentation associated with this for a period of three (3) years after permit close out. Cascade Construction or its designated representative shall be responsible for long term implementation, maintenance and monitoring of Storm Water Management Plan.

General descriptive Best Management Practices (BMP's) are included herein and on the drainage and erosion control plan prepared by Buckhorn Engineering. Those BMP's are for general reference. The responsibility for implementing, maintaining and monitoring the effectiveness of these or other BMP remains with the Operator and General Contractor as outlined above.

8.0 Consultants Qualifications

Buckhorn Engineering, Inc. is a full-service consulting engineering firm servicing both private and municipal clients the Western Slope of Colorado for over 30 years. This plan was prepared by Dan Quigley, P.E. who has over 29-years of experience in civil engineering design incorporating storm water management and has been closely involved in development of erosion and sediment control Best Management Practices for municipalities and for private development for the past 17 years. Dan is a certified Stormwater Manager through the 5-2-1 Drainage Authority in Grand Junction, CO.

9.0 Certification

I, Daniel C. Quigley, a duly registered professional engineer in the State of Colorado, (registration #38334), have prepared this report, related documents, and supervised the preparation of the drawings enclosed. The information included is, to the best of my knowledge, accurate and conforming to Chapter 4 of the Delta County Land Use Regulations and to accepted engineering practices for the preparation of Storm Water Management Plans.

November 16, 2021



Project Engineer

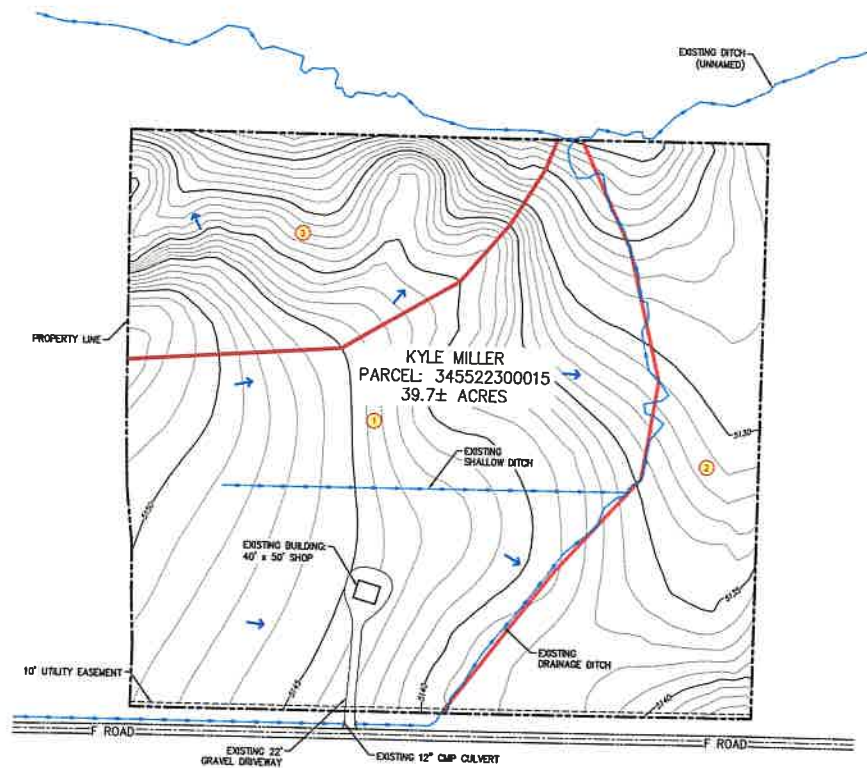
Buckhorn Engineering, Inc.





APPENDIX A

EROSION CONTROLPLAN



EXISTING CONDITIONS

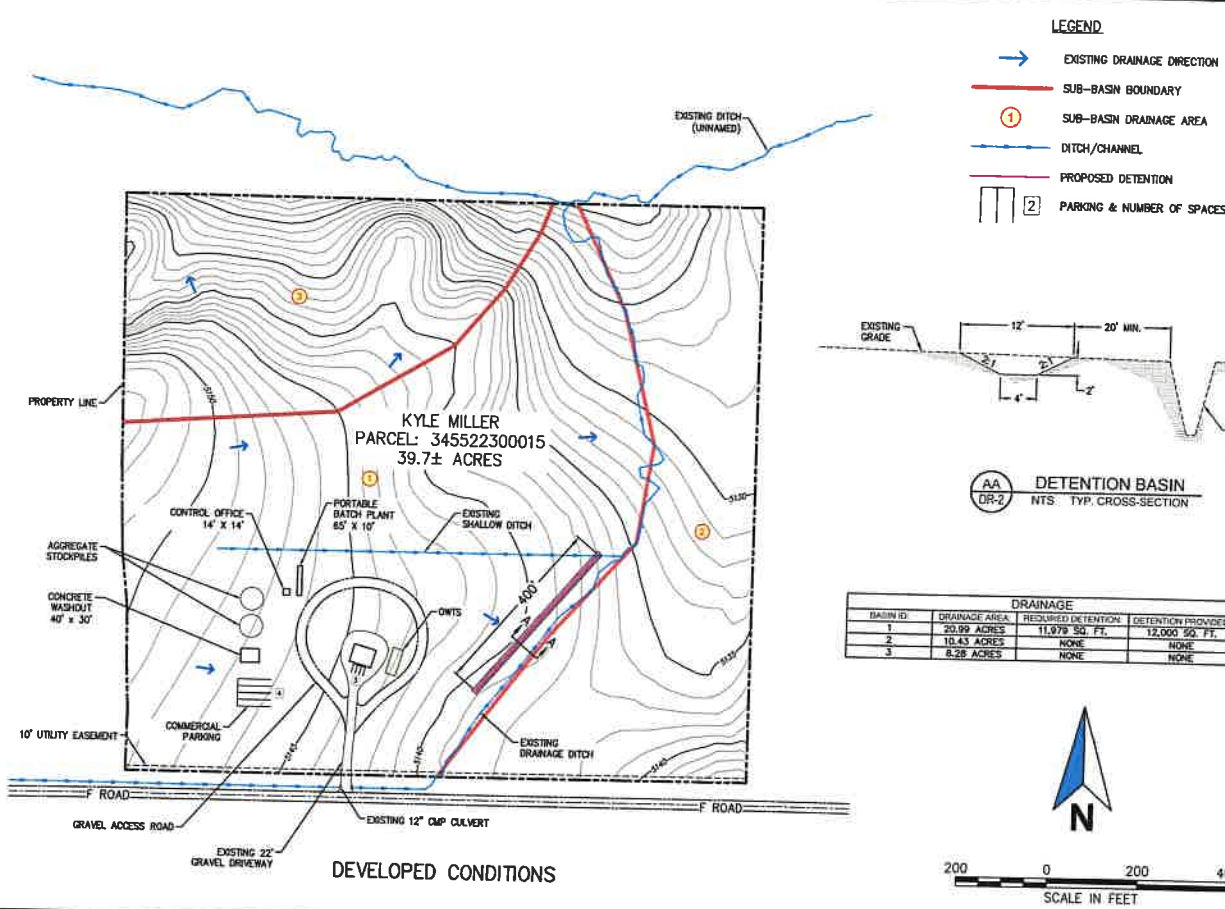
LEGEND

- EXISTING DRAINAGE DIRECTION
- SUB-BASIN BOUNDARY
- SUB-BASIN DRAINAGE AREA
- DITCH/CHANNEL



200 0 200 400
SCALE IN FEET

REV	DATE	REVISIONS	BY	DO
1	12/09/2021	REVISED FOR COUNTY CONDITIONS		
BUCKHORN ENGINEERING 222 South Park Avenue Montrose, Colorado 81401 (970) 249-6023				
KYLE MILLER ALLIANCE BATCH PLANT PARCEL: 345522300015 AT 10377 F ROAD DELTA COUNTY, COLORADO EXISTING CONDITIONS				
PROJECT: 2021-103-OV DATE: 12/09/2021 DRAWN BY: [blank] CHECKED BY: [blank] BUCKHORN ENGINEERING				
SHEET DR-1 1 OF 2				



DRAINAGE			
Basin ID	Drainage Area	Required Detention	Detention Provided
1	20.99 ACRES	11,979 SQ. FT.	12,000 SQ. FT.
2	18.43 ACRES	NONE	NONE
3	8.28 ACRES	NONE	NONE

REV	DATE	REVISIONS
1	12/01/2021	REVISED FOR COUNTY COMMENTS
2		

BUCKHORN ENGINEERING
222 South Park Avenue
Montrose, Colorado 81401
970.249.0238

KYLE MILLER
ALLIANCE BATCH PLANT
PARCEL: 345522300015 AT 10331 F ROAD
DELTA COUNTY, COLORADO
DEVELOPED CONDITIONS

PROJECT: 2021-105-DY
DATE: 12/01/2021
DRAWN BY: JL
CHECKED BY: JL
BUCKHORN ENGINEERING

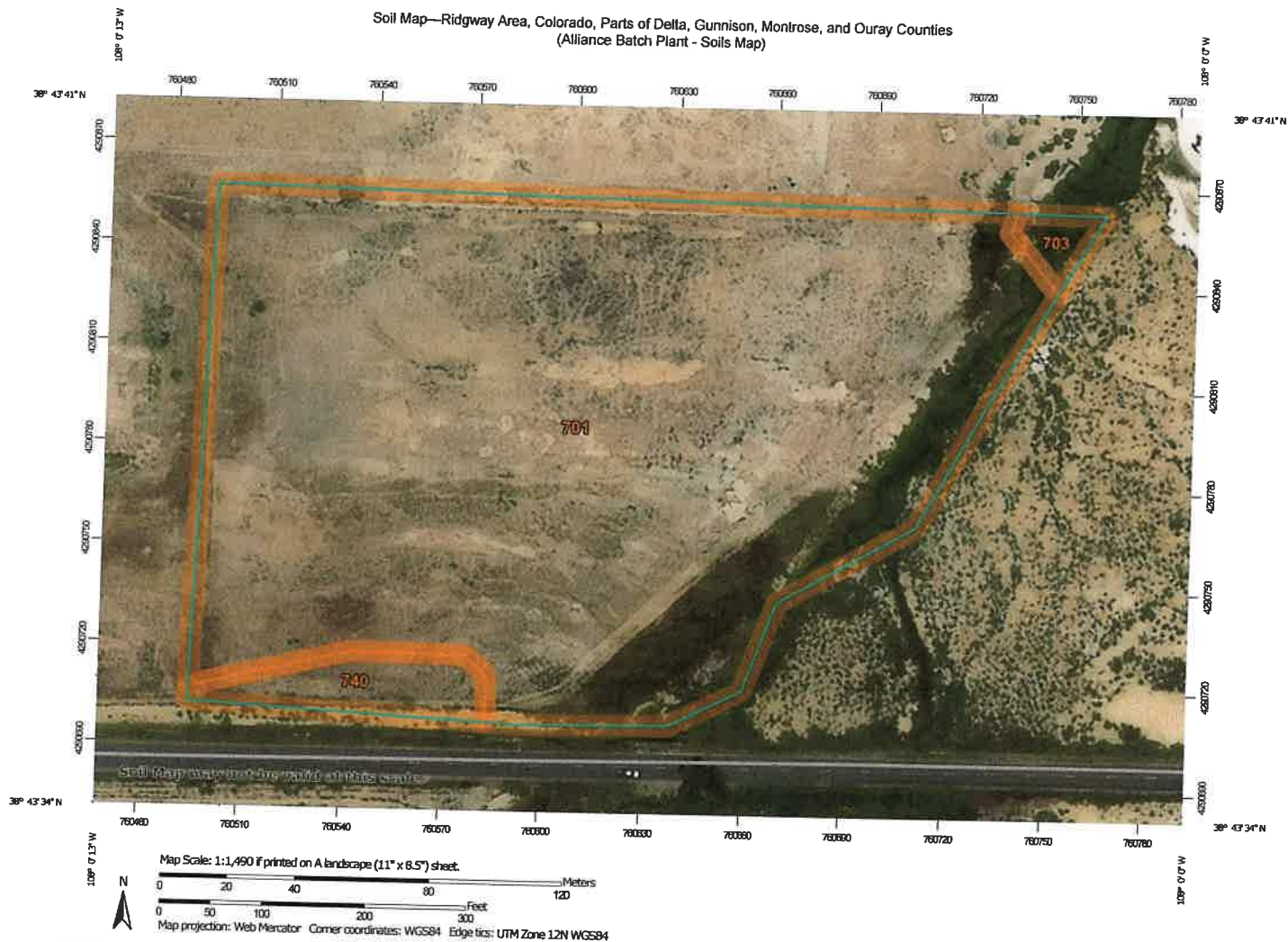
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2 OF 2



APPENDIX B

NRCS WSS SOILS INFORMATION

Soil Map—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - Soils Map)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/15/2021
Page 1 of 3

Soil Map—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - Soils Map)

MAP LEGEND

Area of Interest (AOI)		Spoil Area
Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
Soil Map Unit Polygons		Wet Spot
Soil Map Unit Lines		Other
Soil Map Unit Points		Special Line Features
Special Point Features		Water Features
Blowout		Streams and Canals
Borrow Pit		Transportation
Clay Spot		Rails
Closed Depression		Interstate Highways
Gravel Pit		US Routes
Gravelly Spot		Major Roads
Landfill		Local Roads
Lava Flow		Background
Marsh or swamp		Aerial Photography
Mine or Quarry		
Miscellaneous Water		
Perennial Water		
Rock Outcrop		
Saline Spot		
Sandy Spot		
Severely Eroded Spot		
Sinkhole		
Slide or Slip		
Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
Survey Area Data: Version 13, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jul 7, 2017

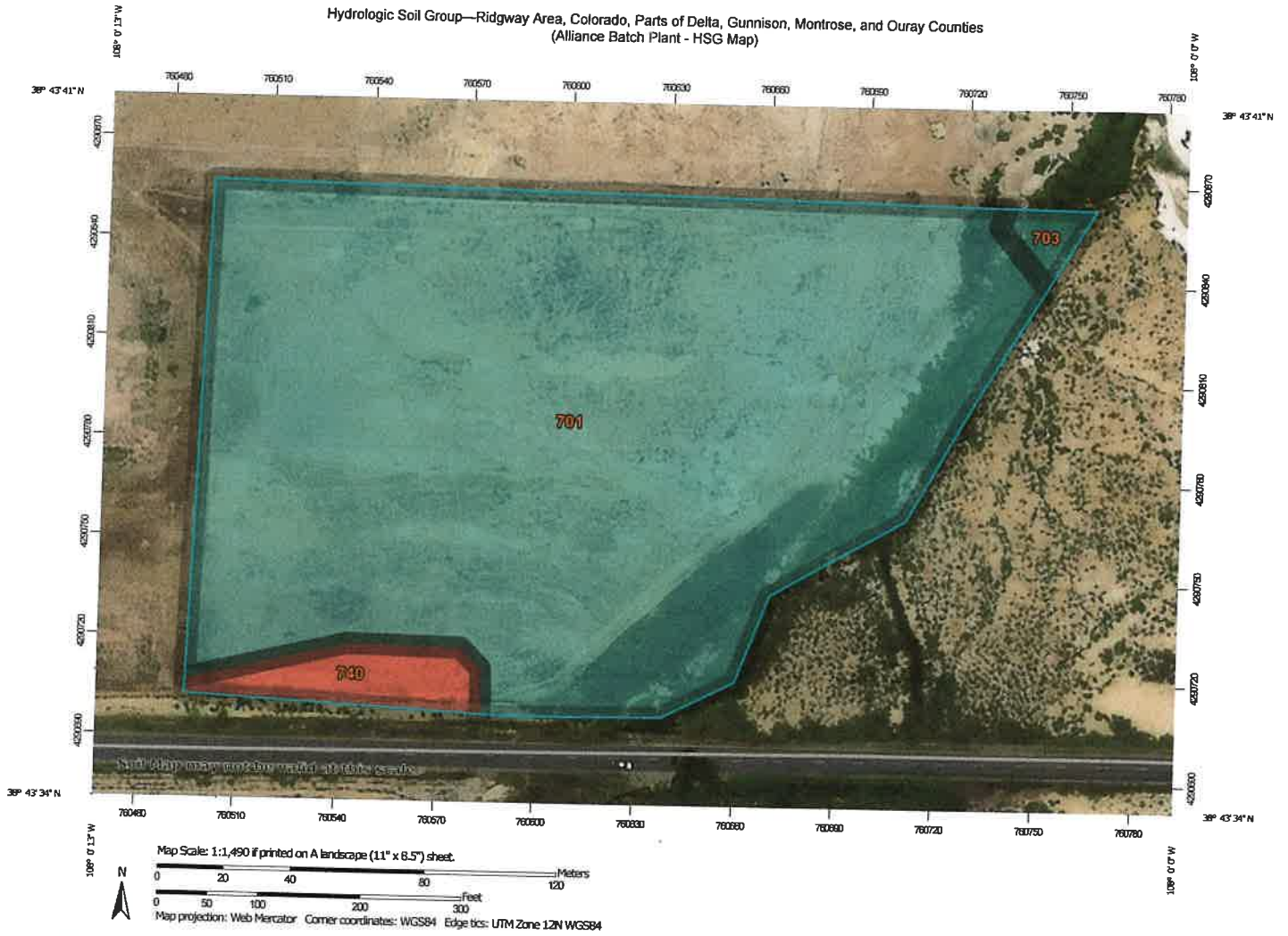
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
701	Montrose silty clay loam, 0 to 2 percent slopes	7.9	95.0%
703	Sagers silty clay loam, 2 to 7 percent slopes	0.1	1.1%
740	Persayo-Fruita complex, 0 to 12 percent slopes	0.3	3.9%
Totals for Area of Interest		8.4	100.0%



Hydrologic Soil Group—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - HSG Map)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/15/2021
Page 1 of 4

Hydrologic Soil Group—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - HSG Map)

MAP LEGEND

Area of Interest (AOI)			C
 Area of Interest (AOI)		 C/D	
Soils		 D	
Soil Rating Polygons		 Not rated or not available	
 A		Water Features	
 A/D		 Streams and Canals	
 B		Transportation	
 B/D		 Rails	
 C		 Interstate Highways	
 C/D		 US Routes	
 D		 Major Roads	
 Not rated or not available		 Local Roads	
Soil Rating Lines		Background	
 A		 Aerial Photography	
 A/D			
 B			
 B/D			
 C			
 C/D			
 D			
 Not rated or not available			
Soil Rating Points			
 A			
 A/D			
 B			
 B/D			

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
Survey Area Data: Version 13, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jul 7, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
701	Montrose silty clay loam, 0 to 2 percent slopes	C	7.9	95.0%
703	Sagers silty clay loam, 2 to 7 percent slopes	C	0.1	1.1%
740	Persayo-Fruita complex, 0 to 12 percent slopes	D	0.3	3.9%
Totals for Area of Interest			8.4	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

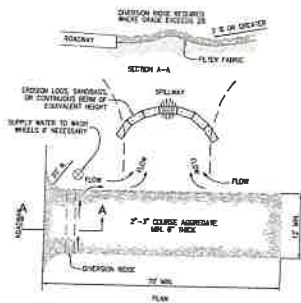
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

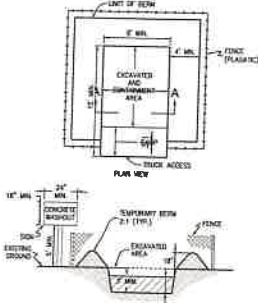
APPENDIX C
CONTROL MEASURES



NOTES

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF FLOWING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP COATING, RETAIN AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN BAKING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH COLORED STONE THAT DRAINS INTO AN AFFIRMED SEDIMENT TRAP OR SEDIMENT BASIN.

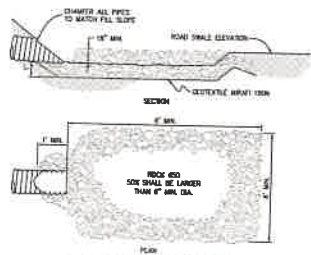
2
1 **STABILIZED CONSTRUCTION ENTRANCE**
NTS
CONSTRUCT AT ALL CONSTRUCTION ACCESS
POINTS TO PAVED ROAD



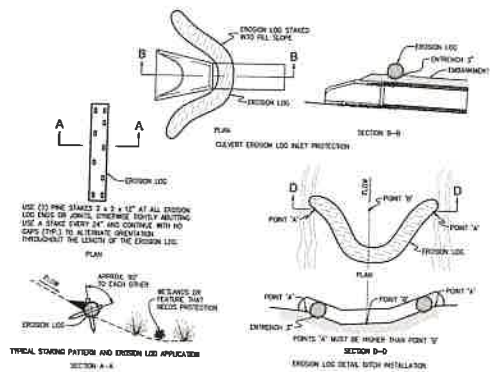
NOTES

1. DITCH BUILT MAY BE USED AS AN ALTERNATIVE FOR THE BOX.
2. A FENCE (PLASTIC) SHALL BE INSTALLED AROUND THE CONCRETE WASHOUT AREA, EXCEPT AT THE OUTLET.
3. THE CONCRETE WASHOUT BOX SHALL HAVE LETTERS AT LEAST 3 INCHES HIGH.

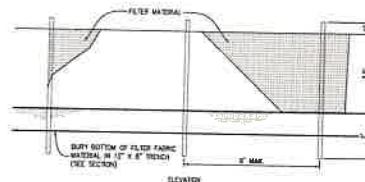
4
1 **CONCRETE WASHOUT STRUCTURE**
NTS



2
1 **OUTLET PROTECTION**
NTS



1
1 **EROSION LOG FILTER**
NTS



SILT FENCE DETAIL

1. FENCE SHALL NOT BE INSTALLED ON SLOPES STEEPER THAN 3:1.
2. JOINTS IN FENCE SHALL BE OVERLAPPED 6" AT POINT.
3. USE STAPLES, NAIL PINS, OR EQUIVALENT TO ATTACH TO WOOD POSTS.
4. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. MAXIMUM RECOMMENDED STAKE HEIGHT IS 12".
5. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

2
1 **SILT FENCE DETAIL**
NTS

BUCKHORN ENGINEERING

December 21, 2021

Kyle Miller
6448 6250 Trail
Montrose, CO 81401

RE: **Alliance Ready Mix (PLN21-001), 19337 F Road, Delta, Colorado
Geologic and Soils Report**

Dear Mr. Miller:

As required by the Delta County Planning Department, Buckhorn Engineering, Inc. (BEI) has prepared this Geologic and Soils Report for your proposed Alliance Ready Mix Batch Plant at 19337 F Road in Delta County. The purpose of this report is to provide soil suitability and site characteristics for the Planning Department to use to review and approve the proposed project relative to a Geologic Hazards Assessment (Chapter 4, Section 6 of the County Land Use Code) and Soils Suitability (Chapter 5, Section 2 of the LUC). As stipulated in a document outlining the "Recommended Conditions of Approval" dated October 27, 2021, from County Planner Kate Kelly, site characteristics and hazards as outlined in the Colorado Geological Survey "Guidelines and Criteria for Identification and Land-Use Controls of Geologic Hazard and Mineral Resource Areas" (SP-06) must be identified. The conditions of approval also require that a qualified engineer performs a site visit, and the report must address ground subsidence, expansive soil and rock, and the suitability of the soil. This report contains the findings of our evaluation of the site geology, hazards, and soils as they pertain to the proposed use.

Site Characteristics

The subject property is Delta County Parcel 345522300015 that is 39.7 acres in Section 22 Township 15S Range 95W. The following photographs show the nature of the site at the time of our site visit on December 3, 2021 by BEI Professional Engineer and Professional Geologist.



Photo 1 (left) view north from F Road towards the driveway and new shop/office building.

Photo 2 (right) view southeast at the shop/office from near the proposed batch plant site.

The area to be developed on the property is at an average elevation of 5,145 feet. The site is gently sloping at a gradient of 1-2% down to the east towards a drainage, which carries runoff to the northeast and then north. The property had been irrigated in the past, as evidenced by furrows, but it is now mostly vacant with a shop/office building (seen in Photos 1 and 2) that sits about 300 feet north of F Road and is accessed by a gravel driveway (Photo 1) in the southern portion of the lot. The following aerial image (Figure 1) shows the building site and surrounding land on the north side of F Road. Green areas on the image are generally either irrigated or are within drainage areas, brown/tan areas contain sparse or very low vegetation, and white areas are those with abundant salts on the ground surface.



Figure 1. Google Earth image of the general area to be developed and the surrounding features. Note the drainage in the southeast corner of the property that passes under F road and the generally dry nature of the site.

Locally, drainage is to the north and northeast. Much of the runoff is controlled by irrigation ditches and return flow channels, such as the one to the east of the existing building. As seen in Figure 1, the adjacent parcel to the west is irrigated, but generally, most of the land in the immediate vicinity of the subject property is not irrigated.

Project Description

As seen on the Site Plan below (Figure 2), the proposed site improvements include: a circular drive around the existing shop/office, an Onsite Wastewater Treatment System (OWTS) located on the east side of the building, a portable batch plant (65 feet x 10 feet) located northwest of the shop/office, a small (14 feet x 14 feet) control office by the batch plant, aggregate stockpiles, a concrete washout area (40 feet x 40 feet), a commercial parking lot, and a 400-foot long detention basin on the west side of the existing drainage ditch. The driveway and parking areas will all be unpaved and contain a gravel surface.

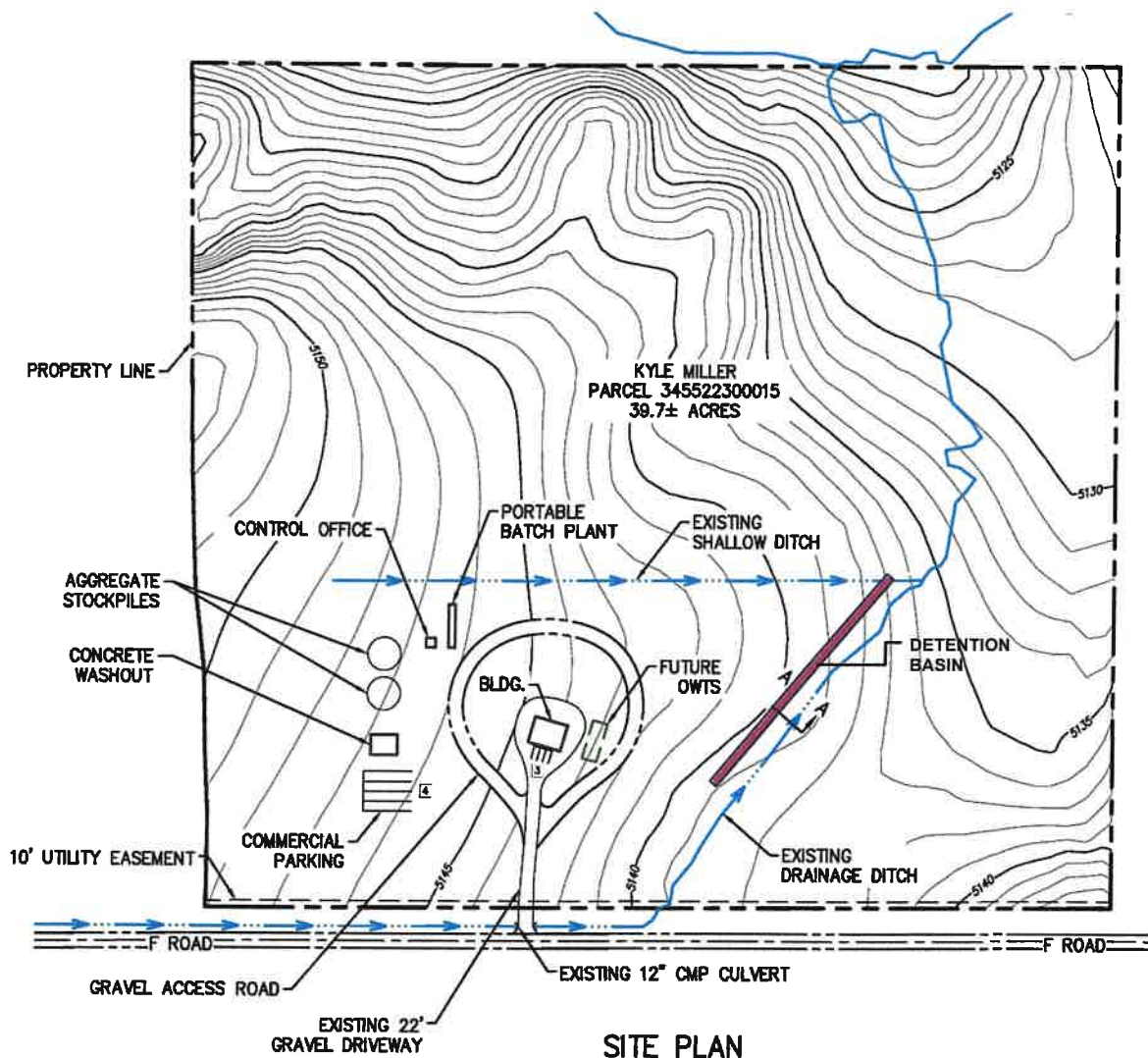


Figure 2. Site Plan of the proposed project improvements (prepared by BEI).

Geologic Setting

According to the *Geologic Map of the Delta Quadrangle, Delta and Montrose Counties, Colorado* (Colorado Geological Survey Open-File Report OF-08-02, 2008), the building site is mapped as Quaternary alluvial mudflow and fan valley fill (*Qamf*) deposits overlying the Smoky Hill Member of the Mancos Shale (*Kms*), as seen on Figure 1. The alluvial mudflow deposits are described as "light grayish-reddish-brown to pale orange-yellow, well to occasionally poorly sorted, poorly consolidated, clayey to sandy silt deposited in valley head and valley side alluvial fans, tributary stream valleys, and coalescing fans in broad basins." Areas mapped as *Qamf* may be subject to future flash floods and debris flow events, especially in non-incised valley head and valley side areas and within deeply dissected modern arroyo channels. These soils can be prone to significant collapse from dispersion, hydro-compaction, or slope failure when wetted or loaded. See the following Figure 3 for the geologic map of the site and the surrounding area.

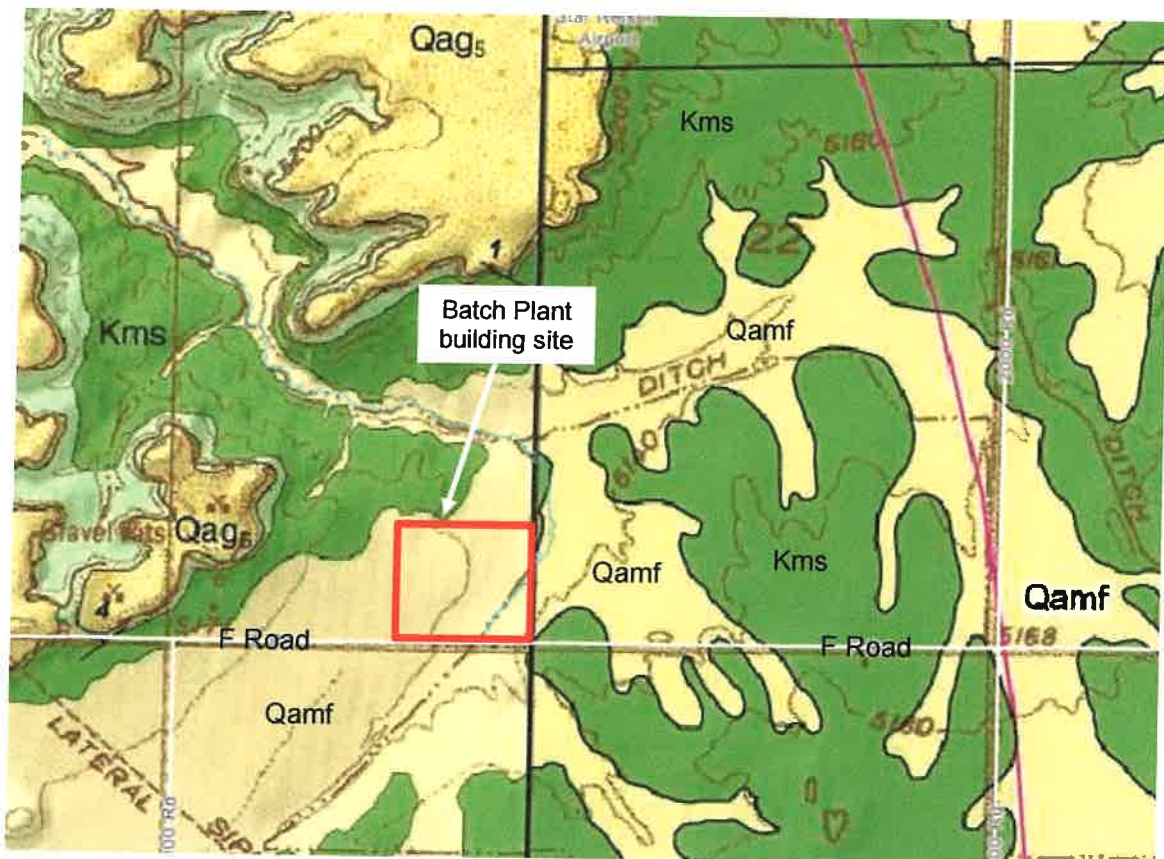


Figure 3. Google Earth image of the general area to be developed and the surrounding features. Note the drainage in the southeast corner of the property that passes under F road and the generally dry nature of the site.

The bedrock that underlies this site and which is exposed as Adobe (badland) hills nearby, is of the Smoky Hill Member of the Mancos Shale that is described as "blackish-gray to tan, slightly calcareous to silty, marine shale." This marine shale can be problematic for buildings and roads in the region, as it has the potential for being expansive when wetted, shrinking when dried, causing unstable slope conditions, and it contains salts (including gypsum and other sulfates) that can be corrosive to concrete and steel.

Geotechnical Evaluation

Three test pits were excavated on this property to evaluate the soils for construction of the batch plant and the OWTS. Test Pit #1 (TP#1) was located at the batch plant site and TP#2 and TP#3 were located in the OWTS leachfield site (see Figure 2). As seen in the attached Test Pit Logs, in TP#1 we found 1-foot of dark brown, dry, clay with scattered roots which is likely a disturbed plow layer. From 1-1.5 feet is a tan, dry, fine sandy clay and from 1.5 to 4 feet was dark brown, dry, very stiff to hard, clay that was difficult to excavate using a mini-excavator. The pit was terminated at 4 feet due to these hard conditions. Laboratory tests of the soil from 2 to 4 feet was found to be composed of less than 1% gravel, 34% sand (mostly fine sand), 16% silt, and 49% clay. Atterberg Limits tests indicate the soils has a Liquid Limit of 28, a Plastic Limit of 11, and a Plasticity Index (PI) of 17. A soil with a PI of between 15 and 30 is considered to be moderately plastic, which means that it has the potential to react with water,

thus changing volume by expanding when wetted and shrinking when dried. This soil classifies in the Unified Soil Classification System (USCS) as a sandy lean clay (CL). In-situ moisture content was found to be 8.1% at 1-1.5 feet. A Standard Proctor test of the sample from 2-4 feet had a maximum density of 112.9 pcf at 12.1% optimum moisture content.

The two test pits excavated at the leachfield (OWTS) site were nearly identical and we found 0.9 feet of a light brown, dry, stiff, lean clay (CL) plow layer with some roots and massive structure. From 0.9 to 6 feet, the soil is light brown, stiff, sandy lean clay (CL) with massive structure and abundant salts. This soil was dry to 4 feet and then moist below that. A sample of soil from 1-2 feet in TP#1 was found to be composed of 0% gravel, 17% sand, 13% silt, and 70% clay. From 6 to 8 feet, we found brown, moist, lean clay with highly weathered Mancos Shale. No groundwater was found to 8 feet and there is no evidence of a seasonal water table. Both pits were terminated at 8 feet.

Geologic Hazards

According to the Delta County LUC (Chapter 4 Section 6), the purpose of a geologic hazards assessment is "to ensure that development occurs with due regard to geologic and wildfire hazards, such that it does not exacerbate hazards for adjacent and nearby land uses or create a danger to public health and safety." Geologic hazards specifically identified for evaluation in the LUC are wildfire, steep slopes, areas of special flood hazard, abandoned mines, and abandoned oil and gas wells. Additionally, geologic hazards as outlined in the Colorado Geological Survey (CGS) "*Guidelines and Criteria for Identification and Land-Use Controls of Geologic Hazard and Mineral Resource Areas*" (Special Publication SP-06) must be identified and mitigation measures provided, where needed. According to SP-06, the geologic hazards that must be evaluated for each site are avalanches, landslides, rockfalls, mudflows and debris fans, unstable or potentially unstable slopes, seismic effects, radioactivity, ground subsidence, and expansive soil and rock. In preparation of this report, BEI also reviewed the 2018 *Delta County Multi-Jurisdictional Hazard Mitigation Plan* (MJHMP) to identify potential mapped hazards relevant to the subject property. The geohazards identified in the MJHMP were expansive soils, erosion, avalanche, landslides, and rockfalls.

Based on our analysis of the topography, geology, soils at this site and available mapping, the following geologic hazards are not relevant to this site: avalanche, rockfall, landslide, unstable or potentially unstable slopes, ground subsidence, abandoned mines, abandoned oil and gas wells, and flood hazard from the breach of dams or river flooding. The geohazards that are relevant to this site and potential mitigation (avoidance, mitigation, or no practical mitigation) are discussed below.

1. **Expansive and Collapsible Soil and Rock** – Soils that contain expansive clays can react with water and expand when wetted and shrink when dried. This has the potential to exert significant pressures against foundation components that can damage the foundation and cause structural damage to a building. The Mancos Shale formation and soils derived from the Mancos Shale, are known to have expansive potential. In addition, the soils derived from the weathering of shale can be expansive or even collapsible, depending on the proportion of silt and clay and the mode of deposition. The alluvial mudflow and fan valley fill (*Qamf*) deposits described in the *Geologic Setting* section, are the mudflow deposits that fill the drainages and low-lying areas adjacent to the shale (Adobe) outcrops. They are often deposited rapidly and chaotically in a slurry that contains voids and does not settle or densify. These soils can be

susceptible to hydro-compaction and collapse when water is applied while the soils are under load (i.e., due to a building foundation).

General recommendations for mitigating this hazard from the differential movement of soils under a foundation, is to remove at least 1-foot of the fine-grained native soil or shale and replace it with compacted structural fill. This creates a uniformly dense bearing surface that is not reactive with water and it also allows the foundation to not be in direct contact with the native soils that are commonly corrosive to concrete. Although the batch plant will not have a permanent foundation, this method will help reduce the potential for movement of the batch plant. If any other permanent structures are planned, a site specific analysis should be performed at that location prior to design so that foundation recommendations can be made specific to the loading patterns of the new structure.

2. **Erosion** – As evidence by rills and deep gullies through the Adobe region and on this site, these fine-grained soils are susceptible to erosion. Following the site grading and drainage plan and dispersing (not concentrating) runoff from roofs or anywhere on-site will be important in reducing soil loss from this site and therefore mitigating this hazard. The detention basin collects and slows runoff which also reduces erosion. The detention basin will need to be cleaned out and/or regraded after storm events that fill it with mud and debris so that it maintains a storage capacity. The planting of native grasses, forbs and low drought-tolerant shrubs that don't require additional watering would also help to bind the soil, absorb runoff, and reduce erosion.

3. **Mudflows and Debris Flows** – Generally, the alluvial mudflow and valley fill (Qamf) landform in the region is susceptible to sheetflow flooding and mudflows/debris flows from the nearby shale outcrops. However, at this site, since the drainage is to the north and northeast, runoff from uphill of the site (south of F Road) is intercepted by F Road (which is elevated above the adjacent land) and the water is carried along bar ditches to the unnamed drainage on the east side of the proposed improvements (see Site Plan, Figure 2). Therefore, this type of hazard is significantly reduced because of the presence of the road and associated drainage channels. No additional mitigation is required other than notifying the County Road and Bridge department if the road ditches and culverts become plugged with soil and debris.

4. **Seismic Effects** – Delta is in the Colorado Plateau Seismotectonic Province in Colorado, where maximum credible earthquakes are estimated to be on the order of magnitude 5.5 to 6.5, which is equivalent to Modified Mercalli (MM) V to VIII (CGS Bulletin #43, *Earthquake Potential in Colorado*). According to the USGS online map of Quaternary (geologically recent) faults, the closest mapped faults to the site are an unnamed fault at Little Dominguez Creek, roughly 15 miles to the west, and the Monitor Creek Fault, roughly 15 miles to the south-southwest. The Uncompahgre Valley is considered to have low seismic risk and most faults are considered old and inactive.

For site-specific seismic design parameters, we recommend the use of the Applied Technology Council (ATC) website (www.hazards.atccouncil.org) that relies on the ASCE7-16 guidelines and U.S. Geological Survey Seismic values determined from the latitude and longitude coordinates for the site, the soil Site Class, and the Seismic Risk Category for the anticipated structure.

5. **Radioactivity** – Radon gas is produced by decay of radioactive minerals contained in subsurface rock and soil. The U.S. Environmental Protection Agency (EPA) has determined that radon is the second leading cause of lung cancer and that radon can accumulate in buildings if the gas is not properly ventilated. The EPA map of Radon Zones indicates that virtually all of western Colorado, including Delta County, is in Zone 1 (www.epa.gov/radon/zonemap.html). Although there is no known safe level of radon, Zone 1 is the zone of highest risk for exposure to radon gas [i.e., greater than 4 picoCuries per Liter (pCi/L)].

The EPA does not specifically address testing and management of radon in commercial structures. However, owners should be aware of the potential health implications of constructing upon radon emitting soils, assess risks, and take appropriate action. The Colorado Department of Public Health and Environment (CDPHE) recommends assuming that radon is present and build passive radon mitigation into building plans. Once the building is complete, indoor tests should be performed to determine the effectiveness of the passive system. If a reading exceeds 4 pCi/L, the CDPHE recommends the system is upgraded to an active system that involves mechanical ventilation. Additional information about radon gas can be found on the EPA radon website www.epa.gov/radon/ or the CDPHE website www.cdphe.state.co.us.

Soils and Soil Suitability

This section is to discuss the soil types found at this site and address the suitability of the soils for building foundations and structures, infrastructure, on-site wastewater treatment systems and their cumulative impacts, and implementation of a drainage plan.

According to the Web Soil Survey (www.websoilsurvey.com), the entire area to be developed is mapped as Montrose silty clay loam (0-2% slopes). This soil is extensive in the Uncompahgre Valley from Montrose to Delta and it forms in alluvium derived from shale. It consists of silty clay to silty clay loam to 65 inches and depth to a water table of greater than 80 inches. Generally shale is deeper than 65 inches. Calcium carbonate is a maximum of 15%, gypsum is a maximum of 4%, sodium adsorption ratio is a maximum of 8.0, and these soils are very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm). Montrose silty clay loams are prime farmland soil if irrigated and are Hydrologic Soil Group C. These soils have low to moderate plasticity, are dominated by fine-grained soil (clay, silt and fine sand), and can be susceptible to excessive consolidation or collapse under light to heavy loads due to the weak soil matrix. Site-specific testing is recommended for building and road sites.

Based on our observations of the test pits and the results of the laboratory testing presented in the *Geotechnical Evaluation* section, our findings are consistent with the mapped soils. Mitigation for foundations of lightly loaded structures typically involves an over-excavation of the soils and replacement with compacted structural fill and to design greater rigidity in the foundation system so that it resists differential movement. A geotextile separation fabric at the base of the fill is also recommended to separate the native soil from the coarser fill materials to keep the fines from migrating into the fill. We are not aware of the soil preparation or foundation design of the existing shop/office, but providing positive drainage away from the building and roof gutters and downspout extensions to deliver roof drainage away from the foundation will be important for the long-term performance of the foundation soils. Since the portable batch plant is not on a permanent foundation, any adjustments to the structure based on settlement or heave of the soil can be made on a periodic basis. Providing a thick gravel base placed on geotextile separation fabric, just as recommended for a traditional structure, would be prudent to support the batch plant to minimize the need for leveling adjustments.

Regarding infrastructure, the construction of utility trenches and gravel roads do not require extra-ordinary means or methods. Due to the fine-grained nature of the soil and the vibratory loads of haul trucks and cement mixers, the use of larger fill material (such as pit run containing cobbles and larger gravels) at the base of the gravel road section is recommended to provide a more massive base that resists settlement into the native soil. Use of a uni-directional geogrid can also improve the structural support of the soil under base course and can reduce the amount of base course and roadbase used for the gravel road.

Based on our observations of the test pits and laboratory testing of the OWTS site, a wastewater system is suitable for this site. Slow percolation rates due to the stiff clays is anticipated and the system is designed accordingly.

As part of the drainage plan, a linear detention basin has been designed for the area between the OWTS and the drainage channel (see Figure 2). This will intercept sheetflow from the shop/office and OWTS areas and slow the infiltration of large runoff events and reduce erosion at the site.

The soils at the building foundations and structures, infrastructure, on-site wastewater treatment system are suitable for the intended construction. The proposed features at this site are dispersed and relatively small, so the cumulative impacts of the soils on these features is negligible when the mitigation measures discussed above are followed.

Closure

Thank you for the opportunity to perform this geologic and soils evaluation of the proposed batch plant site on F Road. We have not identified any soil, geologic or geologic hazard concerns which would prevent or impair development on this property. Typical mitigation and design measures are offered to reduce impacts from potentially challenging soil and geologic conditions. Please let us know if you have any questions or need more specifics.

Sincerely,
Buckhorn Engineering, Inc.


Laurie J. Brandt, CPG
Certified Professional Geologist




Daniel C. Quigley, PE
Senior Civil Engineer, Owner



Attachments: Test Pit logs, laboratory results

TEST PIT LOG - TEST PIT #1 (TP#1)

TEST PIT LOCATION: Batch Plant site

EXCAVATION COMPANY: Jon Plank

SURFACE ELEVATION:

OPERATOR: Jon Plank

NOTES:

EQUIPMENT: IHI Mini-Ex

DEPTH (ft.)	Water Level	GRAPHIC	SAMPLE TYPE	SAMPLE NUMBER	SUBSURFACE DESCRIPTION	FIELD AND LABORATORY TEST RESULTS
0					dark brown, dry, fine grained CLAY with scattered roots (0-1')	
1				GS-01	tan, dry, fine grained sandy CLAY (1-1.5')	GS-01 @1-1.5' MC=8.1%
2					dark brown, dry, fine grained CLAY; tough digging (1.5-4')	
3				BS-01		BS-01 @2-4' (CL) LL=28 PL=11 PI=17 gravel=0.3% sand=33.9% silt=16.4% clay=49.4% MDD=112.9pcf OMC=12.1%
4					end of excavation at 4' no groundwater or bedrock encountered	
5						
6						
7						
8						

TEST PIT
LOG
1
OF 3

FIELD STAFF DCQ
DRAFTING STAFF SJ
FIELD DATE 11/23/2021
PROJECT # 2021-103-CIV

Alliance Batch Plant
19337 F Road
Delta County, CO

BUCKHORN
ENGINEERING

222 South Park Avenue
Montrose, Colorado 81401
970-249-6828

TEST PIT LOG - TEST PIT #2 (TP#2)

TEST PIT LOCATION: south septic test pit

EXCAVATION COMPANY: Jon Plank

SURFACE ELEVATION:

OPERATOR: Jon Plank

NOTES:

EQUIPMENT: backhoe (pre-dug)

DEPTH (ft.)	Water Level	GRAPHIC	SAMPLE TYPE	SAMPLE NUMBER	SUBSURFACE DESCRIPTION	FIELD AND LABORATORY TEST RESULTS
0					light brown, dry, stiff, LEAN CLAY (CL); plow layer with some roots; massive structure (0-0.9')	
1					brown, dry, stiff, LEAN CLAY (CL); abundant salts; massive (0.9-6')	
2				GS-02		GS-02 @1-2' gravel=0.0% sand=17.3% silt=13.0% clay=69.7%
3						
4					dry to 4' then moist	
5						
6					brown, moist, LEAN CLAY with highly weathered shale (Mancos Shale) (6-8')	
7						
8					end of hole at 8' no groundwater encountered	

TEST PIT
LOG
2
OF 3

FIELD STAFF	LB/DCQ
DRAFTING STAFF	SJ
FIELD DATE	12/3/2021
PROJECT #	2021-103-CIV

Alliance Batch Plant
19337 F Road
Delta County, CO

BUCKHORN
ENGINEERING
222 South Park Avenue
Montrose, Colorado 81401
970-249-6828

TEST PIT LOG - TEST PIT #3 (TP#3)

TEST PIT LOCATION: north septic test pit

EXCAVATION COMPANY: Jon Plank

SURFACE ELEVATION:

OPERATOR: Jon Plank

NOTES:

EQUIPMENT: backhoe (pre-dug)

DEPTH (ft.)	Water Level 	GRAPHIC	SAMPLE TYPE	SAMPLE NUMBER	SUBSURFACE DESCRIPTION	FIELD AND LABORATORY TEST RESULTS
0					light brown, dry, stiff, LEAN CLAY (CL); plow layer with some roots; massive structure (0-0.9')	
1					brown, dry, stiff, LEAN CLAY (CL); abundant salts; massive (0.9-6')	
2						
3						
4					dry to 4' then moist	
5						
6					brown, moist, LEAN CLAY with highly weathered shale (Mancos Shale) (6-8')	
7						
8					end of hole at 8' no groundwater encountered	

TEST PIT
LOG
3
OF 3

FIELD STAFF	LB/DCQ
DRAFTING STAFF	SJ
FIELD DATE	12/3/2021
PROJECT #	2021-103-CIV

Alliance Batch Plant
19337 F Road
Delta County, CO

BUCKHORN
ENGINEERING
222 South Park Avenue
Montrose, Colorado 81401
970-249-6828

TEST PIT LOG KEY

TEST PIT LOCATION:

EXCAVATION COMPANY:

SURFACE ELEVATION:

OPERATOR:

NOTES:

EQUIPMENT:

DEPTH (ft.)	WATER LEVEL	GRAPHIC	SAMPLE TYPE	SAMPLE NUMBER	SUBSURFACE DESCRIPTION	FIELD AND LABORATORY TEST RESULTS
0					dark gray, moist, firm to stiff, sandy CLAY with gravel (CL) (2-4')	Notes in this column indicate tests performed and test results: DD: dry density, pcf MC: moisture content, % LL: liquid limit PL: plastic limit PI: plasticity index GF: gravel fraction, % SF: sand fraction, % Fines: silt/clay, % Sh: Shear resistance P: Penetration resistance CBR: California Bearing Ratio SP: swelling pressure TM: total movement UCS: unconfined compressive strength psf: pounds per square foot pcf: pounds per cubic foot psi: pounds per square inch
1			DS1	drive sample	Unified Soil Classification (see definitions below)	
2			GS1	bulk sample	range in depth of soil unit	
3					location of free subsurface water	
4						
5						
6						
7						
8						
9						
10						
11						
12						

Unified Soil Classification System (ASTM D-2487)

CL = lean clay to sandy/gravelly lean clay
ML = silt to sandy/gravelly silt
CH = high plasticity clay to sandy/gravelly high plasticity
MH = high elasticity silt to sandy/gravelly high elasticity silt
SW = well-graded sand or well-graded sand with gravel
SP = poorly-graded sand or poorly-graded sand with gravel
SM = silty sand to silty sand with gravel
SC = clayey sand to clayey sand with gravel
GW = well-graded gravel or well-graded gravel with sand
GP = poorly-graded gravel or poorly-graded gravel with sand
GM = silty gravel or silty gravel with sand
GC = clayey gravel or clayey gravel with sand

Rock Weathering Classification

W1 = Fresh
W2 = Slightly weathered
W3 = Moderately weathered
W4 = Highly weathered
W5 = Completely weathered
W6 = Residual soil, no structure
RQD = Rock Quality Designation

Intact Rock Strength Classification

R0 = Extremely weak rock, 35 - 150 psi
R1 = Very weak rock, 150 - 725 psi
R2 = Weak rock, 725 - 3625 psi
R3 = Medium strong rock, 3625 - 7250 psi
R4 = Strong Rock, 7250 - 14500 psi
R5 = Very strong rock, 14500 - 36000 psi
R6 = Extremely strong rock, >36000 psi

Test Pit
Log

Field Staff
Drafting Staff
Field Date
Project #

Test Pit Log Key

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FIELD SOIL IDENTIFICATION TERMS

Relative Density of Cohesionless Soils

Description	Field Identification	N Value
Very Loose	Easily penetrated with hand shovel	0-4
Loose	Easily penetrated with 1/2" rebar pushed by hand; easily excavated with hand shovel	4-10
Moderately Dense	Easily penetrated with 1/2" rebar driven with 5 lb. hammer; difficult to excavate with hand shovel	10-30
Dense	Penetrated 1 ft. with driven rebar; must be loosened with pick to excavate	30-50
Very Dense	Penetrated only a few inches with driven rebar; very difficult to excavate even with pick	>50

Consistency & Relative Density of Cohesive Soils

Description	Field Identification	Undrained Shear Strength (psf)	N Value (Approx.)
Very Soft	Extrudes between fingers when squeezed	<250	0-2
Soft	Molded by light finger pressure	250-500	2-4
Firm	Molded by strong finger pressure	500-1,000	4-8
Stiff	Indented by thumb	1,000-2,000	8-15
Very Stiff	Indented by thumbnail	2,000-4,000	15-30
Hard	Difficult to indent with thumbnail	>4,000	>30

Soil Constituents

Modifier	trace	little	some	-ey or -y	and
% (by weight)	0 - 5	5 - 12	12 - 20	20 - 30	>30

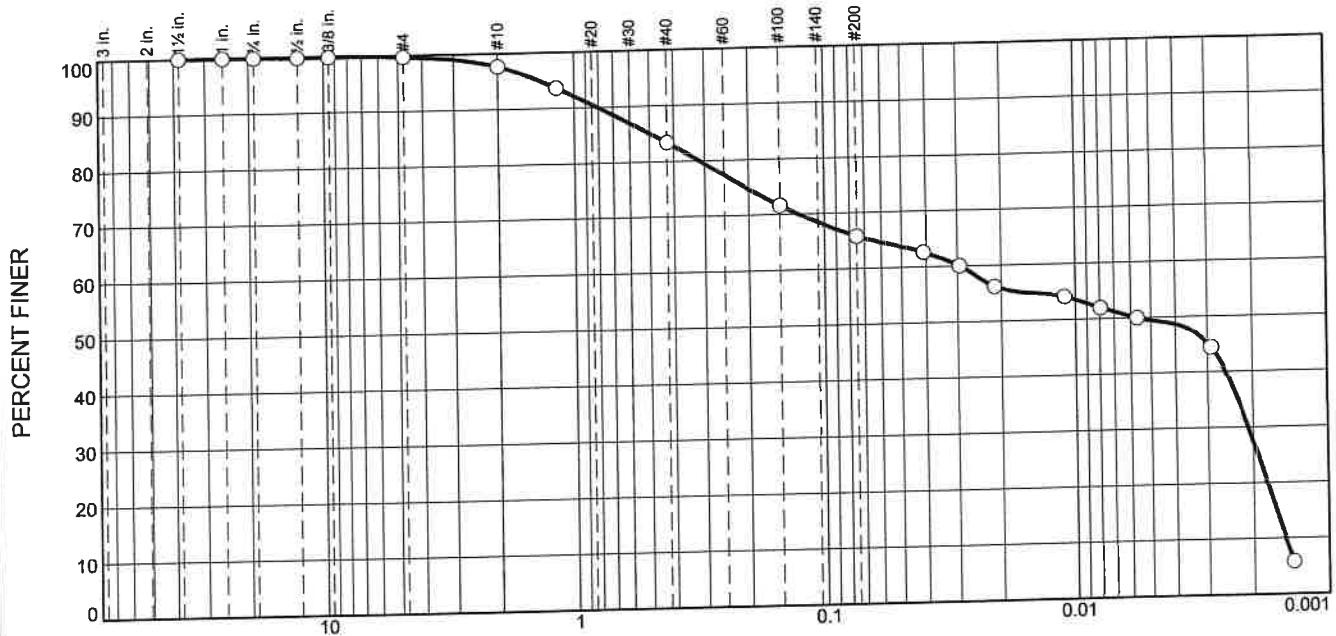
Sheet 1 of 1	Field Staff	Field Soil Identification Terms
	Drafting Staff	
	Field Date	
	Project #	

BUCKHORN

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970-249-6828

Particle Size Distribution



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	0.2	2.0	14.4	17.5	16.4	49.4

Test Results (ASTM D6913 & D1140,			
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)
1 1/2"	100.0		
1"	99.9		
3/4"	99.9		
1/2"	99.9		
3/8"	99.9		
#4	99.7		
#10	97.7		
#16	93.6		
#40	83.3		
#100	71.6		
#200	65.8		
0.0410 mm.	62.6		
0.0294 mm.	60.1		
0.0212 mm.	56.2		
0.0111 mm.	54.1		
0.0079 mm.	52.0		
0.0057 mm.	50.0		
0.0029 mm.	44.4		
0.0014 mm.	5.8		

(no specification provided)

Material Description
dark brown sandy LEAN CLAY

Atterberg (ASTM D4318)
PL= 11 LL= 28 PI= 17

Sieve Test (ASTM D6913 & D1140)

Test Date: 12/3/2021 Technician: KT

Test Notes

Coefficients

D₉₀= 0.8076 D₈₅= 0.4967
D₆₀= 0.0293 D₅₀= 0.0057
D₃₀= 0.0021 D₁₅= 0.0016
D₁₀= 0.0015
C_u= 19.54 C_c= 0.10

Hydrometer Test (ASTM D7928)

Test Date: 12/3/2021 Technician: KT

Test Notes

USCS (ASTM D2487)

CL

Date Sampled: 11/23/21

Date Received: 11/23/21

Checked By: SJ

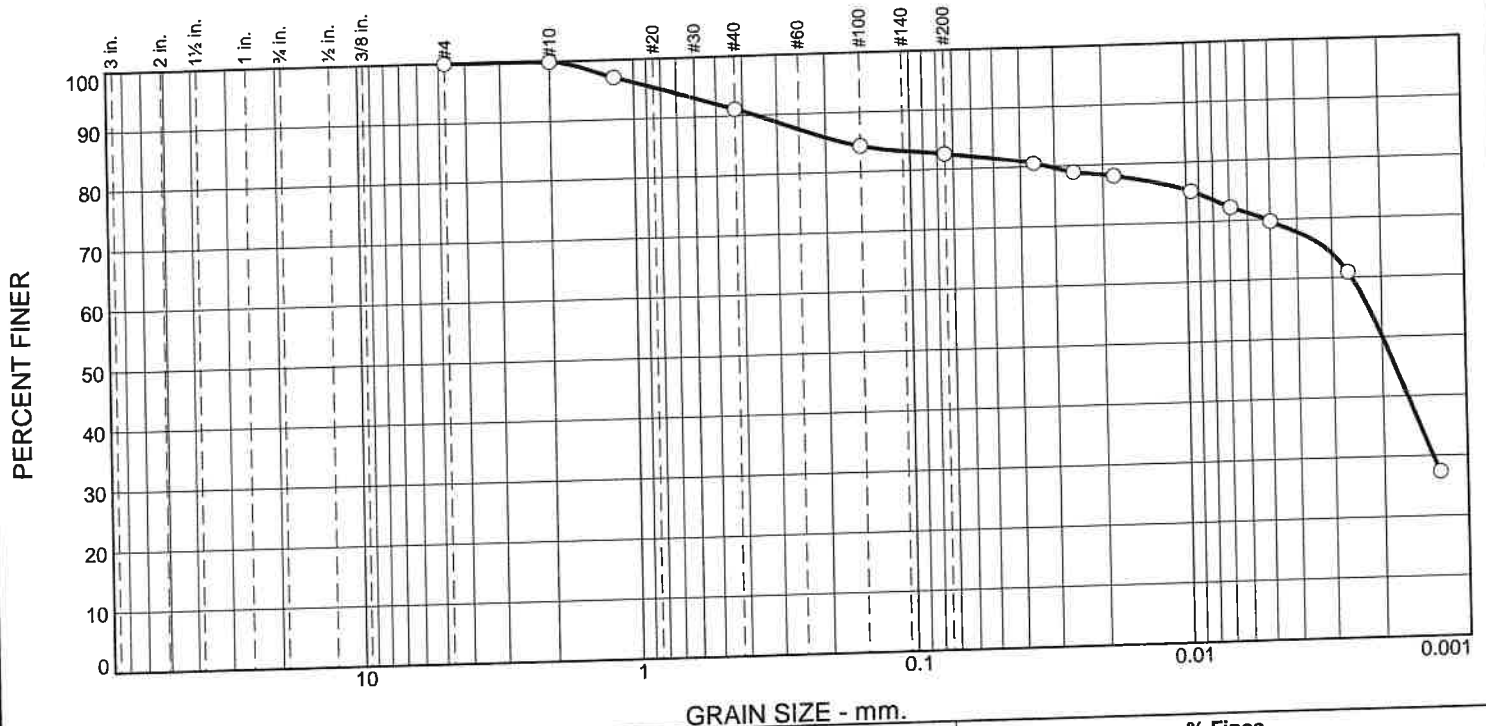
Title: Lab Manager

Location: TP#1
Sample Number: BS-01 Depth: 2-3'

BUCKHORN
ENGINEERING

Client: Jon Plank
Project: Alliance Batch Plant
19377 F Road Delta, CO
Project No: 2021-103-CIV

Particle Size Distribution



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	8.8	8.4	13.0	69.7

Test Results (ASTM D6913 & D1140,			
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)
#4	100.0		
#10	99.9		
#16	97.1		
#40	91.1		
#100	84.4		
#200	82.7		
0.0357 mm.	80.5		
0.0256 mm.	78.9		
0.0182 mm.	78.0		
0.0096 mm.	75.1		
0.0069 mm.	72.2		
0.0050 mm.	69.7		
0.0026 mm.	60.9		
0.0013 mm.	27.4		

* (no specification provided)

Material Description

light brown sandy LEAN CLAY (ASTM D2488)

Atterberg (ASTM D4318)

PL= NR LL= NR PI= NR

Sieve Test (ASTM D6913 & D1140)

Test Date: 12/7/2021 Technician: KT

Test Notes

NR = Not Requested

Coefficients

D₉₀= 0.3573 D₈₅= 0.1706

D₆₀= 0.0026 D₅₀= 0.0020

D₃₀= 0.0013 D₁₅=

D₁₀=

C_u=

C_c=

Hydrometer Test (ASTM D7928)

Test Date: 12/7/2021 Technician: KT

Test Notes

USCS (ASTM D2487)

Date Sampled: 12/3/2021

Date Received: 12/3/2021

Checked By: SJ

Title: Lab Manager

Location: TP#2

Sample Number: GS-02

Depth: 1-2'

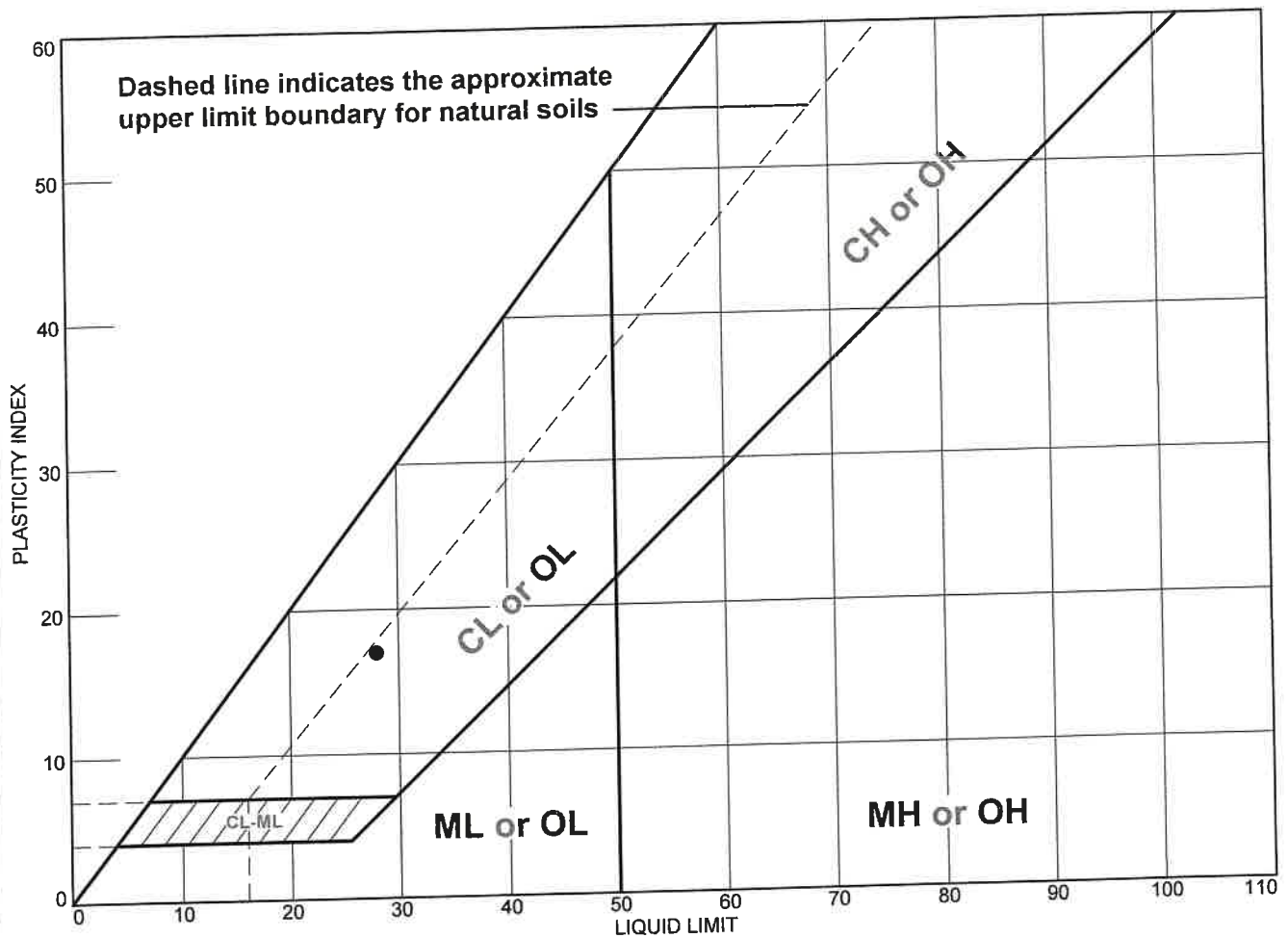
BUCKHORN
ENGINEERING

Client: Jon Plank

Project: Alliance Batch Plant
19377 F Road Delta, CO

Project No: 2021-103-CIV

ATTERBERG LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
• dark brown sandy LEAN CLAY	28	11	17	83.3	65.8	CL

Project No. 2021-103-CIV **Client:** Jon Plank
Project: Alliance Batch Plant
 19377 F Road Delta, CO
• Location: TP#1 **Depth:** 2-3' **Sample Number:** BS-01

BUCKHORN
ENGINEERING

Remarks:

Tested By: SJ

Checked By: JLH



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In-Situ Moisture Content

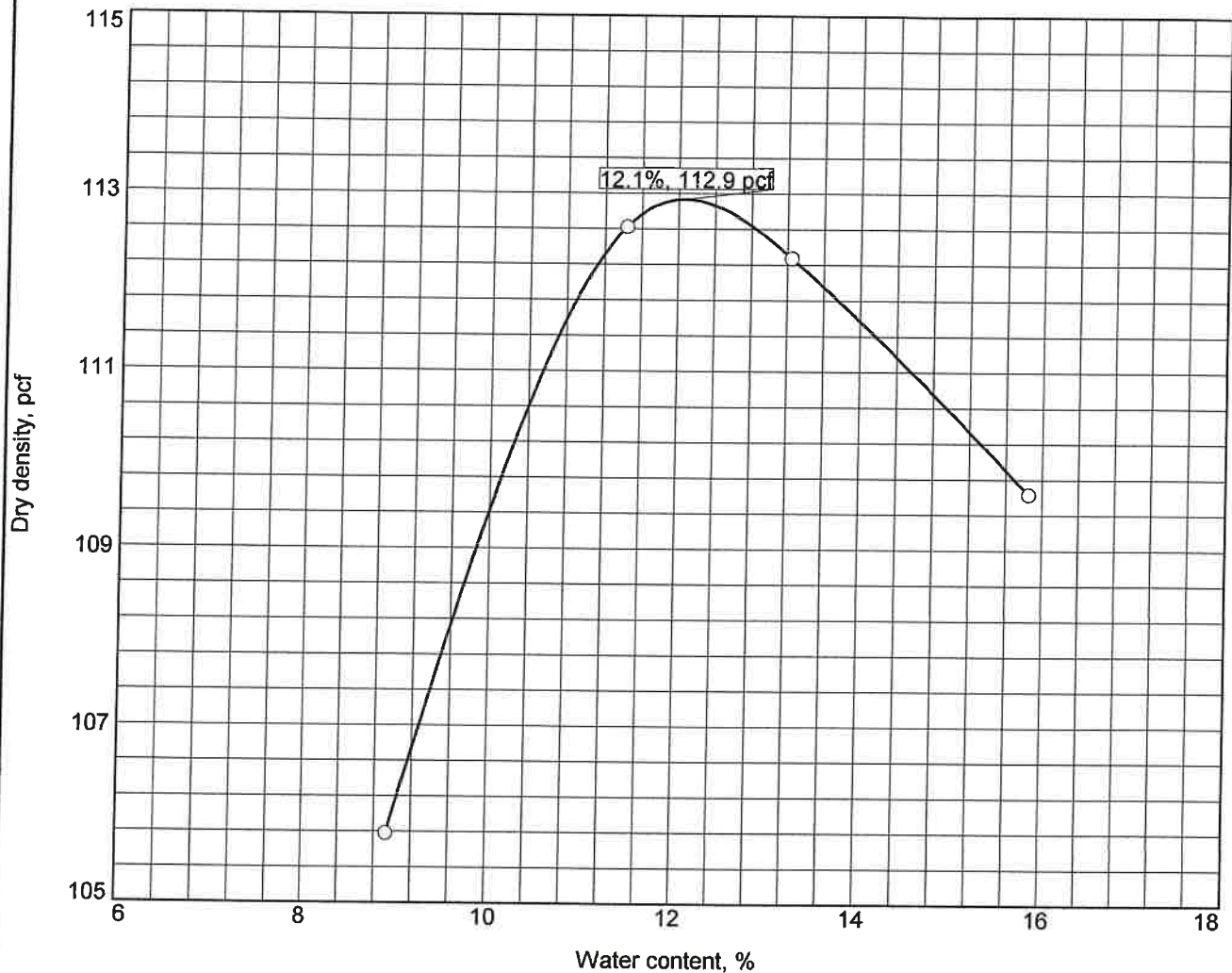
ASTM D 2216

Project Name Alliance Batch Plant
Project Location 19377 F Road Delta, CO
Client John Plank
Project No. 2021-103-CIV

Date Sampled 11/23/2021
Sampled By DCQ
Date Received 11/23/2021
Tests For DCQ
Date Tested 11/25/2021
Tested By KT

Sample #	Sample Location	Soil Description	Tare (g)	Tare + wet (g)	Tare + dry (g)	% Moisture
GS-01	TP#1 @1-1.5'	light brown sandy CLAY (ASTM D2488)	86.2	402.4	378.7	8.1%

MOISTURE-DENSITY RELATIONSHIP for Curve No. BS-01



Test specification: ASTM D 698-12 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
2-3'	CL	A-6(8)			28	17	0.3	65.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 112.9 pcf Optimum moisture = 12.1 %	dark brown sandy LEAN CLAY
Project No. 2021-103-CIV Client: Jon Plank Project: Alliance Batch Plant 19377 F Road Delta, CO Date: 12/3/2021 Location: TP#1 Sample Number: BS-01	Remarks:
BUCKHORN ENGINEERING	

Tested By: KT Checked By: SJ

T: \\CIVIL\\2021-103-CIV Alliance Batch Plant\\65CAD\\ABP OWTS.dwg PLOT DATE 2021-12-27 13:15 SAVED DATE 2021-12-27 09:26 USER: dee

PROJECT SPECIFICATIONS

THE FOLLOWING GENERAL NOTES AND SPECIFICATIONS CONSTITUTE A MAJOR PORTION OF THE O.W.T.S. PLANS AND SPECIFICATIONS. STRICT COMPLIANCE WITH THESE NOTES IS ESSENTIAL TO THE CONSTRUCTION AND PERFORMANCE OF THIS O.W.T.S. SYSTEM.

I. GENERAL CONDITIONS

- THE CONTRACTOR/OWNER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED FOR THIS PROJECT FROM THE COUNTY, APPLICABLE UTILITY COMPANIES AND ANY OTHER APPLICABLE GOVERNING AGENCIES, PRIOR TO START OF CONSTRUCTION.
- THIS O.W.T.S. SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT ADOPTED COUNTY ONSITE WASTEWATER TREATMENT SYSTEM REGULATIONS.
- CONTRACTOR SHALL HAVE ONE SET OF SIGNED PLANS APPROVED BY THE COUNTY ON THE JOB SITE AT ALL TIMES DURING CONSTRUCTION AND INSPECTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES, INCLUDING ANY UTILITIES NOT SHOWN ON THE DRAWINGS. WHEN WORKING NEAR EXISTING UTILITIES, THE CONTRACTOR SHALL EXERCISE SUFFICIENT CARE TO PREVENT DAMAGE TO THE UTILITY IN THE EVENT THAT THE INFORMATION SHOWN ON THE DRAWINGS DOES NOT REFLECT ACTUAL FIELD CONDITIONS.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LINES, ELEVATIONS, SETBACKS, MATERIALS, ETC PRIOR TO START OF CONSTRUCTION AND SHALL NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES FOUND.
- THE CONTRACTOR SHALL HAVE PRIOR EXPERIENCE IN THE CONSTRUCTION OF O.W.T.S. OF THE NATURE SHOWN IN THIS PLAN SET.
- CONTRACTOR(S) TO EMPLOY SKILLED LABOR AND BEST CONSTRUCTION PRACTICES OF THE TRADES INVOLVED IN CONSTRUCTING THIS O.W.T.S.
- LOCAL PLUMBING AND ELECTRICAL CODES AND THE LATEST REVISION OF THE COUNTY GUIDELINES FOR ONSITE WASTEWATER TREATMENT SYSTEMS SHALL BE MET BY THE CONTRACTOR.
- ALL DETAILS DESIGNATED AS "TYPICAL DETAILS" APPLY GENERALLY TO THE DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE SHOWN IN THESE DETAILS.
- ENGINEER'S APPROVAL MUST BE SECURED FOR ALL CHANGES TO THESE PLANS. ANY UNAUTHORIZED MODIFICATIONS ARE SOLELY AT THE RISK OF THE PERSON MAKING THE CHANGE.
- IMMEDIATELY NOTIFY THE ENGINEER IF, DURING CONSTRUCTION, A CONDITION THAT IS NOT COVERED BY THESE DRAWINGS IS DISCOVERED.
- UNLESS THESE PLANS SHOW FINISHED CONTOURS AND SPOT ELEVATIONS THEY ARE PRESENTED IN SCHEMATIC FORM ONLY. FIELD ADJUSTMENTS MAY BE NECESSARY TO ACHIEVE THE DESIGN INTENT.
- SHOULD SOIL CONDITIONS VARY FROM THOSE SHOWN ON THE TEST PIT PROFILE LOG DURING EXCAVATION OF THE TREATMENT AREA STOP WORK AND NOTIFY THE ENGINEER.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO COUNTY REGULATIONS.
- UNLESS OTHERWISE DIRECTED THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REINSTALLING ANY EXISTING SIGNS, STRUCTURES, FENCES ETC. ENCOUNTERED ON THE JOB AND RESTORING THEM TO ORIGINAL CONDITION.
- TO ADEQUATELY ASSESS THIS PROJECTS NEEDS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERTAKE A THOROUGH SITE INSPECTION (ADDITIONAL EXCAVATIONS, LABORATORY TESTS, ETC.) SHOULD SUCH ACTION BE DEEMED APPROPRIATE.

II. APPLICABLE CODES & STANDARDS

- AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)
- UNIFORM PLUMBING CODE - (OUTDOOR APPENDIX) - CURRENT EDITION (UPC)
- INTERNATIONAL BUILDING CODE-CURRENT EDITION (IBC)
- NATIONAL ELECTRIC CODE-CURRENT EDITION (NEC)
- O.W.T.S. COUNTY GUIDELINES-CURRENT EDITION
- COUNTY LAND USE CODE-CURRENT EDITION
- AMERICAN CONCRETE INSTITUTE - CURRENT EDITION (ACI)
- CONCRETE REINFORCING STEEL INSTITUTE - CURRENT EDITION (CRSI)
- STATE OF COLORADO O.W.T.S. GUIDELINES-CURRENT EDITION
- O.S.H.A. TRENCH SAFETY STANDARDS - CURRENT EDITION

- III. SITE PREPARATION
- STRIP ALL VEGETATION FROM TREATMENT AREA TO A DEPTH OF THREE (3) TO SIX (6) INCHES. REMOVE ALL TREE AND BRUSH ROOTS GREATER THAN 3/4 INCH IN DIAMETER TO A DEPTH OF 3 FEET BELOW BOTTOM OF TREATMENT AREA.
 - ADEQUATE SURVEYING METHODS SHALL BE USED TO LAYOUT THE ENTIRE O.W.T.S., CHECKING FOR SETBACK COMPLIANCE, ELEVATION AND HORIZONTAL CONFLICTS, AS WELL AS UTILITIES.
 - PROTECT SURROUNDING STRUCTURES, VEGETATION, AND UTILITIES AS NECESSARY TO ELIMINATE DAMAGE FROM CONSTRUCTION ACTIVITIES.

IV. SITE EXCAVATION

- THE SIDES OF ALL SOIL EXCAVATIONS DEEPER THAN 4 FEET SHALL BE LAID BACK TO A SLOPE OF 2.0 HORIZONTAL TO 1.0 VERTICAL UNLESS:
 - A STEEPER SLOPE IS PERMITTED BY THE ENGINEER FOR THE PARTICULAR LOCATION BASED ON THE SOIL PROPERTIES IN QUESTION.
 - A PRE-ENGINEERED SOIL RETENTION SYSTEM IS SUPPLIED BY CONTRACTOR.
- CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS FOR TRENCH SAFETY.
- TREATMENT BED EXCAVATION IN FINE GRAINED SOILS WILL REQUIRE THAT NO EQUIPMENT OR FOOT TRAFFIC SHALL TRAVEL OVER THE BOTTOM OF THE TREATMENT AREA FOLLOWING ITS EXCAVATION.
- THE SIDEWALLS AND BOTTOM OF THE TREATMENT AREA SHALL BE SCARIFIED TO A DEPTH OF THREE (3) INCHES, SUCH THAT NO SMEARED, COMPACTED, OR SEALED SOIL REMAINS.
- NO TREATMENT AREA EXCAVATION IS PERMITTED WHEN THE SOILS ARE MOIST OR WET.
- IF GROUNDWATER IS ENCOUNTERED NOTIFY THE ENGINEER IMMEDIATELY.
- THE BOTTOM OF ALL EXCAVATIONS (TREATMENT AREA, SEPTIC TANK, PUMP VAULT) SHALL BE LEVEL, WITH NO DEPRESSIONS GREATER THAN 0.1 FEET IN DEPTH. LOOSEN SOIL AND RAKE SMOOTH.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A DRY EXCAVATION. DOWATERING, AND DRYING TIME, IF NECESSARY, SHALL BE INCLUDED IN THE PROJECT COST.

V. FILL PLACEMENT

- FILL SHALL BE PLACED AS NOTED BASED FOR FILL SOIL TYPE AS FOLLOWS:
 - CLAY EMBANKMENTS - PLACE FILL TO DEPTH SHOWN ON PLANS PLUS 10 PERCENT TO ALLOW FOR COMPACTION. COMPACT IN 6" LIFTS USING EXCAVATOR BUCKET AND LIGHTLY TAMPING SURFACE OF CLAY FILL.
 - SAND FILL - PLACE FILL TO DEPTH SHOWN ON PLANS. WATER SETTLE BY FLOODING ENTIRE LAYER TO A STANDING DEPTH OF 3 INCHES. ALLOW TO COMPLETELY DRAIN AND ADJUST FILL TO DESIGN DEPTH. REPEAT AS NECESSARY.
 - GRAVEL FILL - PLACE FILL TO DEPTH SHOWN ON PLANS. COMPACT BY LIGHTLY TAMPING WITH EXCAVATOR BUCKET. ADJUST TO FINAL GRADE AFTER TAMPING EFFORT IS COMPLETE. GRAVEL SHALL BE PUSHED ONTO EXCAVATED NATIVE SOILS. NO DUMPING IS PERMITTED.
 - TOPSOIL COVER TO BE PLACED LOOSELY TO A DEPTH OF 2" GREATER THAN DESIGN DEPTH.
- ALL FILL SHALL BE PROVIDED FROM AN ENGINEER APPROVED SOURCE. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER CURRENT GRADATION FOR SAND AND GRAVELS PRIOR TO DELIVERY TO THE JOBSITE.

VI. FINISH GRADING

- ALL FINISHED GRADING SHALL BE SUCH THAT NO DEPRESSIONS OF MORE THAN 0.2 FEET REMAIN, UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. ALL SLOPES SHALL DRAIN TO EITHER A DEDICATED DRAINAGE CONTROL STRUCTURE OR SHEET FLOW TO UNDISTURBED VEGETATED AREA, COMPLETELY AWAY FROM TREATMENT SITE.
- FINISH GRADING SHALL BE UNDERTAKEN ON ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES, AND AS NOTED ON THESE PLANS.
- PROVIDE DIVERSION SWALE(S) AS SHOWN ON THESE PLANS. SWALES TO EXTEND BEYOND DOWNHILL LIMIT OF TREATMENT AREA AND DRAIN TO DAYLIGHT. USE A TWO (2) PERCENT MINIMUM GRADE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

4. PROTECTION : BED AREA SHALL BE PROTECTED TO PREVENT DAMAGE FROM VEHICULAR OR PEDESTRIAN TRAVEL.
- VII. REVEGETATION
- ALL AREAS DISTURBED BY O.W.T.S. CONSTRUCTION SHALL BE REVEGETATED EITHER:
 - AS SHOWN ON THE LANDSCAPE ARCHITECTS PLANS, OR
 - BY PLACING SOD OR SEED MIX AS DIRECTED BY THE OWNER.
 - FOR MOUND O.W.T.S., 70 PERCENT OF THE MOUND MUST HAVE ESTABLISHED GROWTH, PRIOR TO ENGINEER CERTIFYING PROJECT COMPLETION TO THE COUNTY HEALTH DEPARTMENT.
 - ALL AREAS TO RECEIVE REVEGETATION SHALL HAVE 4 INCHES OF TOPSOIL (CLAYEY SANDS, SAND-CLAY MIXTURES OR SILTY SANDS, SAND-SILT MIXTURES) COVER.

VIII. PIPING & TRENCHES

- PIPING SHALL BE OF SIZE, TYPE, AND SCHEDULE SHOWN ON THESE PLANS.
- ALL JOINTS UNLESS NOTED OTHERWISE SHALL BE SOLVENT WELDED. ALL CONNECTIONS SHALL BE CUT PERPENDICULAR TO FLOW LINE, FLASH TRIMMED, PRIMED, AND SOLVENT WELDED.
- PIPE SLOPE SHALL BE AS SHOWN ON THE PLANS, BUT IN NO CASE LESS THAN 1 PERCENT FOR GRAVITY BASED O.W.T.S.
- PIPING SHALL BE BEDDED IN LOOSE GRANULAR MATERIAL, FREE FROM STONES, CLODS, FROZEN SOIL, OR OTHER DELETERIOUS MATERIAL. BEDDING MATERIAL MAY BE EXCAVATED ON-SITE OR IMPORTED.
- ALL PIPE TRENCHES SHALL BE COMPACTED TO 85 PERCENT STANDARD PROCTOR (ASTM T-99) IN NON TRAFFIC AREAS. AREAS SUBJECT TO VEHICLE TRAFFIC SHALL BE COMPACTED TO 95 PERCENT STANDARD PROCTOR. HAND TAMP AROUND PIPE HAUNCHES.
- TRENCHES SHALL HAVE SMOOTH BOTTOMS AND SIDEWALLS WITH NO PROTRUDING OR SHARP OBJECTS. PROVIDE BELL HOLES WHERE REQUIRED TO FACILITATE INSTALLATION.
- PIPE BURIAL SHALL BE TO THE DEPTH SHOWN ON THESE PLANS; BUT NO LESS THAN 24 INCHES.
- PIPE LENGTHS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED.

IX. SEPTIC TANKS & VAULTS

- ALL BELOW GROUND TANKS AND VAULTS SHALL BE CONSTRUCTED OF REINFORCED CONCRETE UNLESS SHOWN OTHERWISE ON THIS DRAWING SET AND BE RATED TO HANDLE 400 PSF FOR NON-TRAFFIC AREAS OR H-20-44 RATED FOR AREAS TO RECEIVE VEHICLE TRAFFIC. SEE CONCRETE SECTION FOR STRENGTH AND REINFORCING REQUIREMENTS.
- SEPTIC TANKS SHALL BE CONFIGURED AS SHOWN ON THESE PLANS, WITH SUBSTITUTIONS CONSIDERED BASED ON LOCAL AVAILABILITY.
- ALL TANKS AND VAULTS SHALL BE WATERTIGHT AND HAVE ONE 20 INCH DIAMETER ACCESS PORT WITH LID OVER EACH COMPARTMENT.
- WATERTIGHT MANHOLES AND LIDS SHALL BE PROVIDED FOR ALL PUMPING VAULTS AND FOR SEPTIC TANKS WHEN BURIAL DEPTH EXCEEDS 8 INCHES.
- FOR TANKS AT SITES WITH FINE GRAINED SOILS, CLAYEY SANDS, SAND-CLAY MIXTURES, SILTY SANDS, OR SAND-SILT MIXTURES, AN EFFLUENT FILTER IS REQUIRED AS SHOWN ON THESE PLANS.
- TANKS SHALL BE NON-BUOYANT WHEN EMPTY.
- ALL TANKS MUST BE SUPPLIED BY A MANUFACTURER LISTED ON THE LATEST VERSION OF THE CDPHE ONLINE SUMMARY ENTITLED "ACCEPTED SEPTIC TANKS FOR USE IN COLORADO ON-SITE WASTEWATER TREATMENT SYSTEMS".
- INSTALL EFFLUENT FILTER AND HIGH WATER ALARMS WHEN SHOWN ON THESE PLANS, IN ACCORDANCE WITH MFRS. RECOMMENDATIONS EXCEPT WHEN NOTED OTHERWISE.
- ALL TANK PENETRATION SEALS SHALL BE WATER TIGHT.
- THESE REQUIREMENTS ARE SUPERSEDED BY LOCAL O.W.T.S. GUIDELINES WHERE APPLICABLE.
- TANK(S) WITH CONCRETE OUTLET BAFFLES ARE NOT PERMITTED.

X. CONCRETE

- ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, ACI 301.
- ALL CONCRETE SHALL DEVELOP 4000 PSI COMPRESSIVE 28-DAY STRENGTH.
- ALL REINFORCING STEEL SHALL BE HIGH STRENGTH DEFORMED BARS, GRADE 60, ASTM 1615-89 WITH 60,000 PSI MINIMUM YIELD STRENGTH; EXCEPT NO. 3 COLUMN TIES, BEAM STIRRUPS, FIELD-BENT AND FIELD WELDED BARS WHICH SHALL BE GRADE 40.
- DETAIL BARS IN ACCORDANCE WITH ACI DETAILING MANUAL AND ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE. PROVIDE CORNER BARS.

XI. PUMPING SYSTEMS

- WHEN SHOWN ON THESE PLANS A PUMPED DOSING SYSTEM IS REQUIRED. AS A MINIMUM THIS SYSTEM WILL INCLUDE A BELOW GRADE PUMP VAULT WITH ACCESS WAY, EFFLUENT PUMP, CONTROL PANEL, 3 FLOAT CONTROLS, ALARM, VENT, CONTROL WIRING, PULL CABLE, AND PIPING. OTHER ELEMENTS INCLUDE CONDUIT POWER SUPPLY, AND CONNECTION TO PRIMARY BREAKER PANEL.
- PRIOR TO ACCEPTANCE, THE PUMPING SYSTEM MUST BE TESTED AND SHOWN TO BE FULLY OPERATIONAL. (SEE INSPECTION REQUIREMENTS).

XII. INSPECTIONS & CLOSE-OUT

- AT A MINIMUM ONE INSPECTION WILL BE REQUIRED PRIOR TO BURIAL OF THE SEPTIC TANK AND TREATMENT SYSTEM. FOR O.W.T.S. WITH DIFFICULT SOILS, PUMPING SYSTEMS, AND/OR PHASED CONSTRUCTION, SEE THIS SHEET FOR PROJECT SPECIFIC INSPECTION REQUIREMENTS.
- PRIOR TO FINAL ACCEPTANCE THE CONTRACTOR SHALL PROVIDE "AS-CONSTRUCTED" SKETCH OF THE INSTALLED O.W.T.S., FOR FUTURE LOCATION PURPOSES. THIS SKETCH SHALL TIE EACH INSTALLED COMPONENT TO THE PRIMARY STRUCTURE ON THE SITE (I.E. SEPTIC TANK, TREATMENT TO SITE, PUMP, TANK,...). EACH LOCATED COMPONENT SHALL BE TIED TO TWO CORNERS ON THE PRIMARY STRUCTURE. THE SKETCH SHALL BE LEGIBLY DRAWN ON EITHER THE FIELD PLAN OR SEPARATE SHEET AND SUBMITTED TO THE ENGINEER AT THE FINAL INSPECTION.
- CALL FOR INSPECTIONS AT LEAST 2 WORKING DAYS PRIOR TO DAY OF EACH NEEDED INSPECTION.
- THE CONTRACTOR SHALL COMPILE ALL PRODUCT LITERATURE, SHIPPED WITH THE O.W.T.S. COMPONENTS AND PLACE IN A THREE RING PLASTIC COVER BINDER. THIS INCLUDES WARRANTY, OPERATION MAINTENANCE INFORMATION. THIS INFORMATION SHALL BE PROVIDED TO THE OWNER PRIOR TO CERTIFICATION TO THE COUNTY.

XIII. FIELD RECONNAISSANCE

- FIELD RECONNAISSANCE WAS PERFORMED BY DAN QUIGLEY ON NOVEMBER 23, 2021. MR. QUIGLEY IS A CPOW CERTIFIED SOILS TECHNICIAN. TWO TEST PITS WERE EXCAVATED AS PRESENTED IN THE LOGS ATTACHED HEREIN.
- WEATHER WAS SUNNY, CLEAR AND 45°. CONDITIONS WERE DRY.
- TEST PITS WERE EXCAVATED BY JON PLANK USING A TRACKHOE.
- NO ISSUES WERE ENCOUNTERED DURING THE RECONNAISSANCE VISIT.
- THIS O.W.T.S. SYSTEM (TANK AND S.T.A.) IS A NEW SYSTEM.

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811
CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES

DESIGN CALCULATIONS

DESIGN CRITERIA :

WATER CLOSET: 24.8 GPD / SINK: 8.4 GPD /
KITCHEN SINK: 5.8 GPD
TOTAL: 39 GPD

EFFLUENT :

Qe = 39 GPD.

SEPTIC TANK :

- NEW 500 GALLON CONCRETE TANK.

TREATMENT AREA :

FOR TYPE 4 SOILS. ASSUMED LTAR OF 0.2 PER REGULATION 43.10, TABLE 10-1

MIN. TREATMENT AREA:

$$A = \frac{Q_e}{LTAR} = \frac{39 \text{ GPD}}{0.2} = 234 \text{ SQ. FT.}$$

NO SIZE REDUCTION REQUESTED
20' x 12' = 240 SQ. FT. > 234 SQ. FT. (SO OKAY)

PROJECT LOCATION

19337 F ROAD
DELTA COUNTY, COLORADO

DRAWING EXPIRATION

THIS O.W.T.S. DESIGN IS VALID
FOR A PERIOD OF 12 MONTHS
FROM THE DATE ISSUED.



ISSUED
FOR REVIEW

LEGEND

- EXISTING 1' CONTOURS
- EXISTING 5' CONTOURS
- FENCE
- WATER LINE
- IRRIGATION DITCH
- PROPERTY LINE
- TEST PIT
- CLEAN OUT

INSPECTION REQUIREMENTS

- EXPOSED EXCAVATION BOTTOM OF SEPTIC TANK AND TREATMENT BED OR TRENCHES.
 - ALL PIPES, SEPTIC TANKS, OPERATIONAL TESTING, CHAMBERS INSTALLED PRIOR TO BACKFILL.
 - REAL TIME WET OPERATIONAL TEST, WHICH CLEARLY DEMONSTRATES ALL CONTROLS AND EQUIPMENT ARE OPERATIONAL AND READY FOR USE. THIS INCLUDES TELEPHONE LINE CONNECTIVITY!
 - FINAL GRADING VERIFICATION.
 - PROVIDE AS-BUILT DRAWING AT TIME OF FINAL INSPECTION.
- NOTE: SCHEDULE INSPECTIONS WITH ENGINEER SO THAT NO MORE THAN TWO SITE VISITS ARE REQUIRED.

CONTRACTOR SUBMITTALS TO ENGINEER

- ALL IMPORT MATERIALS (I.E. SAND, SOIL, GRAVELS, ASTM GRADATION)
- CHANGE ORDER REQUEST IN WRITING AND APPROVED BY THE ENGINEER BEFORE IMPLEMENTATION.
- ACCURATE "AS-BUILT" DRAWING OF INSTALLED IMPROVEMENTS WITH SUFFICIENT DETAIL, SO THAT ALL OWTS ELEMENTS CAN BE LOCATED. THE DRAWING MUST BE RECEIVED BY THE ENGINEER PRIOR TO COMPLETION CERTIFICATION OF MONTROSE COUNTY.
- ANY SHOP DRAWINGS CALLED FOR IN THE SPECIFICATION OR ON THE PLANS.

MANDATORY
PRECONSTRUCTION MEETING

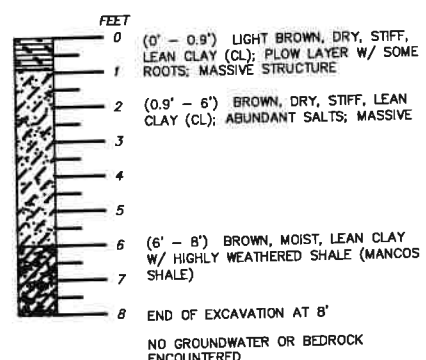
PRIOR TO CONSTRUCTION, THE CONTRACTOR IS TO MEET WITH THE ENGINEER TO DISCUSS SPECIAL DESIGN FEATURES/LAYOUT/CONSTRAINTS.

OWNER'S RESPONSIBILITIES

- TO PREVENT THE O.W.T.S. FROM FAILING PREMATURELY, THIS O.W.T.S. DOES NOT PERMIT:
 - EXCESSIVE GARBAGE GRINDER WASTE
 - SEPTIC SYSTEM ADDITIVES
 - SNOW STORAGE ON O.W.T.S. TREATMENT AREA
 - VEHICULAR ACTIVITY ON O.W.T.S. TREATMENT AREA
- THIS O.W.T.S. IS NOT DESIGNED TO ACCEPT DISCHARGE FROM A JACUZZI OR SPA. THE OWNER IS RESPONSIBLE FOR PROPER DISPOSAL OF JACUZZI/SPA DISCHARGE ACCORDING TO THE LOCAL HEALTH ORGANIZATION.
- EXCESSIVE IRRIGATION ON THE ABSORPTION BED AREA MAY ADVERSELY IMPACT THE SEPTIC SYSTEM EFFICIENCY AND SHALL BE AVOIDED.
- THIS O.W.T.S. HAS BEEN DESIGNED IN ACCORDANCE WITH THE CURRENT COUNTY DEPARTMENT OF HEALTH REGULATIONS FOR ON-SITE WASTEWATER TREATMENT SYSTEMS. IT MUST BE REALIZED THAT AN O.W.T.S. DOES NOT LAST INDEFINITELY. LONGEVITY DEPENDS ON VARYING DEGREES, ON WORKMANSHIP DURING CONSTRUCTION, ADEQUACY OF MAINTENANCE, FREQUENCY OF SEPTIC TANK PUMPING, THE CHEMICAL AND ORGANIC COMPOSITION OF INCOMING WASTE, AND RESULTANT CHEMICAL AND PHYSICAL REACTIONS BETWEEN THE EFFLUENT AND THE RECEIVING SOIL. NO WARRANTY FOR THE PERFORMANCE OF THE O.W.T.S. IS EXTENDED OR IMPLIED THROUGH THIS DESIGN.

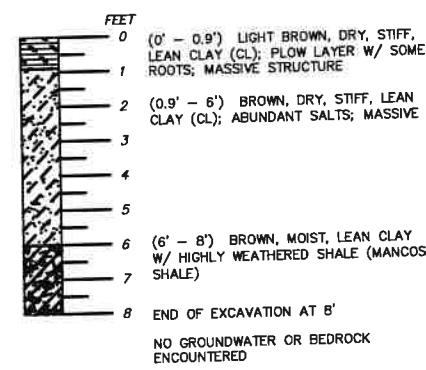
TEST PIT #2 PROFILE LOG

DATE OF TEST : 12/3/2021
LOCATION : O.W.T.S. TEST PIT TP#2
LOGGED BY : DAN QUIGLEY, P.E.



TEST PIT #3 PROFILE LOG

DATE OF TEST : 12/3/2021
LOCATION : O.W.T.S. TEST PIT TP#3
LOGGED BY : DAN QUIGLEY, P.E.



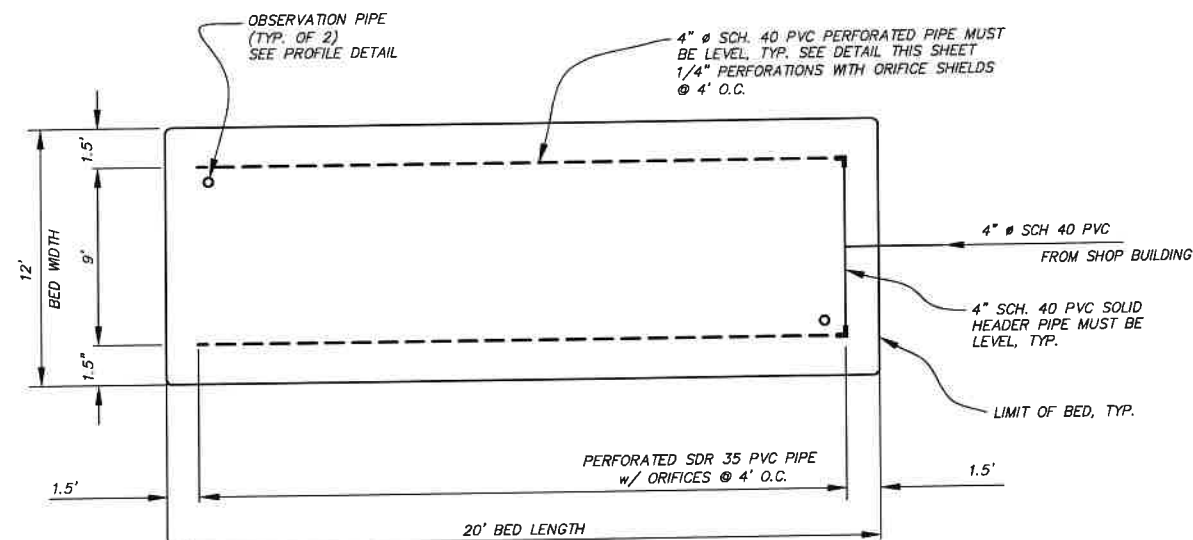
REVISIONS		DESCRIPTION	BY
REV	DATE		

BUCKHORN ENGINEERING
222 South Park Avenue
Montrose, Colorado 81401
970-249-6828

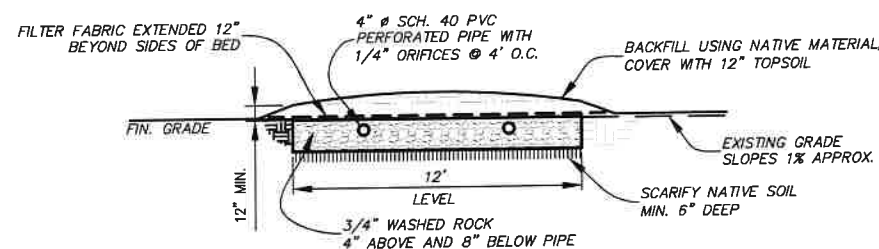
ALLIANCE BATCH PLANT OWTS
19337 F ROAD
DELTA COUNTY, CO

O.W.T.S. NOTES AND SPECIFICATIONS

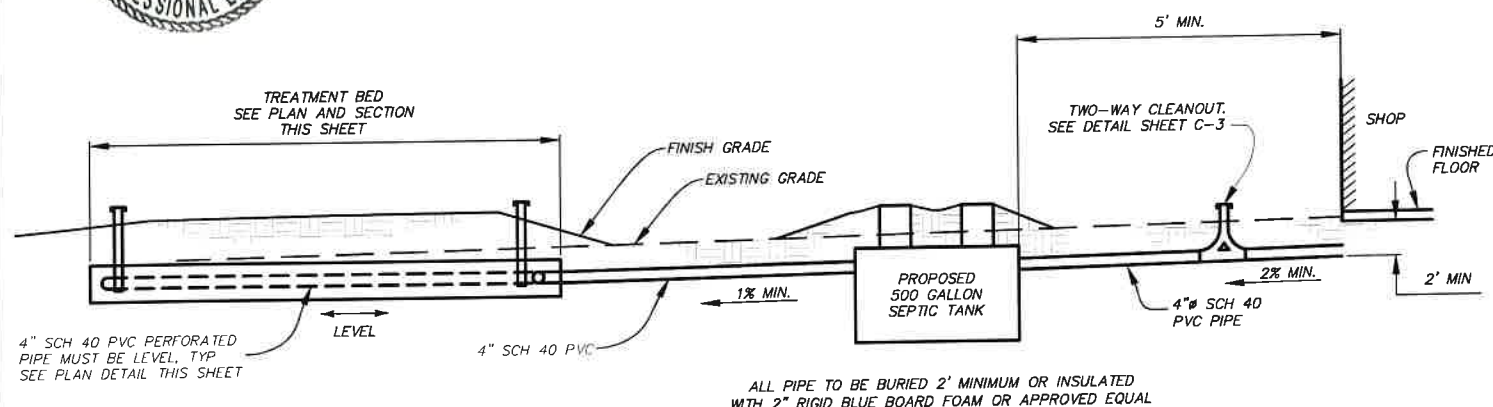
PROJECT	2021-103-CIV
DATE	12/21/2021
DRAFTER	DL
CHECKED	DQ
BUCKHORN ENGINEERING	
SHEET	C-1
	1 OF 3



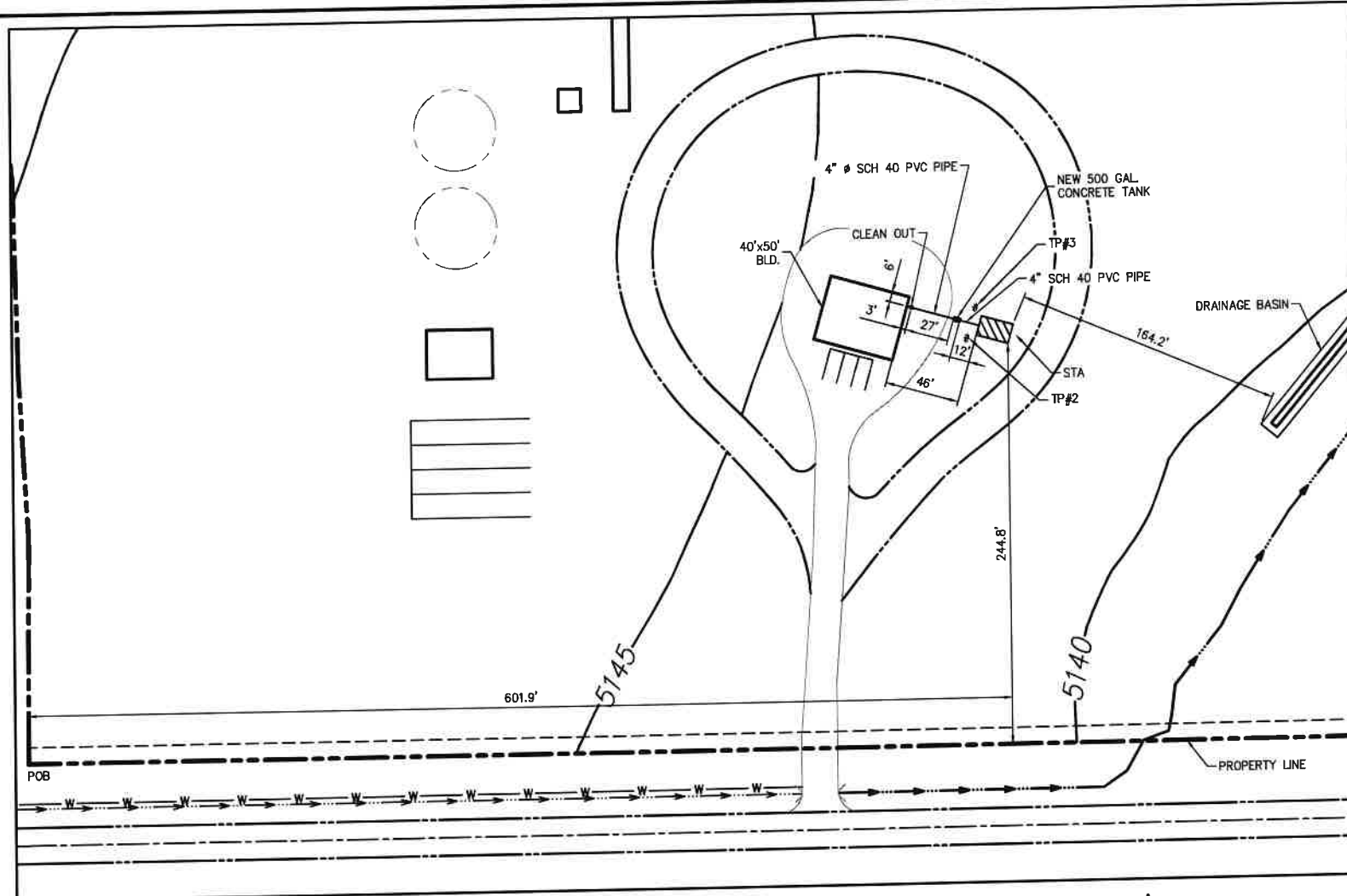
O.W.T.S. TREATMENT BED PLAN
NOT TO SCALE



O.W.T.S. TREATMENT BED SECTION
NOT TO SCALE



O.W.T.S. SCHEMATIC PROFILE
NOT TO SCALE



O.W.T.S. SCHEMATIC SITE PLAN

NOTE : NO SURVEY WAS PERFORMED AS PART OF THIS PROJECT. TOPOGRAPHICAL INFORMATION SHOWN ON THIS DRAWING IS APPROXIMATE.

100 0 10
SCALE IN FEET



TREATMENT AREA NOTES:

- ARRANGE TREATMENT BED(S) PARALLEL TO CONTOURS.
- BOTTOM OF TREATMENT BED(S) AND PIPES MUST BE LEVEL.
- EXCESSIVE IRRIGATION IN THE TREATMENT AREA MAY ADVERSELY AFFECT THE TREATMENT EFFICIENCY AND SHALL BE AVOIDED.
- IMPACT THE SEPTIC SYSTEM AREA SHALL BE DEEP ROOTED PLANTING IN THE SYSTEM.
- ROUTE RESISTANT GRASSES REQUIRING MINIMAL WATERING.
- ROUTE SURFACE DRAINAGE AWAY FROM TREATMENT AREA.
- EXCAVATION SHALL BE PROTECTED FROM ALL PEDESTRIAN, VEHICULAR, AND OTHER ACTIVITY THAT COULD CAUSE COMPACTON.
- FINAL CONSTRUCTION SHALL BE PROTECTED FROM ALL VEHICULAR ACTIVITY AND ANY DISTURBANCE.

OWTS CONSTRUCTION NOTES:

- OWTS CONSTRUCTION NOTES:
- THESE ARE SCHEMATIC PLANS ONLY. ACTUAL LOCATIONS MAY VARY TO FIT SITE CONDITIONS. VERIFY LAYOUT AND FINISH FLOOR ELEVATIONS WITH ENGINEER PRIOR TO EXCAVATION.
 - TREATMENT AREA TO BE CONSTRUCTED ON TEST PIT SITES. MAY ONLY BE MOVED WITH ENGINEER'S APPROVAL.
 - PVC BENDS BETWEEN STRUCTURE AND TREATMENT AREA TO BE 45° MAXIMUM. NO 90° BENDS!

DELTA COUNTY MINIMUM SETBACKS		
	TO STA	TO TANK
SPRINGS, WELLS	100 FT.*	50 FT.
POTABLE WATERLINE	25 FT.	10 FT.
DWELLINGS	20 FT.	5 FT.
PROPERTY LINES	10 FT.	10 FT.
SUBSOIL DRAINS	10 FT.	10 FT.
IRRIGATION DITCH / WATER COURSE	50 FT.*	50 FT.
INTERMITTENT DITCH	25 FT.	10 FT.
SEPTIC TANK	6 FT.	—

* PLUS 8' FOR EA 100 GPD OF
DESIGN FLOW OVER 1000 GPD

OSI - ORENCO SYSTEMS INC. PRODUCTS AVAILABLE FROM:

- SCG ENTERPRISES WHEATRIDGE (888) 560-3334
- GRAND JUNCTION PIPE AND SUPPLY (970) 240-2199
- VALLEY PRECAST (719) 395-6764

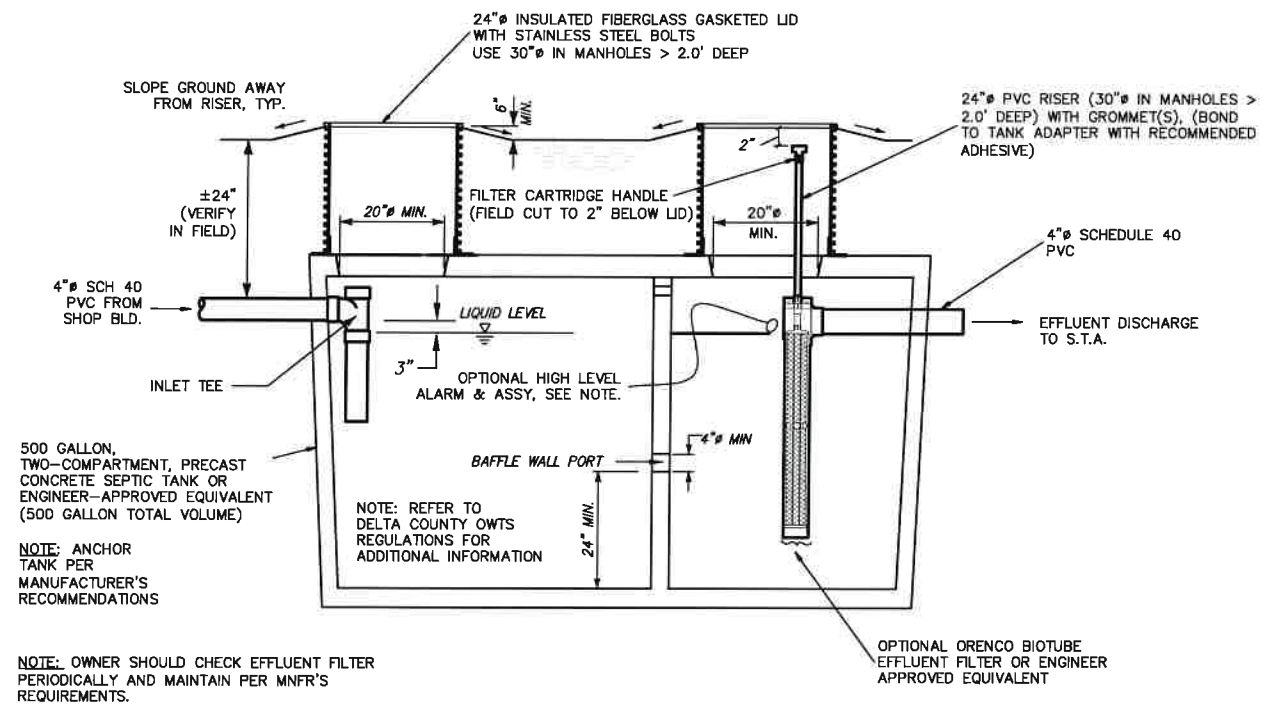
IF ALTERNATIVE PRODUCTS ARE TO BE CONSIDERED, SUBMIT TECHNICAL SPECIFICATIONS AND DESCRIPTIONS TO ENGINEER FOR APPROVAL PRIOR TO USE.

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811

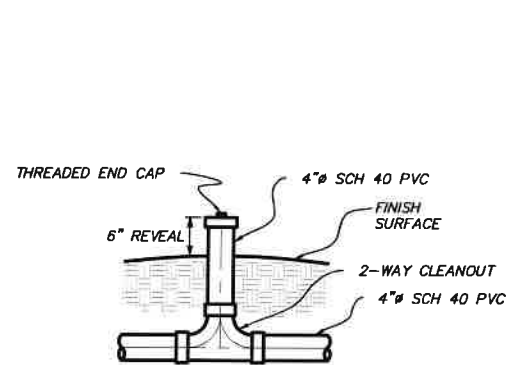
**CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES**

ISSUED
FOR REVIEW

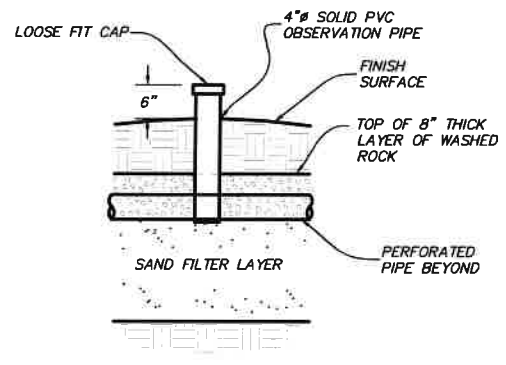
ALLIANCE BATCH PLANT OWTS 19337 F ROAD DELTA COUNTY, CO		BUCKHORN ENGINEERING 222 South Park Avenue Montrose, Colorado 81401 970-249-6828		REVISIONS	
PROJECT	2021-103-	REV	DATE	DESCRIPTION	BY
DATE	12/21/20				
DRAFTER					
CHECKED					
BUCKHORN ENGINEERING					
SHEET C-2 2 OF 3					
OWTS NOTES AND SPECIFICATIONS					



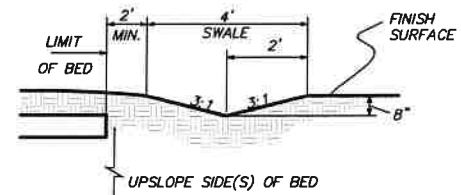
SEPTIC TANK DETAIL
NOT TO SCALE



2-WAY CLEANOUT DETAIL
NOT TO SCALE



OBSERVATION PIPE
NOT TO SCALE



DIVERSION SWALE DETAIL

[illegible]

**PRELIMINARY DRAINAGE REPORT
ALLIANCE BATCH PLANT
19337 F ROAD
DELTA COUNTY, COLORADO**

November 18, 2021

Prepared for:

**Cascade Construction
Jon Plank
52750 Banner Road
Delta, CO 81416**



Alliance Batch Plant
Drainage Report
Delta County, Colorado

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1. INTRODUCTION

This drainage report was prepared in support of a special use application for the Alliance Ready Mix Batch Plant at 19337 F Road in Delta County. This report generally follows the requirements of the Delta County Land Use Code, Chapter 4, Section 7.B, *Stormwater Management, Grading, Erosion, and Sediment Control*.

Section 2 of this report discusses the historic hydrologic conditions on the site. Section 3 addresses the developed hydrologic analysis used in sizing retention structures within the project area. Section 4 provides conclusions about the potential impacts of development to the site. The remaining sections provide certification and references employed in the report preparation.

A. Site Location - The project site is located on the north side of F Road between 1900 and 2000 roads approximately 3.5 miles east of us Highway 50. The site is located in Township 15 South, Range 95 West, Section 22 of the New Mexico Prime Meridian. The proposed development is on a 39.7-acre parcel and proposes to construct and operate a concrete ready mix batch plant.

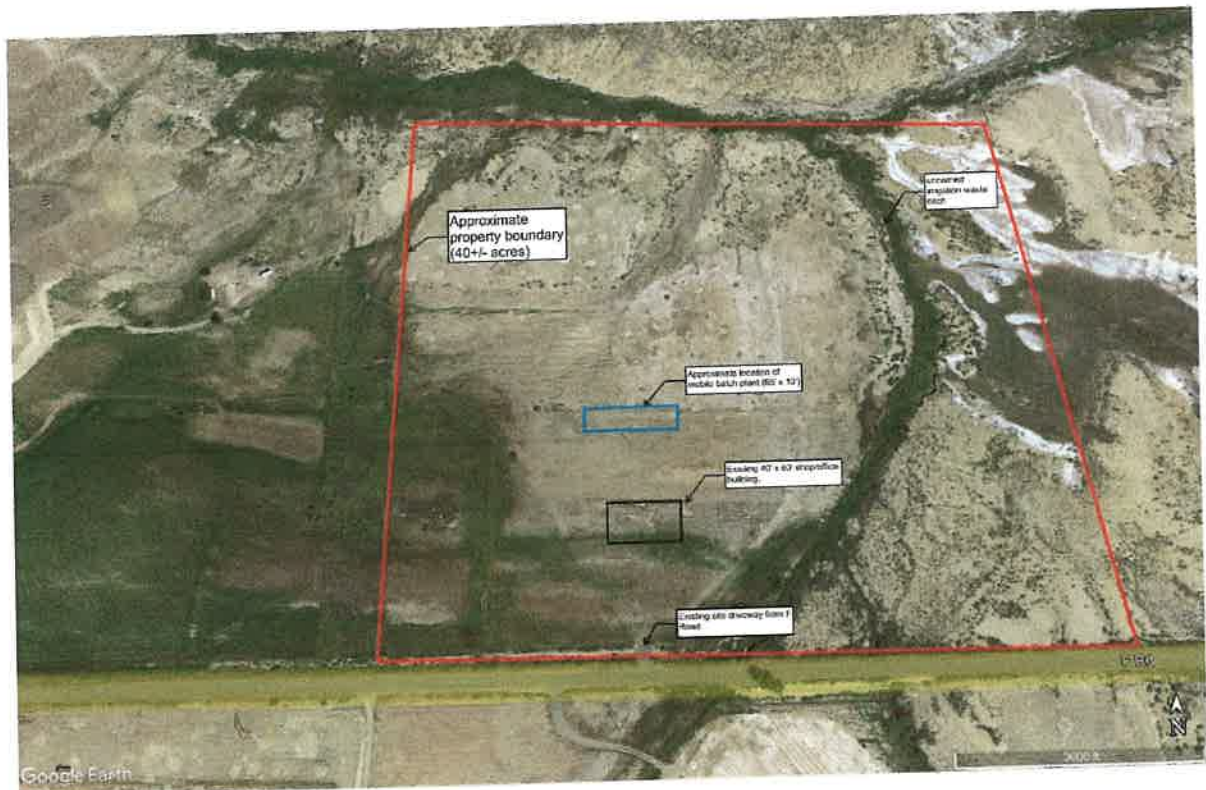


Figure1. Google© image of the Alliance Batch Plant site, current site conditions.

- B. Site Vegetation** - The site has not been used for agriculture in recent years and has generally been vacant since 2011. Vegetation generally consists of sparse native forbs and grasses.
- C. Adjacent Development** – The site is bounded to the west by agricultural property and undeveloped native land. To the north, the parcel is bounded by undeveloped, native land used for livestock. The eastern boundary of the property also undeveloped natural land used for agriculture. To the south, the property is bounded by irrigated agricultural property.
- D. Site Description** - The site generally slopes at an average of 1% from the south to north at elevations from 5148 to 5137 feet above MSL. It is on soils derived from the Mancos Shale formation and has traditionally been irrigated for agricultural crop production.
- E. Site Soils** - The project area has been mapped by the NRCS on their Web Soil Survey (WSS) online site to contain three (3) soil units which are:
- Montrose silty clay loam (Map unit 701) which comprises approximately 95.0% of the property and forms slopes from 0 to 2%. This unit is classified as a Hydrologic Soil Group (HSG) type C soil, which indicates poorly well drained soil with a low infiltration rate and moderately high runoff potential.
 - The Sagers silty clay loam (Map Unit 703) comprises approximately 1.1% of the site (in the northeastern corner) and forms slopes from 2 to 7% and is classified as an HSG C unit with low infiltration potential and moderately high runoff potential due to the impervious nature of the soil.
 - The Persayo-Fruita complex (Map Unit 740) comprises approximately 3.9% of the site (in the southwestern corner) and forms slopes from 0 to 12% and is classified as an HSG D unit with very slow infiltration rates and high runoff potential due to the impervious nature of the soil.

The site is characterized by storm water sheet flows across the entire portion of the site and concentrates in an unnamed irrigation wastewater ditch at the north end of the property. Site drainage plans are presented in Appendix E of this report. Detailed soil information is presented in Appendix B of this report.

- F. Existing Drainage Facilities** – Irrigation wastewater ditches border the site on the east and north sides. The northern ditch flows from east to west and collects wastewater from several other ditches including the north-south flowing waste ditch that divides the eastern portion of the property. No development is proposed east of this ditch. A west to east trending shallow drainage ditch is located north of the proposed batch plant location and will be excavate to slope to the east to the proposed detention basin adjacent to the eastern waste ditch as shown on Sheet Dr-2 in the appendix.
- G. Project Description** – The proposed development of the property is a ready mix concrete batch plant to produce an estimated 150 cubic yards of concrete per day. Domestic water will be supplied by the Tri-County Water Conservancy District (TCWCD).

Sanitary sewer service will be provided by portable toilets on site. An existing 40' x 50' shop/office building was constructed in early 2021 and will remain.

H. Relevant Flood Hazard and Drainage Studies – A Flood Insurance Study (FIS) for Delta County, issued on August 19, 2010, does not include the project area in the floodplain mapping. Delta County GIS indicates that the area is in flood zone D where flooding is undetermined but possible. No development in a known flood zone is proposed as part of this development.

2. HISTORIC DRAINAGE SYSTEM

This section of the report reviews the historic or pre-developed conditions on the project site. Historic flows for the site are limited to the approximate 39.7-acre extent of the property and are characterized by sheet flows over the vegetated, gently sloping terrain from the east to west. The pre-developed flows for 25 and 100-year storm events were calculated using the Modified FAA-Rational Method spreadsheet from the USDCM Volume 2 Storage Chapter. The UDFCD Rational Method spreadsheet was used to calculate historic flows for the site. These peak flows (in Basin #1) were estimated to be 10.31 cfs for the 25-year storm and 20.83 cfs for the 100-year event assuming 2% impervious cover. Historic flow patterns for the site are shown on Sheet DR-1 in Appendix E of this report. Basin #2, east of the waste ditch was not considered in our analysis since no development is intended for that portion of the 39.7-acre property. Basin #3, to the north of the proposed batch plant was also not included in our analysis for detention since no development is proposed within that basin either.

3. PROPOSED DRAINAGE SYSTEM

A. Criteria - In order to calculate the required detention storage for the proposed development, the following design criteria and assumptions were used:

- Average basin slope = 1%
- Weighted c values of 0.57 and 0.67 for the 25-year and 100-year events
- 40-hour drain time was used due to low runoff type soils (HSG C/D) as reported by the NRCS-WSS
- Rational Method was used for hydrologic analysis
- Design storms of 25-year, 1-hour (0.901 inches) and 100-year, 1-hour (1.22 inches) were used for analysis using information from the NOAA Atlas Volume 14

B. Hydrologic Data The current NOAA Atlas 14 was consulted for calculations of rainfall depth, intensity, and frequency-duration for the interval storms. The NOAA 14 IDF data for Delta, Colorado with a 90% confidence interval was used for our analysis and is presented in Appendix B.

RETURN PERIOD	1-HR TOTAL PRECIPITATION (IN)
2-year	0.385
5-year	0.557
10-year	0.701
25-year	0.901
50-year	1.06
100-year	1.22

Table 1. Summary of NOAA Atlas 14 precipitation data for varying recurrence periods in Delta, CO. Shaded values were used for design and drainage analyses in this report.

Return Period	5-min.	10-min.	15-min.	30-min.	1-hr.	2-hr.	3-hr.	6-hr.	24-hr.
2-yr	0.131	0.191	0.233	0.311	0.385	0.460	0.510	0.624	0.945
5-yr	0.203	0.298	0.363	0.473	0.557	0.641	0.683	0.788	1.19
10-yr	0.265	0.387	0.472	0.608	0.701	0.794	0.830	0.931	1.39
25-yr	0.321	0.445	0.543	0.739	0.901	0.985	1.02	1.16	1.72
50-yr	0.417	0.610	0.744	0.939	1.06	1.18	1.20	1.30	1.88
100-yr	0.484	0.709	0.864	1.09	1.22	1.35	1.37	1.47	2.09

Table 2. Summary of NOAA 14 Intensity-Duration-Frequency values for the project site. Rainfall intensity is given in inches per hour.

C. Runoff

The developed flow rates for the Alliance Batch Plant project area were calculated using the Rational Method as described in Volume 1 of the USDCM. Peak developed runoff flows for the 25-year and 100-year design storms are 10.97 cfs and 21.62 cfs respectively for the proposed development (Basin #1). Detailed calculation results for pre-developed and developed conditions are presented in Appendix D of this report. Developed flow patterns are presented on Sheet DR-2 in Appendix E of this report. Historically, storm drainage has been intercepted by natural drainages on the eastern and northern property boundaries and transmitted in both concentrated and shallow sheet flow across the site from south to north. Developed flows will be drained into a designated detention basins north or downslope from the proposed batch plant.

The developed area was divided into one drainage basin labeled Basin #1. Basin #2, to the east, will continue to drain into the waste ditch and is not being developed as part of this project. Drainage in Basin #3, to the north, will remain unchanged since no development is proposed in that basin. Table 4 details the basin runoff and retention calculations. Basins #1 through #3 are presented in exhibits DR-1 and Dr-2 in Appendix E of this report. Table 3 summarizes the basin area and the calculated percent impervious which was used in the retention calculations presented in Appendix D. Estimated impervious area includes all roadways, buildings and man-made improvements for the batch plant development. One extended detention basin, (labeled A) will be constructed to detain 100-year design storm flows from drainage Basin 1. Detailed calculation worksheets are presented in Appendices C and D of this report.

Basin ID	Total Area (Acres)	Total Area (S.F)	Impervious Area (Acres)	% Impervious
#1	21.0	914,760	0.125	5%
#2	10.4	453,024	0.00	2%
#3	8.3	361,548	0.00	2%
Totals	39.7	1,729,332	0.125	9%

Table 3. Summary of basin areas and the calculated percent impervious.

Basin ID	Area (Acres)	25-yr. 1-hr. Runoff (cfs)	100-yr. 1- hr. Runoff (cfs)	Required WQCV Retention Volume (cu. ft.)	Required 25-yr. Retention Volume (cu. ft.)	Required 100-yr. Retention Volume (cu. ft.)	Retention provided (cu. ft.)
#1	21.0	10.97	21.62	2,744	7,449	11,979	12,000
#2	10.4	5.11	10.32	-	-	-	-
#3	8.3	4.08	8.23	-	-	-	-
Totals	39.7	-----	-----	2,744	7,449	11,979	12,000

Table 4. Developed Conditions Runoff and Retention Values. i (25-yr) = 0.901, i (100-yr) = 1.22.

D. Roads

An access road from Delta County Road F will enter the facility and circle the existing shop building to allow ready mix and delivery trucks to access the batch plant. That road will be crowned and will consist of CDOT Class 6 aggregate base course and will drain to both sides. The majority of surface storm flows will be from that roadway and rooftops of the plant and 40' x 50' shop building. Those flows will be captured by swales and roadside ditches that drain towards the extended detention basin described above. No other roads are proposed as part of this project.

E. Storm Sewers and Culverts

No storm sewer system is proposed as part of the Alliance Batch Plant project. A 12-inch CMP driveway culvert has been installed and no other culverts are proposed as part of this project.

4. Conclusion

The Alliance Batch Plant Subdivision has been designed in consideration of retaining storm flows on site as required by Delta County Land Use Code, Chapter 4, Section 7.B. This philosophy is in keeping with the County's master plan and a trend towards "green" construction and storm water management. Drainage will be conveyed by surface means the driveways, parking areas and impervious areas to a 12,000 cubic foot detention basin which will allow flows to drain naturally to the northern waste ditch. Storm flows will continue to be percolated naturally through these basins to the native soils after detention and settling in the detention basin provided in the design and presented on Exhibit DR-2 of this report. All detention facilities have been designed to release developed flows, greater than historic flows, within 72 hours as required by Colorado Senate Bill 15-212.

5. REPORT CERTIFICATION

I, Daniel C. Quigley, a duly registered professional engineer in the State of Colorado, (registration #38334), have prepared this report, related documents, and supervised the preparation of the drawings enclosed. The information included is, to the best of my knowledge, accurate and conforming to the Delta County Land Use Code, Chapter 4, Section 7.b., and accepted engineering practices for the preparation of drainage reports.

November 18, 2021

Daniel C. Quigley, P.E.
Project Engineer

6. REFERENCES

- Urban Drainage and Flood Control District (UDFCD) Criteria Manual, Volumes 1-3, March 2017
- Flood Insurance Study, Delta County, Colorado and Incorporated Areas
- # 08085CV000A, August 19, 2010
- NOAA Atlas 14, Volume 8, 2013
- Mays, Larry W., Stormwater Collections Systems Design Handbook, McGraw-Hill, 2001

7. SOFTWARE

- UDFCD Retention Basin Design Workbook, v. 3.07, February 2017
- UDFCD Peak Runoff Prediction by the Rational Method, V 2.00, May 2017
- Mile High Flood District, Culvert Hydraulics Workbook, V. 4.00, May 2020



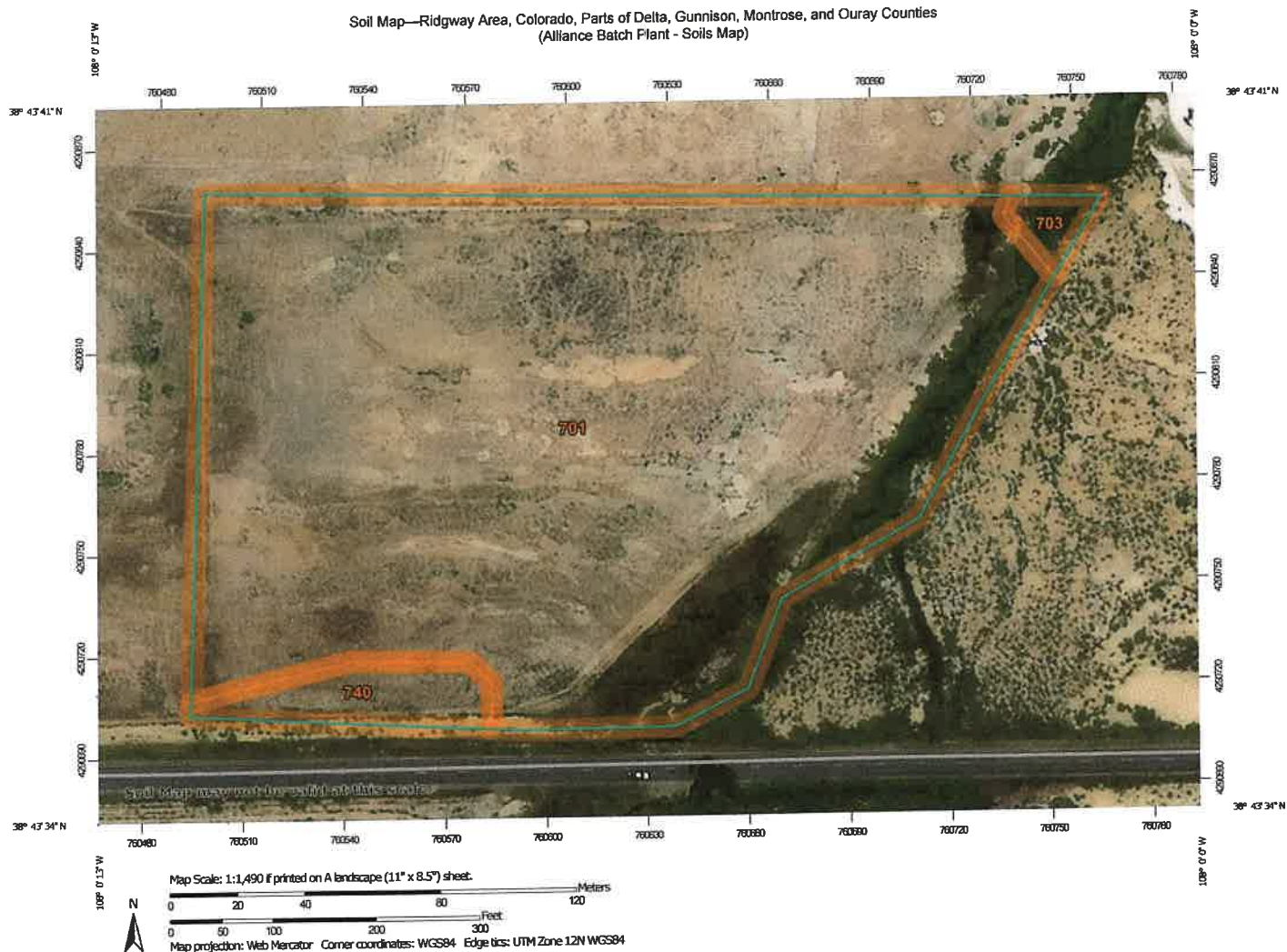
APPENDIX A
SITE PLAN



APPENDIX B

NRCS SOILS AND NOAA 14 RAINFALL DATA

Soil Map—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - Soils Map)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/15/2021
Page 1 of 3

Soil Map—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - Soils Map)

MAP LEGEND

Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area	 Stony Spot
Soils	 Soil Map Unit Polygons	 Very Stony Spot	 Wet Spot
	 Soil Map Unit Lines	 Other	 Special Line Features
	 Soil Map Unit Points		
Special Point Features	 Blowout	Water Features	 Streams and Canals
	 Borrow Pit	Transportation	 Rails
	 Clay Spot		 Interstate Highways
	 Closed Depression		 US Routes
	 Gravel Pit		 Major Roads
	 Gravelly Spot		 Local Roads
	 Landfill	Background	 Aerial Photography
	 Lava Flow		
	 Marsh or swamp		
	 Mine or Quarry		
	 Miscellaneous Water		
	 Perennial Water		
	 Rock Outcrop		
	 Saline Spot		
	 Sandy Spot		
	 Severely Eroded Spot		
	 Sinkhole		
	 Slide or Slip		
	 Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
Survey Area Data: Version 13, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

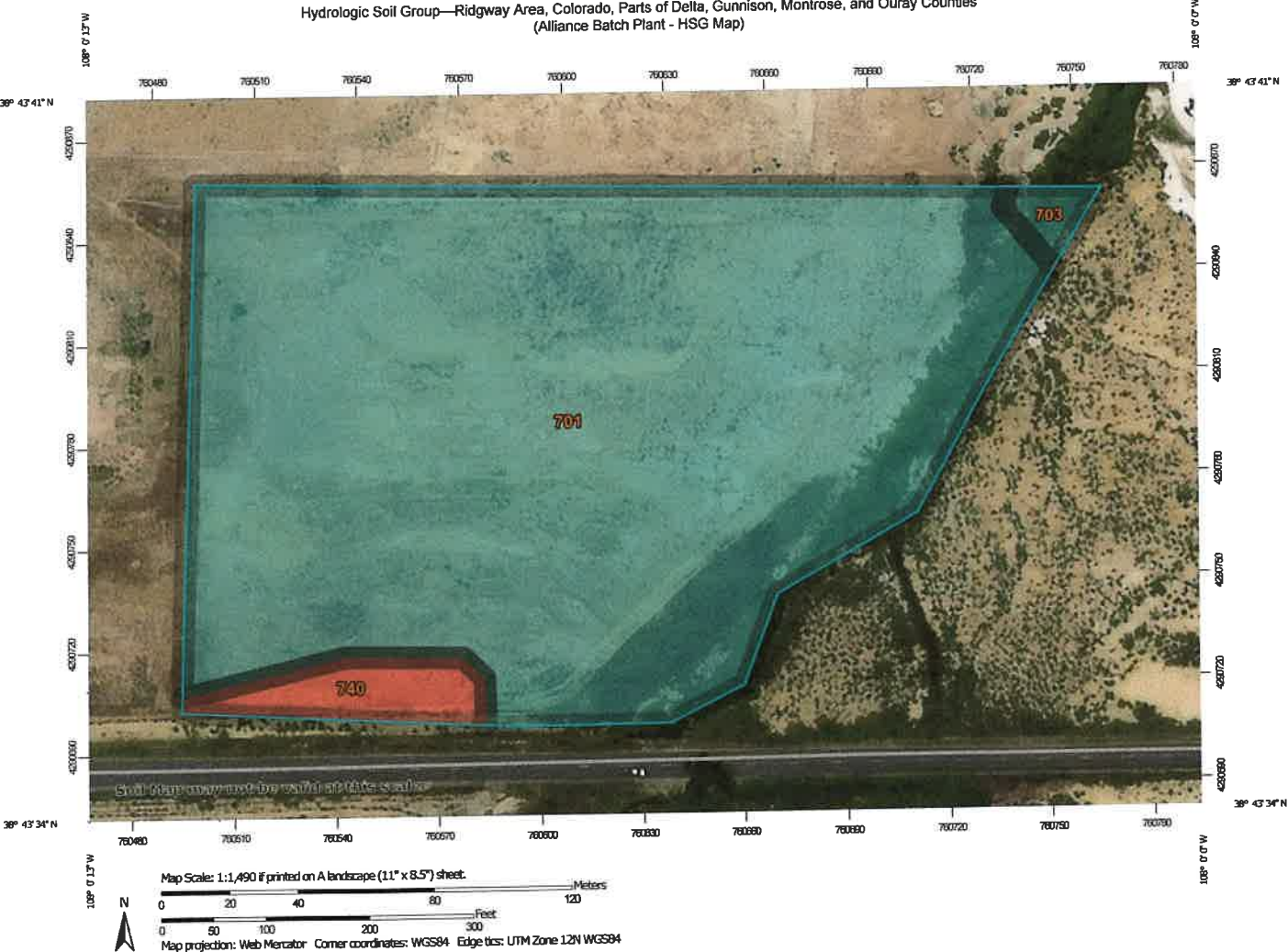
Date(s) aerial images were photographed: Dec 31, 2009—Jul 7, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
701	Montrose silty clay loam, 0 to 2 percent slopes	7.9	95.0%
703	Sagers silty clay loam, 2 to 7 percent slopes	0.1	1.1%
740	Persayo-Fruita complex, 0 to 12 percent slopes	0.3	3.9%
Totals for Area of Interest		8.4	100.0%

Hydrologic Soil Group—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - HSG Map)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Hydrologic Soil Group—Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
(Alliance Batch Plant - HSG Map)

MAP LEGEND

Area of Interest (AOI)
 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ridgway Area, Colorado, Parts of Delta, Gunnison, Montrose, and Ouray Counties
 Survey Area Data: Version 13, Sep 2, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Jul 7, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
701	Montrose silty clay loam, 0 to 2 percent slopes	C	7.9	95.0%
703	Sagers silty clay loam, 2 to 7 percent slopes	C	0.1	1.1%
740	Persayo-Fruita complex, 0 to 12 percent slopes	D	0.3	3.9%
Totals for Area of Interest			8.4	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

NOAA Atlas 14, Volume 8, Version 2 DELTA 3E

Station ID: 05-2196

Location name: Delta, Colorado, USA*

Latitude: 38.7539°, Longitude: -108.0278°

Elevation:

Elevation (station metadata): 5010 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

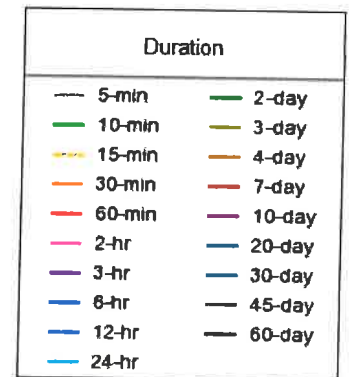
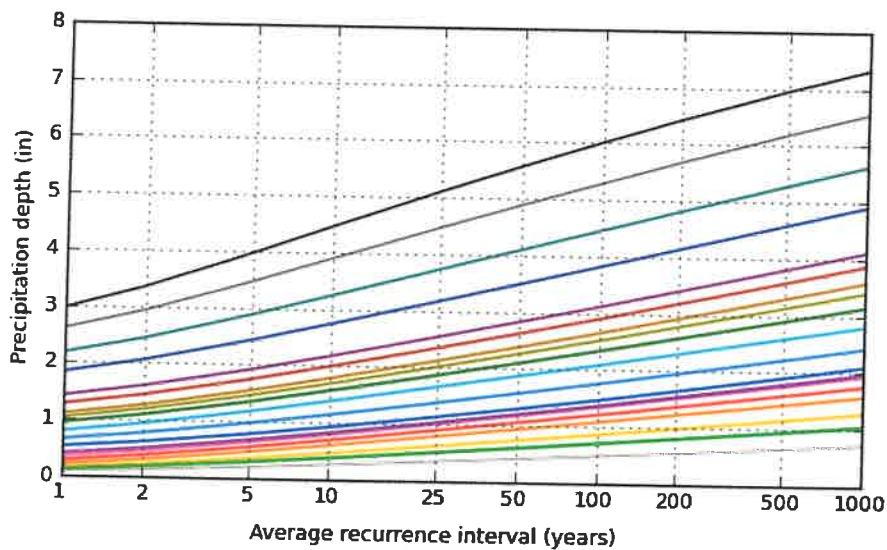
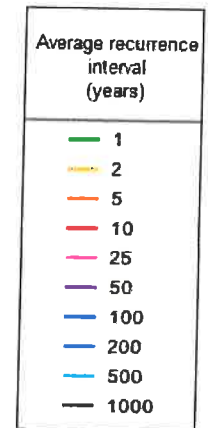
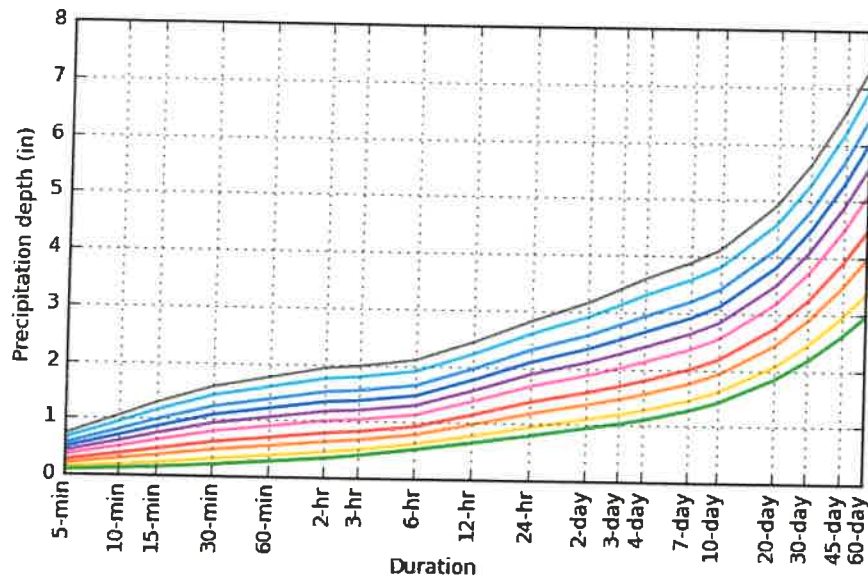
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.087 (0.069-0.111)	0.131 (0.103-0.168)	0.203 (0.160-0.262)	0.265 (0.207-0.342)	0.350 (0.263-0.469)	0.417 (0.306-0.566)	0.484 (0.343-0.673)	0.553 (0.375-0.791)	0.646 (0.420-0.949)	0.717 (0.454-1.07)
10-min	0.127 (0.101-0.163)	0.191 (0.151-0.246)	0.298 (0.235-0.383)	0.387 (0.303-0.501)	0.512 (0.385-0.687)	0.610 (0.448-0.828)	0.709 (0.502-0.986)	0.810 (0.549-1.16)	0.946 (0.615-1.39)	1.05 (0.665-1.57)
15-min	0.155 (0.123-0.199)	0.233 (0.184-0.300)	0.363 (0.286-0.467)	0.472 (0.370-0.610)	0.625 (0.470-0.838)	0.744 (0.546-1.01)	0.864 (0.612-1.20)	0.988 (0.669-1.41)	1.15 (0.750-1.70)	1.28 (0.811-1.91)
30-min	0.212 (0.167-0.271)	0.311 (0.245-0.398)	0.473 (0.372-0.608)	0.608 (0.476-0.785)	0.795 (0.597-1.06)	0.939 (0.689-1.27)	1.09 (0.767-1.51)	1.23 (0.834-1.76)	1.43 (0.928-2.10)	1.58 (0.999-2.35)
60-min	0.281 (0.222-0.360)	0.385 (0.304-0.494)	0.557 (0.439-0.717)	0.701 (0.549-0.906)	0.901 (0.678-1.21)	1.06 (0.776-1.43)	1.22 (0.860-1.69)	1.38 (0.932-1.97)	1.59 (1.03-2.34)	1.76 (1.11-2.62)
2-hr	0.350 (0.280-0.442)	0.460 (0.368-0.581)	0.641 (0.511-0.812)	0.794 (0.630-1.01)	1.01 (0.770-1.33)	1.18 (0.876-1.57)	1.35 (0.966-1.84)	1.52 (1.05-2.14)	1.75 (1.16-2.54)	1.93 (1.24-2.84)
3-hr	0.407 (0.329-0.509)	0.510 (0.411-0.639)	0.683 (0.549-0.857)	0.830 (0.663-1.05)	1.04 (0.801-1.36)	1.20 (0.905-1.60)	1.37 (0.996-1.87)	1.55 (1.08-2.16)	1.79 (1.19-2.56)	1.97 (1.28-2.87)
6-hr	0.527 (0.431-0.649)	0.624 (0.510-0.768)	0.788 (0.642-0.974)	0.931 (0.753-1.16)	1.14 (0.891-1.47)	1.30 (0.995-1.70)	1.47 (1.09-1.97)	1.66 (1.17-2.28)	1.90 (1.29-2.69)	2.10 (1.38-3.00)
12-hr	0.656 (0.544-0.795)	0.778 (0.644-0.943)	0.979 (0.808-1.19)	1.15 (0.942-1.40)	1.39 (1.10-1.75)	1.57 (1.22-2.01)	1.76 (1.32-2.31)	1.96 (1.40-2.64)	2.22 (1.52-3.08)	2.42 (1.62-3.41)
24-hr	0.796 (0.668-0.948)	0.945 (0.792-1.13)	1.19 (0.993-1.42)	1.39 (1.15-1.67)	1.67 (1.33-2.06)	1.88 (1.47-2.36)	2.09 (1.58-2.69)	2.31 (1.67-3.05)	2.59 (1.80-3.52)	2.80 (1.90-3.88)
2-day	0.944 (0.804-1.11)	1.10 (0.935-1.29)	1.36 (1.15-1.60)	1.57 (1.32-1.86)	1.87 (1.52-2.28)	2.10 (1.67-2.60)	2.34 (1.80-2.96)	2.58 (1.90-3.36)	2.90 (2.05-3.88)	3.15 (2.17-4.28)
3-day	1.03 (0.886-1.20)	1.20 (1.02-1.39)	1.47 (1.25-1.71)	1.70 (1.44-1.98)	2.02 (1.66-2.43)	2.27 (1.82-2.77)	2.52 (1.95-3.16)	2.78 (2.07-3.59)	3.13 (2.24-4.15)	3.40 (2.37-4.58)
4-day	1.10 (0.951-1.27)	1.27 (1.10-1.47)	1.55 (1.33-1.80)	1.79 (1.53-2.08)	2.13 (1.76-2.55)	2.39 (1.93-2.90)	2.65 (2.07-3.31)	2.93 (2.19-3.75)	3.30 (2.37-4.34)	3.58 (2.51-4.79)
7-day	1.27 (1.11-1.45)	1.45 (1.27-1.65)	1.75 (1.52-1.99)	2.00 (1.73-2.29)	2.35 (1.97-2.78)	2.63 (2.14-3.15)	2.90 (2.29-3.57)	3.19 (2.42-4.03)	3.58 (2.61-4.64)	3.87 (2.75-5.11)
10-day	1.42 (1.25-1.60)	1.61 (1.42-1.82)	1.92 (1.68-2.17)	2.18 (1.90-2.48)	2.55 (2.14-2.98)	2.83 (2.33-3.36)	3.12 (2.48-3.79)	3.41 (2.61-4.27)	3.81 (2.80-4.90)	4.11 (2.94-5.38)
20-day	1.84 (1.64-2.04)	2.07 (1.84-2.29)	2.44 (2.17-2.71)	2.75 (2.43-3.06)	3.17 (2.71-3.64)	3.50 (2.92-4.07)	3.82 (3.09-4.56)	4.15 (3.22-5.09)	4.58 (3.42-5.78)	4.91 (3.58-6.31)
30-day	2.18 (1.96-2.38)	2.45 (2.20-2.69)	2.89 (2.59-3.17)	3.25 (2.89-3.58)	3.73 (3.21-4.22)	4.10 (3.45-4.71)	4.46 (3.63-5.25)	4.82 (3.77-5.83)	5.28 (3.98-6.58)	5.62 (4.14-7.15)
45-day	2.60 (2.36-2.82)	2.94 (2.66-3.18)	3.47 (3.13-3.77)	3.90 (3.50-4.25)	4.46 (3.86-4.99)	4.88 (4.14-5.54)	5.28 (4.34-6.15)	5.68 (4.48-6.80)	6.18 (4.69-7.61)	6.54 (4.86-8.22)
60-day	2.96 (2.70-3.18)	3.36 (3.06-3.61)	3.97 (3.61-4.28)	4.46 (4.03-4.83)	5.10 (4.43-5.64)	5.56 (4.74-6.26)	6.00 (4.96-6.92)	6.43 (5.10-7.62)	6.95 (5.31-8.48)	7.31 (5.47-9.13)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 38.7539°, Longitude: -108.0278°

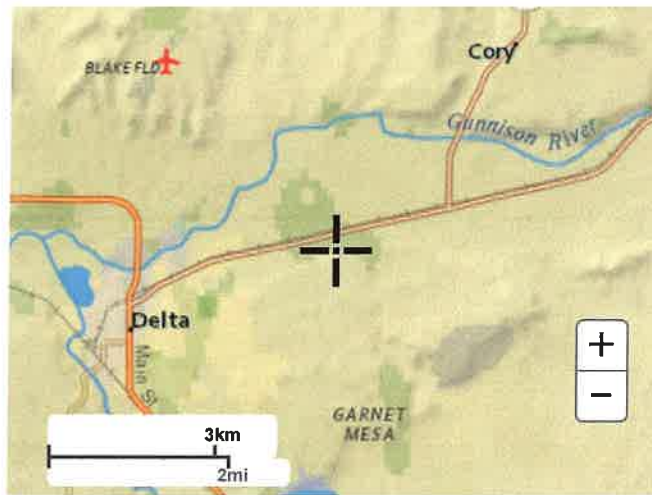


NOAA Atlas 14, Volume 8, Version 2

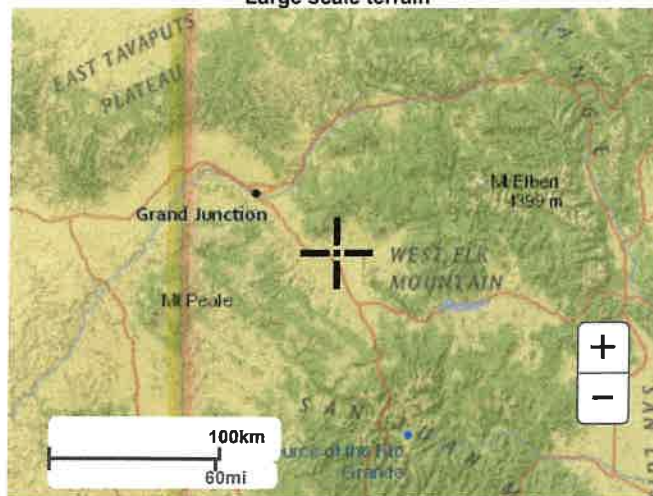
Created (GMT): Mon Nov 15 22:36:05 2021

[Back to Top](#)**Maps & arials**

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

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[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



APPENDIX C
FEMA Firmette



APPENDIX D
PRE-DEVELOPED CONDITION
AND
DEVELOPED CONDITION
HYDROLOGIC CALCULATIONS
AND
CULVERT CALCULATIONS

Dr. Jyoti Chavhan, Assistant Professor, Pimpri Chinchwad Education Trust's Pimpri Chinchwad College of Engineering, Pimpri, Dist. Pune-411 004
 Email: jchavhan@pccet.edu.in, jchavhan@pccet.ac.in, jchavhan@pccet.org

[illegible][illegible]

Calculation of Peak Runoff using Rational Method

[illegible]

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Example Zone Configuration (Retention Pond)

Selected BMP Type =	EDB
Watershed Area =	21.00
Watershed Length =	300
Watershed Slope =	0.010
Watershed Impermeousness =	5.00%
Percentage Hydrologic Soil Group A =	0.0%
Percentage Hydrologic Soil Group B =	0.0%
Percentage Hydrologic Soil Groups C/D =	100.0%
Desired VACCV Drain Time =	40.0

Location for 1-hr Rainfall Depth	Unit Input
Water Quality Capture Volume (WQCV)	0.083
Excess Urban Runoff Volume (EURV)	0.083
2-yr Runoff Volume ($P_1 = 0.39$ in.)	0.623
5-yr Runoff Volume ($P_1 = 0.56$ in.)	0.083
10-yr Runoff Volume ($P_1 = 0.7$ in.)	0.230
25-yr Runoff Volume ($P_1 = 0.8$ in.)	0.520
50-yr Runoff Volume ($P_1 = 1.06$ in.)	0.899
100-yr Runoff Volume ($P_1 = 1.22$ in.)	1.255
500-yr Runoff Volume ($P_1 = 0$ in.)	0.909
Approximate 2-yr Detention Volume	0.621
Approximate 5-yr Detention Volume	0.080
Approximate 10-yr Detention Volume	0.129
Approximate 25-yr Detention Volume	0.171
Approximate 50-yr Detention Volume	0.180
Approximate 100-yr Detention Volume	0.275

Zone 1 Volume (WGCV) =	0.063
Zone 2 Volume (EURV - Zone 1) =	0.019
Zone 3 Volume (100 year - Zones 1 & 2) =	0.162
Total Detention Basin Volume =	0.275
Initial Surge Volume (ISV) =	8
Initial Surge Depth (ISD) =	0.33
Total Available Detention Depth (H_{total}) =	8.00
Depth of Trickle Channel (H_{TC}) =	1.00
Slope of Trickle Channel (S_{TC}) =	0.007
Slopes of Main Basin Sides (S_{basin}) =	3
Basin Length-to-Width Ratio (R_{basin}) =	395

Initial Surgecharge Area (A_{s0})	25	m ²
Surgecharge Volume Length (L_{s0})	5.8	m
Surgecharge Volume Width (W_{s0})	5.0	m
Depth of Basin Floor (A_{b0})	0.38	m
Length of Basin Floor (A_{b1})	60.5	m
Width of Basin Floor (W_{b1})	5.1	m
Area of Basin Floor (A_{b1})	311	m ²
Volume of Basin Floor (V_{b1})	54	m ³
Depth of Main Basin (A_{m1})	0.29	m
Length of Main Basin (L_{m1})	98.3	m
Width of Main Basin (W_{m1})	42.9	m
Area of Main Basin (A_{m1})	4,213	m ²
Volume of Main Basin (V_{m1})	11,855	m ³
Calculated Total Basin Volume (V_{b1})	0.275	acre-feet

[illegible]



APPENDIX E
DRAINAGE PLANS AND DETAILS

Cascade Construction Company
Alliance Ready Mix Plant

Noise Mitigation

Noise levels will not exceed Colorado Noise Statute levels as measured at a distance of 25 feet from the property line. The nearest occupied residence is more than 800 feet from the property line.

Distance-activated backup alarms will be installed on applicable equipment used in this operation.

The generator used to provide power for the operation will use a large industrial muffler and will be positioned to minimize sound emanating from the site.

All other equipment powered by internal combustion engines operating on the site will be equipped with functional industrial mufflers.

Material stockpiles will be positioned to help reduce movement of sound toward residential areas.

Dust Suppression

Access to the property is via F Road which is paved.

Sand and gravel brought to the site and stockpiled for concrete production will be moist material.

Cement and fly ash will be delivered in enclosed trucks and transferred through a closed system into storage silos equipped with filters to capture particulate emissions.

All roads and parking areas used for the operation within the property boundary will be graveled and maintained in conformance with the Colorado Air Quality Control Commission Regulation No.1 as it applies to the regulation of fugitive particulate emissions and the measurement of opacity and off-property transport of fugitive particulate emissions.

The concrete plant and all associated equipment will be operated in conformance with the Colorado Air Quality Control Commission Regulation No.1 as it applies to the regulation of fugitive particulate emissions and the measurement of opacity and off-property transport of fugitive particulate emissions.

The operator has filed an Air Pollution Emission Notice and Permit Application with the Colorado Air Quality Control Commission and will maintain dust control in conformance with the approved plan.

Alliance Batch Plan Level 1 Traffic Impact Study (TIS)

Delta County, Colorado

INTRODUCTION:

This Level 1 Traffic Impact Study was prepared in support of a special use application for the Alliance Ready Mix Batch Plant at 19337 F Road in Delta County. This report generally follows the requirements of the Delta County Land Use Code, Chapter 5, Section 1.B, *Traffic Impact Study Contents (Level 1)*.

- A. Site Location** - The project site is located on the north side of F Road between 1900 and 2000 roads approximately 3.5 miles east of US Highway 50. The site is located in Township 15 South, Range 95 West, Section 22 of the New Mexico Prime Meridian. The proposed development is on a 39.7-acre parcel and proposes to construct and operate a concrete ready mix batch plant.
- B. Adjacent Development** - The site is bounded to the west by agricultural property and undeveloped native land. To the north, the parcel is bounded by undeveloped, native land used for livestock. The eastern boundary of the property also undeveloped natural land used for agriculture. To the south, the property is bounded by irrigated agricultural property.
- C. County Road Access** - The site has an existing paved access off F Road that is approximately 30-feet in width and suitable for a commercial access. There is no other access within 150-feet and F Road at this location has a straight alignment for more than 500-feet in both directions providing good sight distance at the access. No additional access is proposed.
- D. Existing Road Network** - The primary route that will be used for commercial project traffic will be F Road to 1900 Road, 1900 Road to D Road and to US Highway 50. All three County roads are paved and are shown on the Delta County Functional Classification map as minor collectors with 100-foot right-of-way. The connection at US Highway 50 is a full movement intersection and has a left turn deceleration lane on the highway.

Delta County Engineering website shows ADT for area roadways for July 2007 as follows:

F Road	1548 ADT
1900 Road	1422 ADT
D Road	1872 ADT

We anticipate these volumes have grown significantly since 2007 and have contacted the County for any recent data. Using a 10-percent growth rate results in:

BUCKHORN ENGINEERING

F Road	1703 ADT
1900 Road	1564 ADT
D Road	2069 ADT

E. Trip Generation - The applicant has indicated the site will be permitted for an estimated daily concrete production 150 cubic yards, we estimate this will result in 30 trips (15 in, 15 out) for trucks serving the site. We anticipate material supply will require a semi-truck several times per week, to be conservative we estimated 1 delivery per day for 2 trips. Other small delivery and employee traffic is estimated at 16 trips per day.

Total estimate ADT for project traffic (weekday) is 50 ADT.

The Institute of Engineers Trip Generation Manual was not utilized to determine ADT as this small and specific use proposed at the site did not fall into any of the surveys provided in the manual, the estimate provided is based on knowledge of the site and provides a better representation than using the ITE Manual.

The estimated ADT is approximately 2.5% of the projected D Road traffic and would not require a revised CDOT access permit. For County Roads the project traffic is estimated at around 2 to 3 percent traffic impact.

Conclusion

The Alliance Batch Plant Subdivision is proposed to use existing site access and minor collector roads within the Delta County Road network. It is estimated to impact area traffic 2 to 3% for weekday traffic. A truck routing map is attached.

REPORT CERTIFICATION

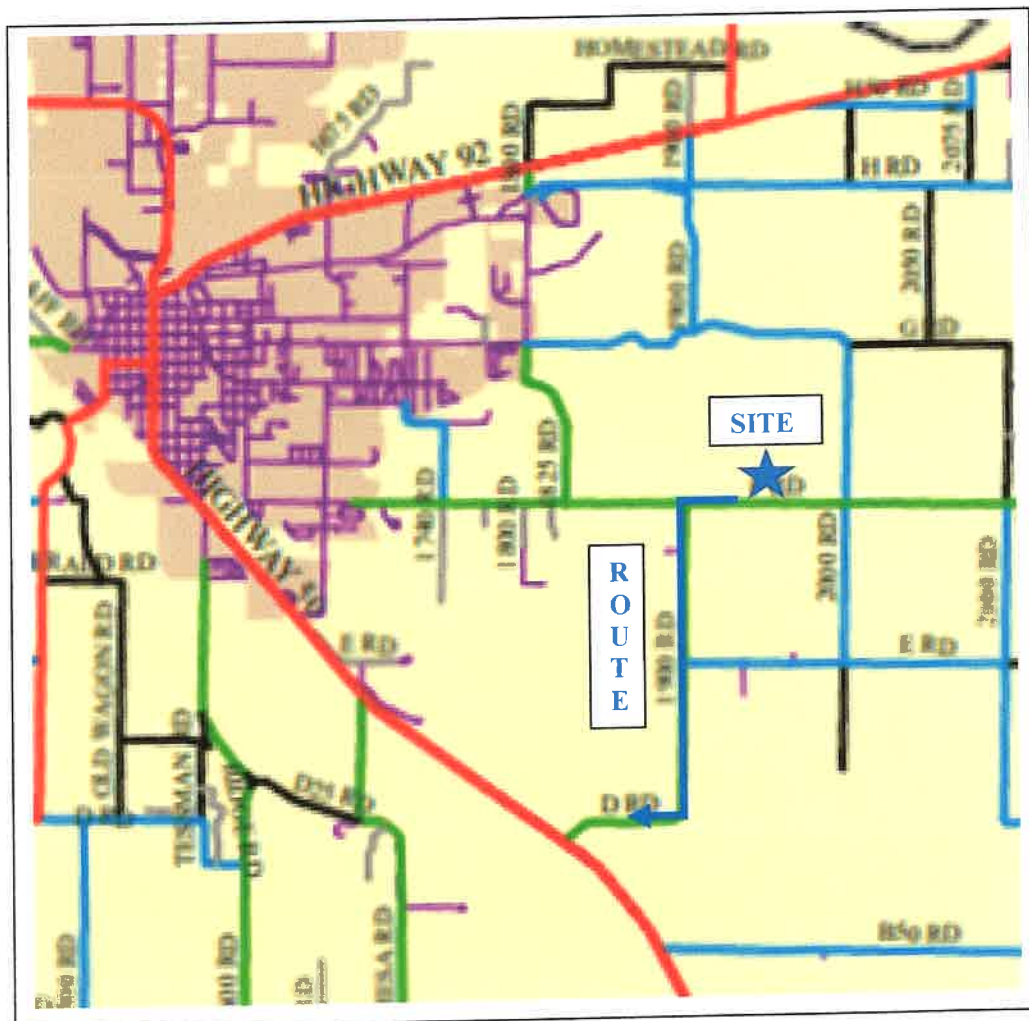
I, Daniel C. Quigley, a duly registered professional engineer in the State of Colorado, (registration #38334), have prepared this report, related documents, and supervised the preparation of the drawings enclosed. The information included is, to the best of my knowledge, accurate and conforming to the Delta County Land Use Code, Chapter 4, Section 7.b., and accepted engineering practices for the preparation of drainage reports.

November 18, 2021


Daniel C. Quigley, P.E.
Project Engineer



TRAFFIC ROUTING PLAN



Alliance Batch Plan – Reclamation Plan

Delta County, Colorado

INTRODUCTION:

This reclamation plan was prepared in support of a special use application for the Alliance Ready Mix Batch Plant at 19337 F Road in Delta County.

- A. Site Location** - The project site is located on the north side of F Road between 1900 and 2000 roads approximately 3.5 miles east of US Highway 50. The site is located in Township 15 South, Range 95 West, Section 22 of the New Mexico Prime Meridian. The proposed development is on a 39.7-acre parcel and proposes to construct and operate a concrete ready mix batch plant. Fine and coarse aggregate will be imported to the site and stockpiled for use in producing ready-mix concrete. Portland cement and fly ash will be stored in portable "pigs" for use in concrete production. Liquid admixtures will be stored in a shipping container adjacent to the batch plant operations building.
- B. Adjacent Development** – The site is bounded to the west by agricultural property and undeveloped native land. To the north, the parcel is bounded by undeveloped, native land used for livestock. The eastern boundary of the property also undeveloped natural land used for agriculture. To the south, the property is bounded by irrigated agricultural property.
- C. County Road Access** - The site has an existing paved access off F Road that is approximately 30-feet in width and suitable for a commercial access. There is no other access within 150-feet and F Road at this location has a straight alignment for more than 500-feet in both directions providing good sight distance at the access. No additional access is proposed.
- D. Existing Vegetation** – The southern half of the site was previously used for irrigated crop production but has not been farmed since before 2005 according to anecdotal information and review of historic Google Earth© images dating back to 1996.
- E. Reclamation Plan** – Upon completion of concrete batch plant operations, that portion of the site will be reclaimed as follows:
- All remaining imported aggregates will be removed from the site or used on any gravel access road to remain to the permanent office building.
 - All components of the portable batch plant, including cement and fly ash transport containers ("pigs") and liquid admixture tanks will be removed from the site.
 - Any temporary buildings associated with batch plant operations will be removed from the site.
 - The site will be graded and the soil scarified to receive hydro-seeding of an approved native seed mix. The disturbed areas will be prepped and seeded during the fall or spring to coincide with seasonal rains or snow for the best possibility of seed germination and growth. Due to the paucity of native vegetation on the site and

surrounding, non-irrigated, properties, successful revegetation will be achieved if greater than 30% of the disturbed area has successful vegetation.

- In lieu of native vegetation, the site may, at the discretion of the owners, be returned to irrigated agricultural production for seasonal crop production.

REPORT CERTIFICATION

I, Daniel C. Quigley, a duly registered professional engineer in the State of Colorado, (registration #38334), have prepared this report, related documents, and supervised the preparation of the drawings enclosed. The information included is, to the best of my knowledge, accurate and conforming to the Delta County Land Use Code and accepted engineering practices for the preparation of reclamation plans.

December 27, 2021



Daniel C. Quigley, P.E.
Buckhorn Engineering, Inc.





STAFF REPORT

Delta County Planning Commission

**Delta County Administrative Building
560 Dodge Street, Delta, CO 81416**

Wednesday, October 27, 2021 @ 5:30 p.m.

PLN21-001/Miller (Alliance Ready Mix)

Consider a Site Plan for a Conditional Use Permit (CUP) to operate a Mobile Concrete Batch Plant. The project is located on the north side of F Road, approximately 2.55 miles east of Delta (Parcel 345522300015)

PROJECT INFORMATION:

Property Owner: Kyle Miller
Applicant: Jonathan Plank
Site Address: 19337 F Road, Delta, CO 81416
Location: Section 22, Township 15S, Range 95W, 6thPM
Parcel ID/Acct: 345522300015/R024344
Parcel Size: 39.70 Acres
Zoning: A-5

RECOMMENDATION:

Staff recommends that the Planning Commission recommend that the Board of County Commissioners:

- a. Find that PLN21-001 complies with the Land Use Code; and
- b. Approve PLN21-001, a Conditional Use Permit for a Mobile Concrete Batch Plant at 19337 F Road, Delta (Parcel: 345522300015), subject to eleven (11) conditions.



SUMMARY:

Kyle Miller owns a 39.70-acre parcel (Parcel #345522300015) with frontage along the northern boundary of F Road about three miles east of the City of Delta. Right of way has been dedicated along the western boundary for possible future use for 1900 Road.

There is one (1) existing shop building (approximately 40' x 50') with an existing gravel driveway that will be extended to accommodate the Batch Plant. Access will be from F Road to the shop (19337 F Road). Drainage runs through the property from north to south on the eastern 1/3 of the property. In addition, aerial imagery shows irrigation water flowing to the southwest corner of the property.

A pre-application conference was held on April 5, 2021 with County staff from Planning, Engineering, and Road & Bridge. The applicant described their operation as a mobile batch plant with a mobile office, including outdoor storage of materials and machines for mixing. The intent would be to operate on this site for a number of years and move the operation if needed at that point.

This property has been zoned as A-5 per the Delta County Land Use maps. Staff finds that this use would qualify as Rural Medium Industrial land use due to the outdoor storage and operation. This type of use in the A-5 zone is a conditional use. Conditional Use Permits go before the Planning Commission (PC) that will make a recommendation to the Board of County Commissioner (BoCC) at noticed public hearings. The PC and BoCC shall determine if the application complies with the Land Use Code, and recommend approval, approval with conditions, or denial. As discussed below, and conditioned, staff finds that this projects complies with the Land Use Code.

DISCUSSION:

On March 30, 2021, Kyle Miller (Owner) and Jonathan Plank (applicant) submitted a pre-application form (PLN21-001/Miller CUP) for a Mobile Concrete Batch Plant in Delta County that would be run by Alliance Ready Mix. The Site Plan shows utilizing an existing access and creating a loop around the existing shop structure. A mobile batch plant would be located at the apex of this loop for trucks to drive through, load and exit (one-way traffic). Materials would be stored around the batch plant.

On April 5, 2021, a Pre-Application Conference was held between the applicants (Kyle Miller and Jonathan Plank) and staff representatives from County Planning, Engineering, and Road & Bridge. Staff evaluated the best access location, including possible access from the right-of-way dedicated for a future use as 1900 Road. Due to the site conditions (e.g. topography) and uncertain extension of 1900 Road, it was determined that the existing access from F Road would be a reasonable location, but would still need approval by Road & Bridge prior to GIS assigning an address. The applicant has completed an Access/Address application to assign an address to the existing shop (19337 F Road).



An Application Packet was sent to the applicants on April 12, 2021 summarizing the pre-application conference and explaining the process. This packet included a Land Use Application, Application checklist, and a Site Plan checklist. This application, along with the required fees, was to be filled out and submitted to the Planning Department to assist in assessing if the application complies with the Land Use Code (LUC).

Chapters 3-6 of the LUC establish standards to assess with this type of development application. Issues to consider for this type of use include parking, noise, dust, runoff/drainage, traffic, geology, water, and Ag lands.

Parking: Chapter 4, Section 3.B Table 4.a, *Parking Ratio Guidelines and Surfacing Standards*; Rural Medium Industry requires one (1) parking space for every 1,000 square feet of gross floor area (sf., GFA). The existing shop building is 40' x 50' which is a total of 2,000 sf. If trucks will be parked/stored on site, the Site Plan needs to illustrate that area in addition to the required parking. (Condition #2)

Noise: Chapter 4, Section 7.C, *Noise*, any noise that is generated by development shall not exceed the thresholds set out in C.R.S. 25-12-103, *Maximum Permissible Noise Levels*. Properties surrounding the site are predominately undeveloped or agriculture. The closest development is on the Dominguez Land Company property, over 1,000 feet away. Condition #5 requires the applicant to provide, and adhere to, a Noise Mitigation Plan.

Dust: Concrete Batch Plant is an industrial use that, by nature of the operation, creates dust from materials such as sand, aggregate, fly ash, and cement. Chapter 4, Section 7.F, *Dust Control*, requires all industrial or extraction uses to submit a Dust Control Plan. Said Plan shall include all available practical methods that are technologically feasible and economically reasonable and that will reduce, prevent, and control fugitive dust into the atmosphere, minimizing impacts to livestock, crops, and public health. Said methods shall include but not be limited to use of water for abating dust. (Condition #6)

Runoff/Drainage: Chapter 4, Section 7.B, *Stormwater Management, Grading, Erosion, and Sediment Control*, all Site Plans associated with a conditional use shall be accompanied by a Stormwater Management Plan, sealed by a Professional Engineer that certifies compliance with the requirements of subsection (1) Section 7.B. (Condition #4) Environmental Health is the authority to consider a Stormwater Management Plan for private lands, Engineering considers plans for County-owned lands.

Condition #10 also requires a Drainage Report, which consists of two parts: 1) a drainage study and 2) a drainage and erosion control plan. Drainage reports shall be in compliance with Chapter 4, Sections 7.B, *Stormwater Management*,



Grading, Erosion, and Sediment Control, and any other applicable state or federal standards for grading, erosion, and sediment control.

Traffic/Access: A Level I Traffic Study is required as part of a conditional use permit and shall include, at a minimum, the information required by this Table 5.a, *Traffic Impact Study Scope*, based on the level of study required. (Condition #8) In addition, Condition #7 requires a Truck Routing Plan for the use of semi-trailers, dump trucks, trash hauling trucks, or comparable heavy trucks as they may be disruptive to nearby property owners and could potentially cause damage to County Roads (specifically F Road). The Truck Routing Plan will need to address the type of vehicles that will be used for this operation, the frequency of both arrivals and departures, approximate hours of truck traffic, and any hazardous materials/hazmat being transported.

Geology: Condition #9 requires a Geologic and Soils report for this development to assess soil suitability and site characteristics pursuant to Chapter 8, Section 2 of the Land Use Code.

Domestic Water: Projects are required to provide proof of adequate water supply for the proposed use. Comments from UVWUA note that this property has irrigation water. There currently is no domestic water serving this property; however, Tri-County has an 8-inch line across F Road and the applicant has been in discussion to acquire a tap for this property. The applicant will need to provide a plan for how water will be provided for domestic purposes (office) and dust control (Condition #11) Pursuant to the Land Use Code, cisterns are not considered an adequate water supply for residential uses. Staff finds that this also applies to new development such as a CUP or subdivision.

Agriculture: Staff noted that aerial imagery shows a green area in the southwest corner and the County's intent/policy is to limit impact to agricultural lands. The proposed location for the operation would be in an area of the site that would not impact the irrigated area, or where the drainage collects (see Site Plan).

Staff has reviewed all documents submitted by the applicant and finds that they are sufficient. All required fees have been paid for this application. Therefore, Staff is recommending approval of the Miller Conditional Use Permit (PLN21-001).

OTHER AGENCIES INVOLVED:

Planning Staff sent the Site Plan along with a summary to the Review Agencies for comment on September 15, 2021. Adjoining Property Owners (within a 200-foot radius from Parcel #345522300015) were also sent a Public Notice for this application, including the applicant. Comments have been received by UVWUA, the Delta County Engineering Department, City of Delta, CDOT, and Colorado Parks and Wildlife (CPW). Planning has not received any additional feedback from any other review agencies or adjoining property owners.



UVWUA (attached): This acreage has irrigation water delivered by the Uncompahgre Valley Water Users Association. No new water delivery structures will be constructed. The irrigation water for this tract of land will be delivered through the existing head gate. (Condition #1)

UVWUA has no other areas of concern.

County Engineering (attached): F Road is classified as a Minor Arterial Road with 100' right-of-way width. Adequate ROW for F Road was deeded per Morton Subdivision Exemption Plat recorded under Reception #689458; this reception number and subdivision will need to be labeled on the Site Plan. (Condition #2)

The Site Plan needs to show all setbacks, existing and proposed utilities, irrigation and easements on the property. The adjacent property owner name in the southeast corner of the Site Plan will need to be revised to reflect the current property owner name. (Condition #2)

All drainages will need to be delineated on the Site Plan, as well as the existing culvert under F Road. (Condition #2)

City of Delta (attached): No comments on this development.

CDOT (attached): No comments on this development.

Colorado Parks and Wildlife (attached): CPW policy directs our efforts towards proposals that will potentially have high impacts to wildlife and wildlife habitat, with an emphasis on large acreages, high priority habitats, wildlife diversity, and effects to species of special concern. At this time, impacts of the development, as proposed, may be characterized as minimal. This does not mean that the landscape has no value to wildlife, and CPW would encourage good land stewardship in the form of a plan for reclamation efforts in the event the mobile concrete batch plant was removed from the property. (Condition #3)

Prepared by: Kate Kelly, Planning & Community Development Technician II
970.874.2110
kkelly@deltacounty.com
October 20, 2021

Attachment(s):

- Site Plan (dated 8/17/21)
- Recommended Conditions of Approval
- Review Agency Comments

THE GUNNISON TUNNEL PROJECT
The Uncompahgre Valley Water Users Association
601 North Park Ave. * P.O. Box 69 * Montrose, CO 81402-0069
Phone: 970-249-3813 Fax: 970-249-6830

September 16, 2021

Delta County Planning and Community Development
295 W. 6th Street
Delta, CO 81416

RE: PLN21-001 / Miller Conditional Use Permit

Dear Land Use Personnel:

Uncompahgre Valley Water Users Association has reviewed the application for a conditional use zoning permit for a mobile concrete batch plant in Delta County located on the north side of F Road (Parcel #345522300015) and located approximately 2.55 miles east of Delta.

This acreage has irrigation water delivered by the Uncompahgre Valley Water Users Association. No new water delivery structures will be constructed. The irrigation water for this tract of land will be delivered through the existing headgate

AREAS OF CONCERN

None

Thank you for your consideration in this matter.

Sincerely,

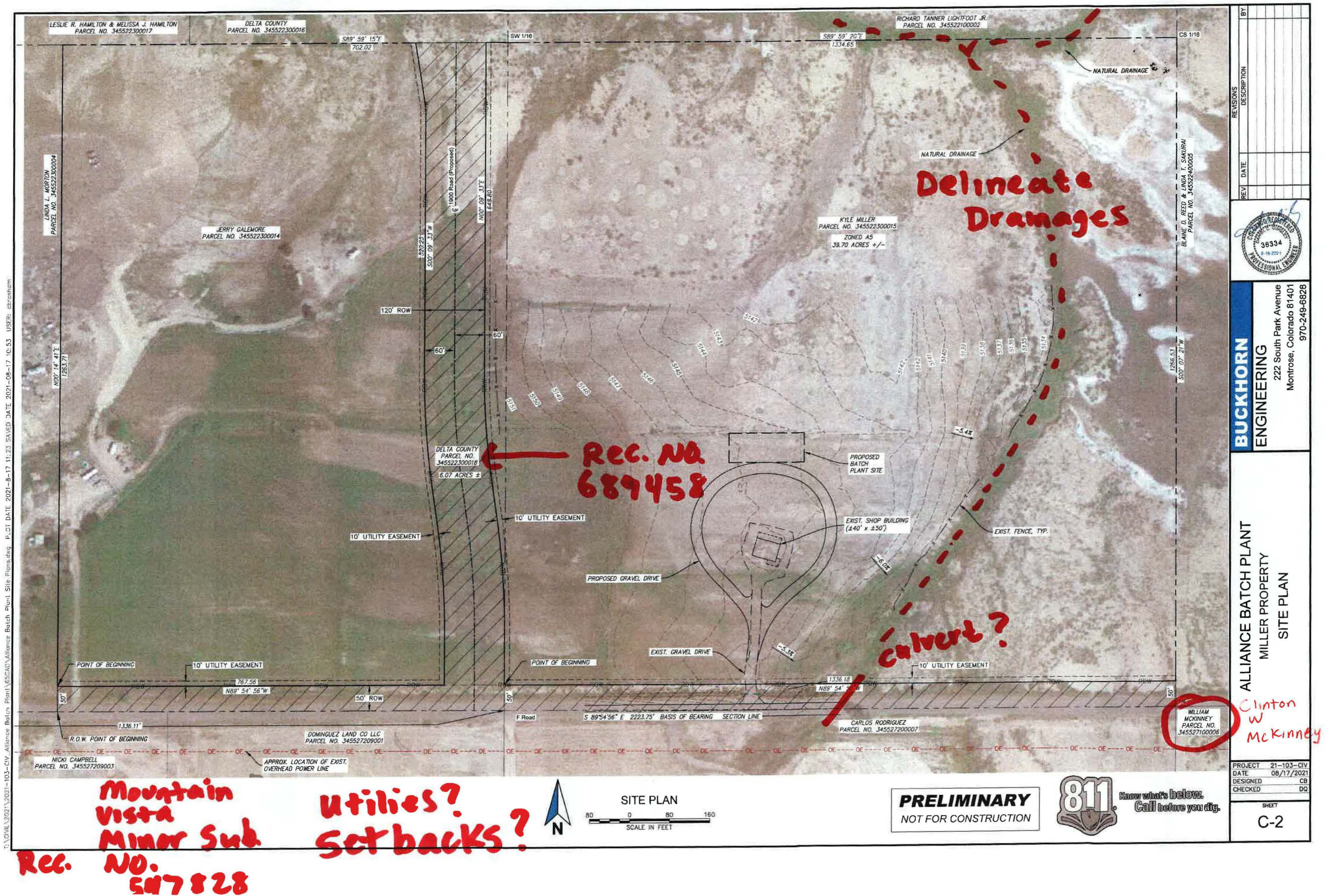


Cheryl A. DeJulio
Business Manager

Memo

To: Planning Department
From: Tim McCracken
CC: File
Date: September 17, 2021
Re: Engineering Comments for PLN21-001 Miller Conditional Use Permit

1. F road is classified as a Minor Arterial Road with 100' right-of-way width.
 - a. Adequate ROW was deeded per Morton Subdivision Exemption at Reception Number 689458.
2. Show all setbacks on the Site Plan.
3. Show all existing and proposed Utilities, Irrigation and Easements on the Site Plan.
4. Revise the adjacent property owner name to the Southeast (see attached Site Plan review).
5. Show the Names and Reception Numbers for adjacent Subdivisions.
6. Delineate natural drainages on the Site Plan.
7. Show existing culvert under F Road on the Site Plan.
8. This review is not meant to be fully comprehensive, and additional requirements may arise at further reviews.





Fwd: PLN21-001/Miller Conditional Use Permit

1 message

Kate Kelly <kkelly@deltacounty.com>

To: Kimberly Henderson <khenderson@deltacounty.com>

Fri, Sep 17, 2021 at 2

Can you print this one too. Thank you.

----- Forwarded message -----

From: **Shay Coburn** <shay@cityofdelta.net>

Date: Fri, Sep 17, 2021 at 1:05 PM

Subject: Re: PLN21-001/Miller Conditional Use Permit

To: Kate Kelly <kkelly@deltacounty.com>

No comments from me. Thanks!

On Wed, Sep 15, 2021 at 1:36 PM Kate Kelly <kkelly@deltacounty.com> wrote:

Dear Review Agencies,

Attached is the Case Summary for PLN21-001/Miller Conditional Use Permit. This application is scheduled to be reviewed by the Planning Commission on October 27, 2021 at the Delta County Administration Building located at [560 Dodge Street, Delta, CO 81416](#) @ 5:30 p.m.

Thank you in advance for your review and comments on this application.

--

Kate Kelly
Planning & Community Development Tech II
[295 W 6th Street](#)
[Delta, CO 81416](#)
[970-874-2110](#)

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--

Shay Coburn
City of Delta
Community Development Manager
Mobile: 970-787-2332
Office: 970-874-7566



--

Kate Kelly
Planning & Community Development Tech II
[295 W 6th Street](#)
[Delta, CO 81416](#)
[970-874-2110](#)

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PLN21-001/Miller Conditional Use Permit

Killian - CDOT, Brian <brian.killian@state.co.us>
To: Kate Kelly <kkelly@deltacounty.com>
Cc: Kandis Aggen - CDOT <kandis.aggen@state.co.us>

Tue, Sep 28, 2021 at 4:08 PM

Kate,

CDOT has no comment on the batch plant.

Thanks,

Brian Killian
Region 3 Access Program Manager
Traffic & Safety



P 970-683-6284 | C 970-210-1101 | F 970-683-6290
222 S. 6th St, Room 100 Grand Junction, CO 81501
brian.killian@state.co.us | www.codot.gov | www.cotrip.org

On Wed, Sep 15, 2021 at 1:36 PM Kate Kelly <kkelly@deltacounty.com> wrote:

[Quoted text hidden]

[Quoted text hidden]



COLORADO

Parks and Wildlife

Department of Natural Resources

Montrose Service Center
2300 South Townsend Avenue
Montrose, Colorado 81401
P 970.252.6000 | F 970.252.6053

October 1, 2021

Delta County Planning and Community Development
Attn: Kate Kelly
295 W. 6th St, Delta, CO 81416

RE: PLN21-001 Miller Conditional Use Permit

Dear Ms. Kelly,

Thank you for the opportunity to provide input on the proposed Conditional Use Permit for a mobile concrete batch plant in Delta County, located approximately 2.55 miles east of the city of Delta. This letter is in response to your request for comments on September 15, 2021.

One of our goals at Colorado Parks and Wildlife (CPW) is to provide complete and timely information to all entities who request comment on matters within our statutory authority and our mission, which is to perpetuate the wildlife resources of the state, to provide a quality state parks system, and to provide enjoyable and sustainable outdoor recreation opportunities that educate and inspire current and future generations to serve as active stewards of Colorado's natural resources.

Currently, CPW policy directs our efforts towards proposals that will potentially have high impacts to wildlife and wildlife habitat, with an emphasis on large acreages, high priority habitats, wildlife diversity, and effects to species of special concern. At this time, impacts of the development, as proposed, may be characterized as minimal. This does not mean that the landscape has no value to wildlife, and CPW would encourage good land stewardship in the form of a plan for reclamation efforts in the event the mobile concrete batch plant was removed from the property.

Again, CPW appreciates the opportunity to comment on this project during the planning phase. If you have any questions, please contact DWM Natalie Renneker at (970) 209-2371 or via email at natalie.renneker@state.co.us.

Sincerely,

Natalie Renneker
District Wildlife Manager



Alliance Ready Mix project

1 message

Raylan <8990rjm@emypeople.net>
To: planning@deltacounty.com

Fri, Oct 22, 2021 at 11:30 AM

Hi,
I can't show up at the meeting but I am all for another concrete facility in the area.
It will be a big win for the local concrete contractors as well as anyone needing concrete.
We need another concrete plant in the area!

Thanks for considering my input,
Raylan Miller
815-590-2524



image.png
355K



(no subject)

1 message

Caleb Miller <calebalan93@gmail.com>
To: planning@deltacounty.com

Fri, Oct 22, 2021 at 11:01 AM

In regards to another portable batch plant in the area to help boost the demand that there is would be of an utmost help seeing that the ones we have currently can't keep up, Having more than one supplier would seem smart, seeing that at this point everyone is limited as to whatever the current company demands!! we are looking forward to seeing this project progress and bring more opportunity to the community around, Thanks Caleb,



Delta concrete batch plant

thejajabsbrown@gmail.com <thejajabsbrown@gmail.com>
To: planning@deltacounty.com

Fri, Oct 22, 2021 at 4:28 PM

Hello delta county my name is Jacob Brown I just was driving through F road. I noticed a batch plant is in process of trying to be place there, I wanted to reach out and give my opinion. I believe delta, Olathe, and Montrose are in need of concrete to help build the community's and to help private homeowners. I want to say that I am In favor of the batch plant to be put in,

Thanks,
Jacob brown
425-295-5751



Batch Plant

Lyndon Hostetler <417lyndon@gmail.com>

Fri, Oct 22, 2021 at 10:16 PM

To: planning@deltacounty.com

Hello Delta County my name is Lyndon Hostetler heard there's a new batch plant maybe going in on F RD i think that would be a positive thing for the community. The valley is growing the valley needs another concrete plant to better serve the home owners .I'm in favor of it .

Thanks



This valley definitely could use another concrete plant.

logan martin <ridgelineroost15@gmail.com>
To: planning@deltacounty.com

Fri, Oct 22, 2021 at 4:51 PM

Sent from my iPhone



STAFF REPORT

**Delta County Planning Commission
Board Room
560 Dodge Street, Delta, CO 81416**

Wednesday, February 23, 2022 @ 5:30 p.m.

PLN21-039/TDS Telecommunications

Continued from February 9, 2022. Consider options for a Conditional Use Permit to install a 60-foot-tall wireless facility in the County Right-of-Way adjacent to 38590 Stucker Mesa Road (Parcel: 3443-023-00-055).

PROJECT INFORMATION:

Applicant: Delta County Tele-Comm, dba TDS Telecom
Representative: Jared Pahl
Zoning: A-35

RECOMMENDATION:

Staff recommends that the Planning Commission:

- a. Table the Stucker Mesa portion of the application to pursue Administrative Review of the DMEA co-location design; and
- b. Consider draft Resolution for PLN21-039.

SUMMARY

On February 9, 2022, the PC held a public hearing to consider two wireless communication facilities under PLN21-039:

- 1) Cottonwood Creek (Crawford). PC recommended BoCC approval (unanimous vote).
- 2) Stucker Mesa (Paonia). PC continued this item for two weeks (February 23, 2022) so the applicant (TDS) could explore options for co-locating with KVNF or DMEA.

Subsequent communications by TDS with immediate neighbors, staff, DMEA and KVNF resulted in a preferred option to co-locate a microwave dish on a DMEA



pole with direct link to DSA 37306. The DMEA pole is located on the south side of Stucker Mesa Road near the DSA cabinet, and could require an additional easement from the neighboring property owner (Swartzendruber). This option includes replacing the existing 35-foot wood pole with a 40-foot composite pole, subject to final design and approval from DMEA (depicted below).



Staff finds that co-locating a small microwave dish on existing DMEA pole within County Right-of-Way and increasing the pole height up to 5' (max) can be approved administratively. TDS informed staff that they want to pursue this design and do not wish to pursue the original location and 60-foot pole, effectively amending their application.

Staff recommends that the PC table the Stucker Mesa portion of the application for TDS to pursue Administrative Review of the Stucker Mesa site as amended. A draft resolution reflecting this action and recommending approval of the Cottonwood Creek site is attached for PC consideration.

On February 9th the PC concluded a public hearing and were deliberating on the matter. As such, the PC could continue with deliberation, without re-opening the



public hearing. Alternatively, the PC could re-open the public hearing to receive additional testimony.

DISCUSSION:

TDS submitted an application package that included a new 60-foot-tall composite microwave antenna located in the County right-of-way for Stucker Mesa Road, at the corner of 38595 Stucker Mesa Road (Site #1, DSA 37310). This antenna would connect to existing equipment (DSA) cabinet located about 1900 feet east along the southern edge of Stucker Mesa Road. This site also requires County approval for developing/installing infrastructure within County Right-of-Way.

The Director referred this application to the Planning Commission (PC) on February 9, 2022 to make a recommendation to the Board of County Commissioners (BoCC). The PC continued the application to February 23, 2022 so the applicant (TDS) could explore alternative options for tower collocating with KVNF or DMEA for the Stucker Mesa Road location. Staff sent an email to Mr. Jared Pahl (TDS representative) in regards to the PC meeting follow-up to include:

- Ask KVNF if they would consider TDS placing a dish on their tower
- Provide an estimated height of pole at the DSA cabinet on Stucker Mesa (not to exceed height) to make this wireless connection
- Contact Ms. Swartzendruber to see if she would object to installing a pole (height undetermined) in the existing easement, or adjacent right-of-way.

On February 15, 2022, Mr. Pahl informed staff TDS was exploring three options (alternatives) for the Stucker Mesa location:

A. DMEA Option; requires:

- o Agreement to change current wood pole with a new composite pole
- o Agreement on a location of the DMEA pole
- o Install MW antenna in comm-space on DMEA pole with direct link to DSA 37306

Initial models suggest the need for a 20-feet to 25-feet dish height. The exact height of a new DMEA pole is yet to be determined – estimate is 40-feet and the current pole is 35-feet.

B. TDS Pole Adjacent to 37310, requires:

- o Additional 10-foot easement adjoining to current easement's southern extent (Swartzendruber's)
- o Setting a 25-foot monopole with antenna direct connection to 37306

Initial models suggest the need for a 20-foot dish height to reach 37306 directly from 37310. Cannot attach dishes directly to the top of the pole – generally, there is a 5-foot open space above the dish to raise if growth of trees, new buildings, etc. get into the path of the pole. Beyond modeling, a dish height of less than 20-feet introduces uncontrollable variables (risk



for builders, vehicles, and other obstructions) to regularly disrupt the line of sight.

C. TDS Pole Adjacent to 37310, Relay up to KVNF, requires:

- o Additional 10-foot easement adjoining to current easement's southern extent (Swartzendrubers)
- o Setting a 25-foot monopole with antenna relay to KVNF
- o Setting a 25-foot monopole with 2 antennas at KVNF in SW Corner of existing fenced perimeter

As with Option B, dish height of less than 20-feet introduces uncontrollable variables. The TDS pole heights do not change from Option B to Option C.

TDS will be pursuing a collaborative (worked with neighbors) solution with DMEA to collocate their wireless antenna on a DMEA pole. Below is the general outline of the terms agreed between TDS and the neighbors:

- TDS submits formal application for wireless attachment to DMEA pole directly adjacent to DSA 37310 (as shown in attachment), anticipating changing existing wooden DMEA pole to composite DMEA pole.
 - o Determine appropriate dish height – anticipated to be 20' from modeling, will require field engineering
 - o Determine appropriate height for pole (TDS and neighborhood requiring maximum height increase of 5', if any)
 - o Determine appropriate composite pole within DMEA's approved equipment inventory
 - o Determine appropriate attachment methodology for TDS's attachment to DMEA pole
 - o Determine cost/requirements for changeout through formal engineering estimate from DMEA
- (Assuming DMEA Approval) TDS/DMEA carry out pole transfer under road and bridge permit for work in ROW (current and new pole would occupy County ROW)
- TDS installs antenna and aligns with DSA 37306
- TDS installs fiber/power (ethernet) from Antenna to existing DSA cabinet and activates antenna– requiring construction within existing DSA easement

As part of a commitment to be a partner with this community, TDS committed to the following:

- Not to deploy additional wireless sites/antennas within the 37310 service area.
- Remove wireless antenna within 1 year of discontinuing use.
- Limit the size of dish to the dish approved for use, anticipated to be Mimosa B-11 radio (spec attached).



- Limit size of DMEA's pole to smallest size (diameter and height) allowable to achieve service goals.
- Consistent with our original application, no permanent lighting will be placed on the pole. Light will be brought from off-site in case of emergency night maintenance

Attachment(s):

- Draft Resolution

**RESOLUTION
OF THE
PLANNING COMMISSION
OF THE COUNTY OF DELTA,
STATE OF COLORADO**

PLN21-039/TDS TELECOMMUNICATION

RECOMMEND THAT THE BOARD OF COUNTY COMMISSIONERS APPROVE A CONDITIONAL USE PERMIT TO INSTALL AND OPERATE A WIRELESS COMMUNICATION FACILITY CONSISTING OF ONE 50-FOOT-TALL POLE WITHIN A TDS EASEMENT AT 39025 COTTONWOOD CREEK ROAD APPROXIMATELY 3.6 MILES NORTH OF CRAWFORD (PARCEL: 344914103001).

RECITALS

WHEREAS, Mr. Samuel F Johnson Jr is the property owner of record of the real property, including an easement in favor of TDS Telecommunication, located at 39025 Cottonwood Creek Road (Site #2, Parcel 3449-141-03-001, Account: R020141); and

WHEREAS, on January 5, 2021, Delta County Board of County Commissioners adopted the Delta County Land Use Code (LUC). Resolution No 2021-R-001 repealed regulations regarding land use and subdivision and adopted a new land use code (including zoning maps); and

WHEREAS, on April 20, 2021, TDS submitted a pre-application to install two (2) new composite microwave antennas; and

WHEREAS, Site #1 is a 60-foot-tall pole located in the County right-of-way for Stucker Mesa Road at the corner of 38595 Stucker Mesa Road Zoned Agricultural/35-Acres ("A-35"), which requires a minimum of 35.0 acres per parcel; and

WHEREAS, Site #2 is a 50-foot-tall pole on a site where TDS has an easement off Cottonwood Creek Road Zoned Agricultural/35-Acres ("A-35"), which requires a minimum of 35.0 acres per parcel; and

WHEREAS, on June 7, 2021, a pre-application conference was held between the applicants and staff from Delta County to review preliminary materials to help identify potential issues and applicable review procedures, including the history with the Stucker Mesa site; and

WHEREAS, on June 11, 2021, a letter was sent to the applicant representative summarizing the pre-application conference and process, identifying applicable fees, and providing a checklist of materials required for an application; and

WHEREAS, a Wireless Communication Facility Resolution was drafted as an appendix to the Land Use Code but has not been adopted; however, projects are subject to the standards of the LUC; and

WHEREAS, absent a resolution for the type of permit, County Planning Director referred this matter to a public hearing at the Planning Commission to make a recommendation to the Board of County Commissioners; and

WHEREAS, on October 25, 2021, TDS Telecommunications submitted an application package; and

WHEREAS, on November 5, 2021, a Public Notice was sent to Adjoining Property Owners (200-foot radius) and notice was posted on the property informing the public that on December 8, 2021 the Delta County Planning Commission would consider this matter; and

WHEREAS, on December 8, 2021, the Planning Commission continued the matter to be heard February 9, 2022 in order to address staff's request for additional information; and

WHEREAS, on January 14, 2022, TDS Telecommunications submitted additional information requested by County staff to complete the application; and

WHEREAS, on January 20, 2022, the application package was determined to be complete by the Planning Department; and

WHEREAS, on January 26, 2022, a Public Notice was sent to Adjoining Property Owners (200-foot radius) and notice was posted on the property informing the public that on February 9, 2022 the Delta County Planning Commission would consider this matter; and

WHEREAS, on February 9, 2022, the Planning Commission held a duly noticed public hearing to consider wireless communication facilities at two locations; Stucker Mesa Road (Site #1), and Cottonwood Creek Road (Site #2) [PLN21-039/TDS Telecommunications]; and

WHEREAS, on February 9, 2022, the Planning Commission voted to: 1) Recommend Board approval of Cottonwood Creek Road (Site #2), subject to

conditions; and 2) Continue Stucker Mesa Road (Site #1) for two weeks so the applicant (TDS) could explore options for co-locating with KVNf or DMEA; and

WHEREAS, on February 16, 2022, TDS submitted a revised design for the Stucker Mesa site consisting of co-locating a microwave dish on an existing DMEA pole and changing said pole to a composite pole adding up to 5 feet in height, and expressed that they no longer wished to pursue the original location and 60-foot pole, effectively amending their application; and

WHEREAS, on February 23, 2022, the Planning Commission considered the revised design for the Stucker Mesa site.

DECISION

NOW, THEREFORE, BE IT RESOLVED, having considered all the written and documentary evidence, the administrative record, and other evidence presented, the Delta County Planning Commission does hereby:

- A. Find that PLN21-039 meets standards of 2021 Delta County Land Use Code (Chapters 3, 4, and 5) as follows:
 1. *Utilities shall be installed in appropriate locations to allow for efficient access and maintenance. All utilities shall follow road and driveway corridors where possible. See discussion below.*
 2. *Minimize impact to agricultural, natural and cultural resources. There would be no impact to these resources.*
 3. *Minimize impact on the views from designated scenic byways (¼ mile). There is no maximum height limit, except as might be limited to mitigate impacts to a scenic byway. The scenic byway, as designated by CDOT, nearest to the site is West Elk Loop.*
 4. *Design in regard to not exacerbate hazards (fire, geologic, operational). See discussion below.*
 5. *Shielded or hooded outdoor lighting so as to not cast light or glare onto adjacent property, or upwards where it dilutes the night sky. No lighting will be placed on poles for maintenance or as FAA requirement. If night repairs are required, lighting would be brought from off-site for safety.*
 6. *All buildings and structures shall be setback 25 feet from roadways. Development on private property is required to be set back 25 feet from the road Right-of-Way (ROW).*
- B. Table PLN21-039A (Stucker Mesa Site #1) to pursue Administrative Review of the DMEA co-location design.
- C. Approve PLN21-039B (Cottonwood Creek Site #2), a Conditional Use Permit to install a 50-foot-tall wireless facility within a TDS easement located at

39025 Cottonwood Creek Road (Parcel: 3449-141-03-001), subject to conditions attached hereto and incorporated herein by reference as Exhibit A.

ADOPTED AS SET FORTH ABOVE on this 23rd day of February, 2022 upon motion of Commissioner _____, seconded by Commissioner _____, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

COUNTY OF DELTA
STATE OF COLORADO

Carl P. Holm, AICP
Planning Commission Secretary

Dated: _____

EXHIBIT A
Conditions of Approval
TDS Telecommunications (PLN21-039)
PC, February 23, 2022

1. Development of the TDS Telecommunication project (Cottonwood Creek site) shall be in accordance with approved plans and supplemental documentation to the satisfaction of the Director of Community Development and Natural Resources, including but not limited to:
 - a. Cottonwood Creek Development Plans, dated 8-12-21
 - b. Cottonwood Creek Revised Site Plan, dated 11-8-21Any significant modification shall require an amendment to be considered by the Planning Commission and Board of County Commissioners.
2. There shall be no lighting on the antenna pole. Emergency service at night will require bringing necessary lighting for the crews.

DRAFT