



**STORMWATER MANAGEMENT PLAN
Submitted with Form 2A Application for:**

**Alamosa 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH 5-4-3 1AH, 1BH, 2AH,
2BH, 3AH, 3BH, 4AH
Arapahoe County, Colorado**

April 26, 2022

**Crestone Peak Resources' Stormwater Management Plan was developed with Substantially
Equivalent Information and in accordance with COGCC Rule 1002.f.**

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Crestone Peak Resources

Site Specific Stormwater Management Plan for Construction Activities

Alamosa 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH 5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH

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This facility is part of a comprehensive Field-Wide Stormwater Management Plan developed pursuant to the Colorado Department of Public Health and Environment (CDPHE) COR400000 Construction Stormwater Discharge Permit.

2.0 SITE DESCRIPTION

Operator / ID	Crestone Peak Resources Operating, LLC
Project / Site Name:	Alamosa 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH 5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH
Location:	NE ¼, NE ¼ SEC. 5 & 6, T5S, R64W, Arapahoe County, Colorado
Total Project Disturbance:	Construction – 16.3 ac
Description of Existing Vegetation:	Non-Crop Land; This location occurs in a semi-arid shortgrass grassland and is usually composed of blue grama as the dominant or codominant species with associated grasses including purple three-awn, sideoats grama, hairy grama, buffalograss, needle-and-thread grass, needlegrass, western wheatgrass, Galleta grass, sand dropseed, and scattered shrubs, dwarf-shrubs and cacti. Vegetation composition is estimated 70-85% grasses and grass-like plants, 5-15% forbs, and 10-15% woody plants.
Known Weed Infestations:	Unknown
Soil Type(s):	Renohill-Little Thedalund complex, 9 to 30 percent slopes – 92.8% Fondis-Colby silt loams, 3 to 5 percent slopes – 4.8% Bresser-Stapleton sandy loams, 9 to 20 percent slopes – 2.4%
Primary Receiving Waters:	Box Elder Creek, 9,935' east of location Coal Creek, 11,705' west of location
Operator ID:	10633
CDPS Permit:	COR401102 (Appendix A)
Qualified Stormwater Manager:	Schuyler Hamilton – Environmental Specialist Crestone Peak Resources Mobile: 720.925.1820
SWMP Administrator:	David Cummings -Project Manager, P.E. Apex Companies, LLC Mobile: 402.707.9799
Site Contact:	Schuyler Hamilton – Environmental Specialist Crestone Peak Resources Mobile: 720.925.1820
Emergency Contact:	Schuyler Hamilton – Environmental Specialist Crestone Peak Resources Mobile: 720.925.1820

3.0 TOPSOIL PROTECTION

Crestone operations personnel and construction contractors adhere to topsoil protection best practices, which include proper planning for both interim and final reclamation of the land during and following oil and gas activities. All topsoil management shall be in accordance with the Colorado Oil and Gas Conservation Commission (COGCC) Series 1000 Reclamation Rules 1001.a, 1002.b and 1002.c requirements.

3.1 Site Investigation

National Resources Conservation Service (NRCS) web soil survey data has been reviewed to determine sampling intervals and locations, to identify topsoil depths, texture, and fertility for development of grading plans, topsoil management, interim reclamation plans, and for final reclamation after decommissioning, well plugging and abandonment. Topsoil depth evaluations shall occur within the disturbance area, with the number of pits determined by topography, land use change, or distinct visual surface changes. When necessary, composite samples are gathered within each soil map unit at 0 to 6 inches in depth, using standard agronomic sampling procedures, for fertility and texture analysis.

3.2 Proposed Sequence of Major Activities

- A. Topsoil Removal: Depth of each soil horizon will vary with individual soil units, and determination of depth and proper removal will be monitored during construction by physical characteristics of color, density, and texture change of soil, and as determined during Site Investigation. Topsoil may not be removed during wet soil moisture conditions, as field determined considering soil texture.
- B. Subsoil Horizon Separation: Lower soil horizons will be stockpiled separately from topsoil where it can be used for contouring during reclamation and preserved in order of original state. Distinctly visible soil horizons or soil types shall be stockpiled separately (i.e. gravel or shale layers). Under no circumstances shall subsoil be mixed with topsoil, nor placed on top of the removed topsoil stockpile
- C. Topsoil Protection: If topsoil will be stockpiled for extended periods of time, it shall be protected from degradation due to erosion, compaction and contamination and to maintain soil microbial activity, using best management practices (BMPs) such as stabilizing with mulch, seeding, track walking, perimeter control or a combination of BMPs. Weeds on stockpiles shall be controlled as to prevent production of weed seed and/or enough biomass that would interfere with redistribution of soil or cause onsite debris. Signage shall be installed to identify topsoil stockpiles to facilitate subsequent reclamation and indicate to personnel that the area may not be disturbed during drilling and completion operations.
- D. Recontouring and Compaction Relief: The first material to backfill will be from excavated subsoil materials, and compacted to avoid subsidence, but not restrictive to root growth of plants. The stockpiled soil horizons will be replaced in order and graded with the adjacent undisturbed land. Ripping/subsoiling will be required prior to topsoil redistribution if soil is overly compacted from vehicle or equipment traffic.
- E. Topsoil Redistribution: The stockpiled topsoil will be redistributed uniformly and to minimize compaction of soil. Topsoil may not be redistributed during wet soil moisture conditions. Topsoil should be leveled with the adjacent undisturbed land, irrigable land being of importance for uniform coverage by flood irrigation water.

3.3 Topsoil Storage Requirements

- A. Calculations: Stored topsoil volumes necessary to facilitate subsequent or final reclamation shall be calculated based off areas remaining for production operations and integrated as

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part of the interim reclamation area per Rule 1003. Topsoil salvage quantities are included in the grading plans (Appendix C).

- B. Interim Reclamation: Placement and distribution will be determined by disturbance area boundaries, surface owner input, land use, and topography.
- C. Topsoil Protection: Stored topsoil shall be protected from erosion and to maintain soil microbial activity, using a combination of best management practices, such as proper design of stockpile depth and contour, stabilizing with mulch, seeding, track walking, perimeter control, establishment of vegetation and weed control.
- D. Signage and Identification: Stored topsoil locations will be documented per Rule 1002.b. Signage identifying topsoil shall be installed, where feasible, and based on land use.

4.0 STORMWATER MANAGEMENT PLAN

This site-specific Stormwater Management Plan (SWMP) for development in Arapahoe County, Colorado is intended to ensure construction activities adhere to good engineering, hydrologic, and pollution control practices, and to ensure erosion, sediment, and stormwater control measures are selected, installed, implemented, and maintained to protect state waters, and minimize site erosion or degradation.

4.1 Nature of Construction Activity

Construction activity will consist of major earthwork, grading and stripping for the purposes of pad construction. Once disturbance allowance is delineated, crews will begin access road construction and perimeter control installation prior to earthwork. Upon installation of perimeter controls, stripping, grading, and stockpiling shall occur. Following completion of earthwork, the disturbance shall be stabilized with structural and non-structural control measures.

All construction and development shall be in accordance with the Colorado Department of Public Health and Environment's CDPS General Permit for Stormwater Discharges Associated with Construction Activity, and the Colorado Oil and Gas Conservation Commission (COGCC) 304.c.15 and 1002.f rules and requirements.

4.2 Proposed Sequence of Major Activities

- A. Delineation of disturbance limits (staking)
- B. Access road construction
- C. Perimeter control installation
- D. Grading, stripping, excavation, and earthwork for pad construction
- E. Well drilling & completion(s)
- F. Facility construction
- G. Pipeline & flowline installation
- H. Disturbance reduction
- I. Interim & final reclamation

4.3 Potential Pollutant Sources

Potential pollution sources shall be placed within the project construction boundary, designated staging area(s), working surface, contained by general or sized secondary containment, and stormwater perimeter control measures. Anticipated pollution sources which will be managed by appropriate BMP fact sheets or operational best management standard operating procedures including, but are not limited to:

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- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Disturbed and stored soils | <input checked="" type="checkbox"/> Vehicle/equipment maintenance and fueling | <input checked="" type="checkbox"/> Non-industrial waste |
| <input checked="" type="checkbox"/> Vehicle tracking of sediments | <input checked="" type="checkbox"/> Dust generating processes | <input checked="" type="checkbox"/> Potential Spills |
| <input type="checkbox"/> Management of contaminated soils | <input checked="" type="checkbox"/> Routine maintenance activities | <input checked="" type="checkbox"/> Spill prevention and response |
| <input checked="" type="checkbox"/> Loading/unloading ops | <input checked="" type="checkbox"/> On-site waste management | |
| <input checked="" type="checkbox"/> Outdoor storage activities | <input type="checkbox"/> Concrete truck washing | |

No dedicated concrete or asphalt batch plants will be at the project location. Safety Data Sheets (SDS) for materials to be used are maintained by Crestone. Pollutants shall be managed in accordance with waste regulations administered by COGCC 900 series rules.

4.4 Erosion, Sediment and Stormwater Control Measures

Measures for stormwater, erosion, and sediment control will be accomplished through a combination of construction techniques, structural and non-structural controls, vegetation, and re-vegetation, administrative controls, and good housekeeping practices. Control measures will be implemented and adjusted with changing site conditions, as well as phases of construction. All control measures deployed throughout construction, shall be identified on site specific stormwater management plan as-built maps. Control measure installation and maintenance procedures will defer to Urban Drainage and Flood Control District specifications, or as identified in Section 6.0 and the grading plans (Appendix C).

4.5 Materials Handling and Spill Prevention

Discharges of hazardous substances or oil resulting from spills or construction operations are not authorized under the Construction General Permit or this plan. **In the event of a spill, the Stormwater Manager shall be notified immediately and/or after any emergency response procedures.** Depending on the nature of the spill and material(s) involved, the Colorado Department of Public Health and Environment 24-hour spill reporting line (877-518-5608), Colorado Oil and Gas Conservation Commission (COGCC), local authority (if applicable), and any affected downstream water users shall notified, as necessary. COGCC reporting shall adhere to 900 series rule requirements, and notification made for all spills of 1 bbl or more outside of secondary containment.

4.6 Non-Stormwater Discharges

Sources of non-stormwater discharges include emergency fire-fighting activities or a fire hydrant, and uncontaminated springs which do not originate from an area of land disturbance. In the event of construction dewatering, control measures shall be implemented and Low Risk Discharge Guidance for Uncontaminated Groundwater to Land (WQP27) shall be followed.

4.7 Final Stabilization

The Colorado Department of Health and Environment (CDPHE) defines final stabilization as, "finally stabilized means that all ground surface disturbing activities at the site have been completed, and all disturbed areas have been either built on, paved, or a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, and the vegetation cover is capable of providing erosion control equivalent to pre-existing conditions, or equivalent permanent, physical erosion reduction methods have been employed." Stabilized unpaved surfaces, such as gravel access roads or working surfaces, necessary for the operation of the facility or nearby facilities, also qualifies as "final stabilized".

4.8 Post-Construction Stormwater

Following final stabilization, and pursuant of COGCC rule 1002.f and rule 1004, BMPs shall be maintained under Crestone's Post-Construction Stormwater Program, and evaluated for Tier 1 / Non-Tier 1 status, as applicable and per COGCC 100 series definitions, until the facility is abandoned, and final reclamation is achieved.

5.0 INTERIM RECLAMATION

Crestone will adhere to an interim reclamation plan as identified in the grading plans (Appendix C). This plan will establish proper planning and execution for reclamation in areas that are affected by oil and gas location construction and development, but no longer in use by production operations. When all wells on a location are completed and turned over to production, the drilling footprint will be reduced, and areas not needed for production will be restored and re-vegetated in accordance with Colorado Oil and Gas Conservation Commission (COGCC) 1000 Series Reclamation Regulations and consistent with the requirements of Rule 1003 Interim Reclamation. Reference shall also be made to Rules 304.c(14) Topsoil Protection Plan and 304.c(15) Stormwater Management Plan during this process.

Soil and aggregate mix used to build a compacted working surface will be removed in areas no longer needed for production. All segregated soil horizons removed from the disturbance area shall be replaced to their original relative positions and contour based on final land use and shall be tilled adequately to alleviate compaction and re-establish a proper seedbed. Final contour, irrigation, and landscape construction, including plantings and perennial seeding, will occur in the first favorable season. The area shall be treated as necessary to prevent invasion of undesirable species and noxious weeds as practicable. The site will be stabilized, inspected, and maintained to control erosion.

5.1 Proposed Sequence of Major Activities

- A. Surface Owner Consultation and Timing: Surface owner consultation shall be conducted to minimize disruption of agricultural operations and designate final land use. Interim reclamation shall occur no later than 6 months, after conclusion of subsequent operations. If soil conditions are not conducive due to weather conditions, a Sundry Notice Form 4 shall be submitted, and reclamation commenced as soon as conditions allow and as practicable.
- B. Recontouring, Compaction Relief and Topsoil Redistribution: Refer to the Topsoil Protection Plan to address site specific requirements.
- C. Soil Preparation: Equipment to be cleaned from soil or debris prior to mobilizing and commencing soil preparation operations between properties.
 - 1) Compaction Alleviation: After topsoil re-distribution, the area shall be cross ripped to a depth of eighteen inches with an agricultural ripper/subsoiler; however, this depth may be adjusted in rocky or shallow soils. Chiseling/ripping will be performed at the minimum depth of topsoil. Cultipacker or disking may be required to reduce soil clod size. Ripping with construction style shanks, for the purpose of surface ridge roughness as a stormwater control measure, is only allowed to a six-inch depth.
 - 2) Leveling: All areas will be leveled and graded to drain properly and blend to the adjacent undisturbed land.
 - 3) Soil Amendments: Necessary amendments will be determined by soil analysis completed during Topsoil Protection Plan Site Investigation, land use, site conditions at time of interim reclamation, and surface owner consultation.

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- 4) Seedbed Preparation: Incorporate soil amendments by disking, harrowing or cultipacking and to provide a seedbed that is firm and friable, and properly crimp straw mulch material.
 - 5) Surface Rock Removal: Surface rocks that interfere with agricultural operations, seeding equipment or future mowing operations will be removed.
- D. Seeding: Seed mix is considered based on consultations with NRCS, CPW, and surface owner; also, by soil type, land use, adjacent reference area vegetation and in accordance with Rule 1202.a.6. Seeding shall not occur in windy conditions or when the soil is frozen or wet. Equipment shall be cleaned from previous mixes, soil, or debris, prior to mobilizing and commencing seeding operations between properties to avoid cross-contamination. Seed shall be applied using appropriate equipment that can place the specified seed at the specified rate and depth.
- E. Mulching: Mulch to be applied within 48 hours after seeding on non-cropland. Mulch application in cropland shall be applied as requested by surface owner. If using straw or hay mulch, only mulch that has been certified as weed-free forage may be used. All mulch types must be anchored properly by methods such as crimping, disking and/or tackifier. Contractor may adjust the rate of mulch and type based on site location, soils, slopes, and time of year to maximize seeding and erosion control success.
- F. Implement Post-Construction Stormwater Control Measures: Additional erosion control measures and materials should include consideration of land use, surface owner grazing practices, and potential damage to materials. Refer to a site-specific stormwater management plan prior to implementation.
- G. Weed control: Weed control measures shall be conducted in compliance with the Colorado Noxious Weed Act, C.R.S. §35-5.5-115 and the current rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act.
- 1) Weed control measures shall be conducted in consultation with the surface owner and County Weed Management Specialist(s) based on site specific conditions. Crestone will monitor and control noxious weeds until the reclamation threshold for release within reclaimed disturbance areas is achieved, including monitoring to measure success of treatments. Weed control measures employed may include mowing or removal and herbicide treatment during the appropriate growing season. During drilling, production, and reclamation operations, all disturbed areas shall be kept reasonably free of noxious weeds and undesirable species.

6.0 SITE-SPECIFIC BMPs: EROSION & SEDIMENT STORMWATER CONTROL MEASURES, INSPECTION AND MAINTENANCE PROCEDURES

Site-specific control measures will be inspected on a routine basis by operations personnel, and as identified in Section 6.2 of this SWMP. If a control measure is found to be inadequate or non-functional, a corrective action will be issued by inspection personnel, and the control measure will be replaced, or a new control measure specified. A schedule for implementation of these corrective actions, including date issued and date completed, will be identified in site-specific maintenance logs. The anticipated stormwater control measures, required inspection scheduled, and maintenance processes are detailed below.

6.1 BMPs for Construction

The following control measures will be implemented during all phases of construction. Construction phases are identified in the grading plans (Appendix C). Timing of phases will be dependent on permit approvals and construction crew(s) scheduling.

BMP Type	Phase of Construction	Location of BMP	BMP Implementation
Reinforced Rock Berms (RRB And RRC)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	At culvert inlet / outlets, and within swales as check dam structures.	Reinforced rock for culverts (RRCs) shall be utilized upstream and downstream of the culverts. Reinforced rock berms (RRBs) will also be placed intermittently along the flowline of the roadside ditches. The RRBs will be placed in the interim reclamation phase, while the RRCs will be placed during active construction, and maintained throughout interim reclamation.
Stabilized Staging Area (SSA)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	Working surface of pad.	The stabilized staging area shall be used for equipment storage, parking, a loading/unloading zone, portable toilets, construction trailer, waste collection, and material stockpile and storage. The stabilized staging area will essentially be the perimeter of the working surface during construction.
Sediment Basin (SB)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	At low points / outfalls from the diversion ditch network.	Where the tributary disturbed area is greater than 1 acre, a sediment basin will be planned for the well site at the low point of the pad. It will be implemented at the downstream termination of the diversion ditches. The basin will contain silt from the upstream cut

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BMP Type	Phase of Construction	Location of BMP	BMP Implementation
			and fill slopes around the drill pad. Periodic maintenance of the pond may be necessary to remove accumulated silt and debris. Sediment basins shall be installed before the site grading begins.
Sediment Trap (ST)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	At low points / outfalls from the diversion ditch network.	Where the tributary disturbed area is less than 1 acre a sediment trap will be planned for the well site at the low point of the pad. It may be implemented at the downstream termination of the diversion ditches. The trap will contain silt from the upstream fill slopes around the pad. Periodic maintenance of traps may be necessary to remove accumulated silt and debris. Sediment traps shall be installed before site grading begins.
Diversion Ditches (DD)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	Surrounding the pad working surface.	Unlined diversion ditches will be constructed at the toe of the cut and fill slopes along the boundaries of the pad. These ditches will capture sediment laden runoff from the slopes and channel it into sediment basins and/or traps. In the fill slope application, the material excavated for the ditch shall be compacted and bermed on the downhill side for an additional layer of protection. Diversion ditches shall be installed before grading work begins on the fill slopes and as soon as the site grading is complete on the cut slopes.
Seeding And Mulching (SM)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	All areas where construction activity has ceased for 14 or more calendar days which have not been temporarily	Cut and fill slopes adjacent to the pad and access road swales shall be stabilized with SM. It shall be applied after grading is complete in the final phase. If the seeding and mulching application does not provide adequate stabilization for

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BMP Type	Phase of Construction	Location of BMP	BMP Implementation
		stabilized, and areas of final reclamation.	the area where slopes exceed 4:1, then more robust bmp's shall be utilized.
Sediment Control Log (SCL)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	Along the contour of cut and fill slopes and surrounding soil storage areas.	9" diameter sediment control logs shall be used on the downstream perimeter of the spoil and topsoil stockpiles per manufacturer specifications. Sediment control logs shall be installed in the interim phase once stockpiles have been created.
Vehicle Tracking Control (VTC)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	A temporary VTC may be used roadway access, prior to paving the asphalt apron.	In lieu of a VTC, the contractor shall install an asphalt apron where a proposed access road intersects a paved public roadway. If the public roadway is gravel, a VTC is not necessary. VTC or asphalt apron shall be installed in the initial phase before the site grading begins.
Riprap	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	At sediment basin and culvert outfalls.	Type-m riprap shall be installed downstream of all culverts for a width of 4 times the culvert diameter and a length of 4 times the culvert diameter. Riprap shall be installed in the interim phase, following culvert or outfall installation.
Erosion Control Blanket (ECB)	Drilling / Completions (Active Construction) and Production (Interim Reclamation)	As necessary along eroded slopes.	Steep slopes shall be protected with straw coconut blankets where indicated on the SWMP plan or where seeding and mulching application is not effective. Blanket shall be installed with seeding during the final phase.

6.2 BMPs for Inspections

Inspections will be conducted to document the status of construction activities, stormwater control measure placement, maintenance needs, and effectiveness, to evaluate pollution sources, and to document reclamation / final stabilization progress. Inspections will be managed by the Stormwater Manager and SWMP Administrator and conducted by their designated representative(s). Inspection forms will document current conditions, non-compliance conditions including any release of sediment or other contaminants, additional control measures that are needed, or repair and maintenance work orders.

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- During construction, inspections shall be conducted every 14 days, and after a major precipitation or melt event, which has the potential to cause surface runoff.
- For sites earthwork and construction is completed, but final stabilization is not achieved due to vegetative cover, inspections shall be conducted every 30 days and exclude precipitation or melt event response. Inspections will continue until all reclaimed areas have achieved a cover of 70% the pre-construction reference vegetation (i.e. final stabilization).
- Post-construction stormwater inspections will be conducted in accordance with COGCC Rules 1002.f and 1003.e, to document the status of the location, maintenance needs, effectiveness of stormwater control measures, to evaluate pollution sources, and to document reclamation / final stabilization progress. Inspections will be managed by the Stormwater Manager and conducted by their designated representative(s).
- Findings, inspection records and site maps are documented electronically and available within 24 hours of any inspection. All inspection records are stored for a minimum of three years after the location has achieved final stabilization.

6.3 BMPs for Maintenance

For maintenance items discovered at active construction locations:

- Action and documentation towards completing repairs identified at the time of inspection shall be made within 24 hours of discovery.
- For maintenance items during post-construction, items will be documented and coordinated with production crews.
- Timeline for completion of maintenance items are a priority and will depend on scope; but in all cases, shall not be completed until field conditions allow for safe access, and utility clearance has been confirmed for actions requiring ground disturbance / earthwork.

Construction BMPs

- **Reinforced Rock Berms (RRB And RRC)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). They will be placed at the culvert inlet/outlets, and with swales as check dam structures. Reinforced rock for culverts (RRCs) shall be utilized upstream and downstream of the culverts. Reinforced rock berms (RRBs) will also be placed intermittently along the flowline of the roadside ditches. The RRBs will be placed in the interim reclamation phase, while the RRCs will be placed during active construction, and maintained throughout interim reclamation.
- **Stabilized Staging Area (SSA)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). It will be on the working pad surface. The stabilized staging area shall be used for equipment storage, parking, a loading/unloading zone, portable toilets, construction trailer, waste collection, and material stockpile and storage. The stabilized staging area will essentially be the perimeter of the working surface during construction.
- **Sediment Basin (SB)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). It will be constructed at low points/ outfalls from the diversion ditch network. Where the tributary disturbed area is greater than 1 acre, a sediment basin will be planned for the well site at the low point of the pad. It will be implemented at the downstream termination of the diversion ditches. The basin will contain silt from the upstream cut and fill slopes around the drill pad. Periodic maintenance of the pond may be necessary to remove accumulated silt and debris. Sediment basins shall be installed before the site grading begins.
- **Sediment Trap (ST)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). It will be constructed at low points/ outfalls from the diversion ditch network. Where the tributary disturbed area is less than 1 acre a sediment trap will be planned for the well site at the low point of the pad. It may be implemented at the downstream termination of the diversion ditches. The trap will contain silt from the upstream fill slopes around the pad. Periodic maintenance of traps may be necessary to remove accumulated silt and debris. Sediment traps shall be installed before site grading begins.
- **Diversion Ditches (DD)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). It will be constructed surrounding the working pad surface. Unlined diversion ditches will be constructed at the toe of the cut and fill slopes along the boundaries of the pad. These ditches will capture sediment laden runoff from the slopes and channel it into sediment basins and/or traps. In the fill slope application, the material excavated for the ditch shall be compacted and bermed on the downhill side for an additional layer of protection. Diversion ditches shall be installed before grading work begins on the fill slopes and as soon as the site grading is complete on the cut slopes.
- **Seeding And Mulching (SM)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). It will be implemented in all areas where construction activity has ceased for 14 or more calendar days which have not been temporarily stabilized, and areas of final reclamation. Cut and fill slopes adjacent to the pad and access road swales shall be stabilized with SM. It shall be applied after grading is complete in the final phase.

If the seeding and mulching application does not provide adequate stabilization for the area where slopes exceed 4:1, then more robust bmp's shall be utilized.

- **Sediment Control Log (SCL)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation) along the contour of cut and fill slopes and surrounding soil storage areas. 9" diameter sediment control logs shall be used on the downstream perimeter of the spoil and topsoil stockpiles per manufacturer specifications. Sediment control logs shall be installed in the interim phase once stockpiles have been created.
- **Vehicle Tracking Control (VTC)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation). A temporary VTC may be used roadway access, prior to paving the asphalt apron. In lieu of a VTC, the contractor shall install an asphalt apron where a proposed access road intersects a paved public roadway. If the public roadway is gravel, a VTC is not necessary. VTC or asphalt apron shall be installed in the initial phase before the site grading begins.
- **Riprap** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation) at the sediment basin and culvert outfalls. Type-m riprap shall be installed downstream of all culverts for a width of 4 times the culvert diameter and a length of 4 times the culvert diameter. Riprap shall be installed in the interim phase, following culvert or outfall installation.
- **Erosion Control Blanket (ECB)** will be implemented during Drilling / Completions (Active Construction) and Production (Interim Reclamation) as necessary along eroded slopes. Steep slopes shall be protected with straw coconut blankets where indicated on the SWMP plan or where seeding and mulching application is not effective. Blanket shall be installed with seeding during the final phase.

Inspection BMPs:

- During construction, inspections shall be conducted every 14 days, and after a major precipitation or melt event, which has the potential to cause surface runoff.
- For sites earthwork and construction is completed, but final stabilization is not achieved due to vegetative cover, inspections shall be conducted every 30 days and exclude precipitation or melt event response. Inspections will continue until all reclaimed areas have achieved a cover of 70% the pre-construction reference vegetation (i.e. final stabilization).
- Post-construction stormwater inspections will be conducted in accordance with COGCC Rules 1002.f and 1003.e, to document the status of the location, maintenance needs, effectiveness of stormwater control measures, to evaluate pollution sources, and to document reclamation / final stabilization progress. Inspections will be managed by the Stormwater Manager and conducted by their designated representative(s).
- Findings, inspection records and site maps are documented electronically and available within 24 hours of any inspection. All inspection records are stored for a minimum of three years after the location has achieved final stabilization.

Maintenance BMPs:

- Action and documentation towards completing repairs identified at the time of inspection shall be made within 24 hours of discovery.

- For maintenance items during post-construction, items will be documented and coordinated with production crews.
- Timeline for completion of maintenance items are a priority and will depend on scope; but in all cases, shall not be completed until field conditions allow for safe access, and utility clearance has been confirmed for actions requiring ground disturbance / earthwork.

APPENDIX A

CDPS STORMWATER GENERAL PERMIT CERTIFICATION



COLORADO

**Department of Public
Health & Environment**

**CERTIFICATION TO DISCHARGE
UNDER
CDPS GENERAL PERMIT COR400000
STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES**

Certification Number: COR401102

This Certification to Discharge specifically authorizes:

**Owner Crestone Peak Resources
Operator Crestone Peak Resources**
to discharge stormwater from the facility identified as

COP Field Permit Arapahoe County East of Watkins

To the waters of the State of Colorado, including, but not limited to:

Box Elder Creek, Kiowa Creek, South Platte River

Facility Activity : Oil and Gas Exploration and Well Pad Development

Disturbed Acres: 281.1 acres

Facility Located at: County Line Rd and Watkins Rd Watkins CO 80137
Arapahoe County
Latitude 39.6714 Longitude -104.499444

**Specific Information
(if applicable):**

Certification is issued and effective: 1/29/2021

Expiration date of general permit: 3/31/2024

This certification under the permit requires that specific actions be performed at designated times. The certification holder is legally obligated to comply with all terms and conditions of the permit.

This certification was approved by:
Meg Parish, Section Manager
Permits Section
Water Quality Control Division



APPENDIX B

CDPHE ENVIRONMENTAL SPILL REPORTING FACT SHEET



Environmental Spill Reporting

*24–Hour Emergency and Incident Reporting Line
Office of Emergency Preparedness & Response*

1-877-518-5608

Updated: June, 2018

Reporting chemical spills and releases in Colorado

General

For all hazardous substance incidents, local emergency response agencies must be notified.

Releases from fixed facilities

The Superfund Amendments and Reauthorization Act (SARA) Title III, requires reporting releases from fixed facilities

Refer to the SARA Title III List of Lists, available from the Environmental Protection Agency (EPA), for the reportable quantity.

The party that owns the spilled material must immediately notify the following agencies or organizations:

- National Response Center (NRC) 1-800-424-8802;
- Colorado Emergency Planning Committee (CEPC), represented by the Colorado Department of Public Health and Environment (CDPHE) 1-877-518-5608; and
- Local Emergency Planning Committee (LEPC) 1-720-852-6600.

In addition to telephone notification, the responsible party must also send written notification describing the release and associated emergency response to both the CEPC (in this case, CDPHE) and the LEPC.

Releases from RCRA facilities

Emergency releases from facilities permitted under the Resource Conservation and Recovery Act (RCRA) are reportable according to the permit requirements.

The permit often requires reporting to CDPHE, even if the amount of the release is less than a reportable quantity under SARA Title III (6 CCR 1007-3 Part 264).

Permitted facilities and generators and transporters of hazardous waste are required to have and implement a contingency plan that describes the actions facility personnel must take in response to fires, explosions or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, surface or ground water at the facility (6 CCR 1007-3 Sections 261, 262, 263, 264 and 265).

Whenever there is an imminent or actual emergency situation, appropriate state or local agencies, with designated response roles as described in the contingency plan, must be notified immediately.

The National Response Center or government official designated as the regional on-scene coordinator must be notified immediately if it is determined that the facility has had a release, fire or explosion that could threaten human health or the environment outside the facility.

CDPHE and local authorities must be notified when the facility is back in compliance and ready to resume operations. In addition, the facility must send a written report to CDPHE within 15 days of any incident that requires implementation of the contingency plan. The contingency plan should include current contact information for notification and submittal of written reports.

Permitted facilities, generators and transporters that store hazardous waste must notify CDPHE within 24 hours of any release to the environment that is greater than one (1) pound and must submit a written report to CDPHE within 30 days of the release (6 CCR 1007-3).

Transportation accidents

Transportation accidents that require reporting:

- Result in a spill or release of a hazardous substance in excess of the reportable quantity (40 CFR Part 302.6)
- Cause injury or death or cause estimated property damage exceeding \$50,000.
- Cause an evacuation of the general public lasting one or more hours.

Those that close or shut down one or more major transportation arteries or facilities or result in fire, breakage, spillage, or suspected contamination from radioactive or infectious substances must immediately be reported to the National Response Center.

Refer to the EPA SARA Title III List of Lists for those substances that have reportable quantities.

In addition to the NRC being notified, the local emergency number (9-1-1) must be called and CDPHE should be notified.

Written notification of any transportation accident involving a release of hazardous materials must be provided to the U.S. Department of Transportation within 30 days (49 CFR Part 171.16)

Since hazardous waste is a subset of hazardous materials, transporters who have discharged hazardous waste must notify the NRC and provide a written report to the US Department of Transportation as noted in the above reporting requirements.

The transporter must give immediate notice to the nearest Colorado State Patrol office (8 CCR 1507-8 HMP 5) and the nearest law enforcement agency if the accident or spill involved a vehicle (42-20-113(3) CRS).

Notification and a written report detailing the ultimate disposition of the discharge of hazardous waste must also be provided to CDPHE (6 CCR 1007-2 Section 263.30). This may be a duplicate copy of the US Department of Transportation report

In the event of a spill or discharge of hazardous waste at a transfer facility, the transporter must notify CDPHE within 24 hours if the spill exceeds 55 gallons or if there is a fire or explosion.

Within 15 days of a reportable incident, the transporter must submit a written report of the incident to CDPHE, including the final disposition of the material (6 CCR 1007-2 Section 263.40).

Releases of hazardous waste at a transfer facility may also require notification to the National Response Center and a written report to the U.S. Department of Transportation.

Releases to water

A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) must be reported to CDPHE immediately (25-8-601 CRS).

Written notification to CDPHE must follow within five (5) days (5 CCR 1002-61, Section 61.8(5)(d)).

Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant.

Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to CDPHE (1-877-518-5608) as required under the Clean Water Act and the Oil Pollution Act.

Releases to air

Any unpredictable failure of air pollution control or process equipment that results in the violation of emission

control regulations should be reported CDPHE by 10 a.m. of the following working day, followed by a written notice explaining the cause of the occurrence and describing action that has been or is being taken to correct the condition causing the violation and to prevent such excess emissions in the future (5 CCR 1001-2 Common Provisions Regulations Section II.E).

If emergency conditions cause excess emissions at a permitted facility, the owner/operator must provide notice to CDPHE no later than noon of the next working day following the emergency, and follow by written notice within one month of the time when emission limitations were exceeded due to the emergency (5 CCR 1001-5, Regulation 3 Part C, Section VII.C.4).

Releases from oil and gas wells

All spills or releases of exploration and production wastes or produced fluids which meet the reporting thresholds of the Colorado Oil and Gas Conservation Commission (COGCC) Rule 906 shall be reported verbally to the COGCC within 24 hours of discovery and on the COGCC Spill/Release Report Form 19 within 72 hours of discovery.

Spills or releases are reportable to the COGCC in the following circumstances:

- 1) the spill or release impacts or threatens to impact any waters of the state, (which include surface water, ground water and dry gullies or storm sewers leading to surface water), a residence or occupied structure, livestock or a public byway;
- 2) a spill or release in which 1 barrel or more is released outside of berms or other secondary containment; or
- 3) any spill or release of 5 barrels or more.

COGCC also requires reportable spills or releases be reported to the surface owner and local government. Whether or not they are reportable, spills or releases of any size must be stopped, cleaned up, and investigated as soon as practicable.

If the spill or release impacts or threatens to impact waters of the state, it must also be reported immediately to CDPHE (25-8-601 CRS).

Releases from storage tanks

Petroleum releases of 25 gallons or more (or any size that causes a sheen on nearby surface waters) from regulated aboveground and underground fuel storage tanks must be reported to the Division of Oil and Public Safety (303-318-8547) within 24 hours. If the report is made after business hours, please leave a message on the technical assistance line for the Division of Oil and Public Safety, and contact the 24 hour CDPHE Emergency and Incident Reporting Line. This includes spills from fuel dispensers.

Spills or releases of hazardous substances from regulated storage tanks in excess of the reportable quantity (40 CFR Part 302.6) must be reported to the National Response Center and the local fire authority immediately, and to the Division of Oil and Public Safety within 24 hours. (8-20.5-208 CRS and 7 CCR 1101-14 Article 4).

Owners/operators of regulated storage tanks must contain and immediately clean up a spill or overfill of less than 25 gallons of petroleum and a spill or overfill of a hazardous substance that is less than the reportable quantity.

If cleanup cannot be accomplished within 24 hours, the Division of Oil and Public Safety must be notified immediately (7 CCR 1101-14 Article 4-4).

CDPHE should also be notified in the case of hazardous substance releases as cleanup activities may be covered by state solid or hazardous waste requirements (6 CCR 1007-2, 6 CCR 1007-3).

Any release that has or may impact waters of the state (which include surface water, ground water and dry

gullies or storm sewers leading to surface water), no matter how small, must be reported immediately to CDPHE (25-8-601 CRS).

Releases from pipelines

Releases of five or more gallons of hazardous liquids or carbon dioxide from a pipeline that result in explosion or fire, cause injury or death or cause estimated property damage (including cost of clean-up and recovery, value of lost product and property damage) exceeding \$50,000 must be reported immediately to the US Department of Transportation Office of Pipeline Safety (49 CFR Part 195 Subpart B) and the National Response Center.

Releases of five or more gallons of hazardous liquids or carbon dioxide from interstate pipelines that do not involve explosion or fire, injury or death or property damage exceeding \$50,000 should be reported to the US Department of Transportation Office of Pipeline Safety within 30 days after the incident.

Releases of natural gas from intrastate pipelines that cause injury or death, property damage in excess of \$50,000 (including the cost of lost product), closure of a public road, or evacuation of 50 or more people must be reported immediately to the Colorado Public Utilities Commission, Pipeline Safety Group (4 CCR 723-11-2).

Releases of natural gas or liquefied natural gas (LNG) from interstate pipelines that cause injury or death, property damage in excess of \$50,000 (including the cost of lost product), or results in an emergency shutdown of the facility must be reported immediately to the National Response Center and the US Dept of Transportation Office of Pipeline Safety.

Releases of oil, petroleum products or other hazardous liquids from interstate and intrastate pipelines that have or may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) must be reported to CDPHE immediately (25-8-601 CRS). CDPHE should also be notified of releases to soil, as cleanup activities may be covered by state solid or hazardous waste requirements (6 CCR 1007-2, 6 CCR 1007-3).

Radiological accidents, incidents, and events

CDPHE must be notified of any condition that has caused or threatens to cause an event, which meets or exceeds the criteria specified in (6 CCR 1007-1) RH 4.51 and RH 4.52 of the State of Colorado *Rules and Regulations Pertaining to Radiation Control*. Reportable events include lost radioactive materials, lost radiation producing machines, over-exposures to persons, contamination events and fires or explosions involving radioactive materials.

Depending upon the severity of the event, notification may be required immediately, within 24 hours, or within 30 days. In most cases, a written follow-up report is also required.

If you are unsure of the proper notification requirement, please contact CDPHE immediately. Telephone event notifications can be made to the CDPHE Radiation Program at any time by calling 1-303-877-9757.

Notification Numbers

Colorado Department of Public Health and Environment toll-free 24-hour environmental emergency and incident reporting line: (877) 518-5608 (24-hour)

National Response Center
(800) 424-8802 (24-hour)

State Oil Inspector (Colorado Division of Oil & Public Safety-Above & Underground Storage Tank Regulators)
(303) 318-8547

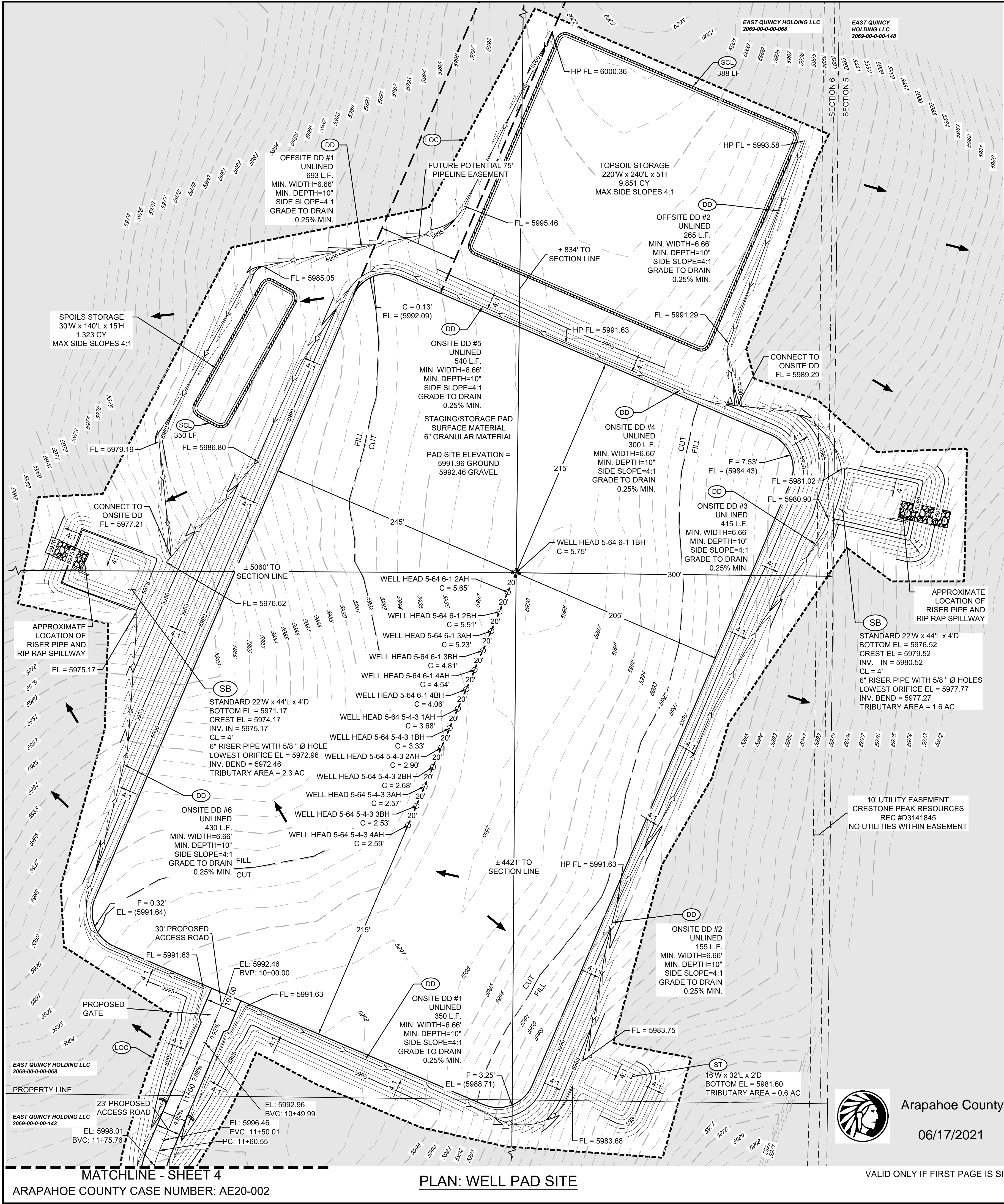
APPENDIX C

GRADING, EROSION, AND SEDIMENT CONTROL PLAN(S)

ALAMOSA 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH
5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH OIL & GAS WELL

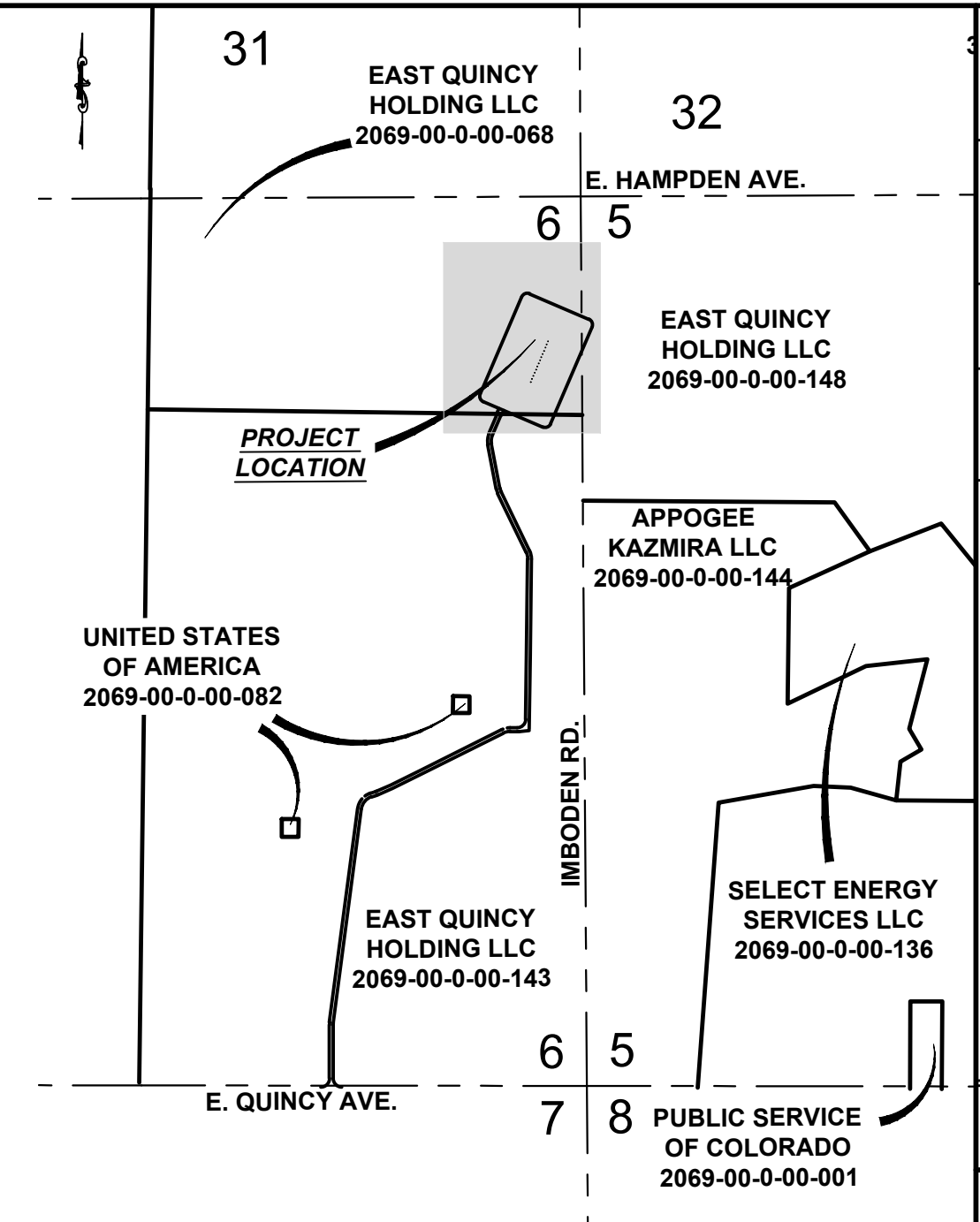
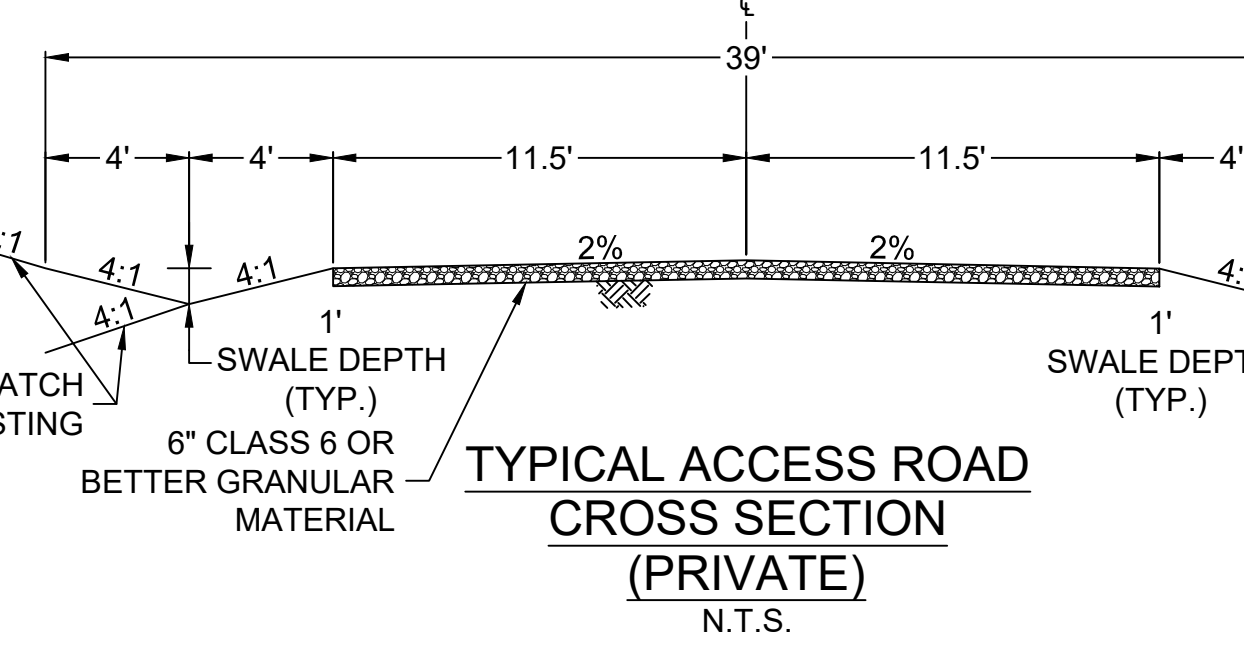
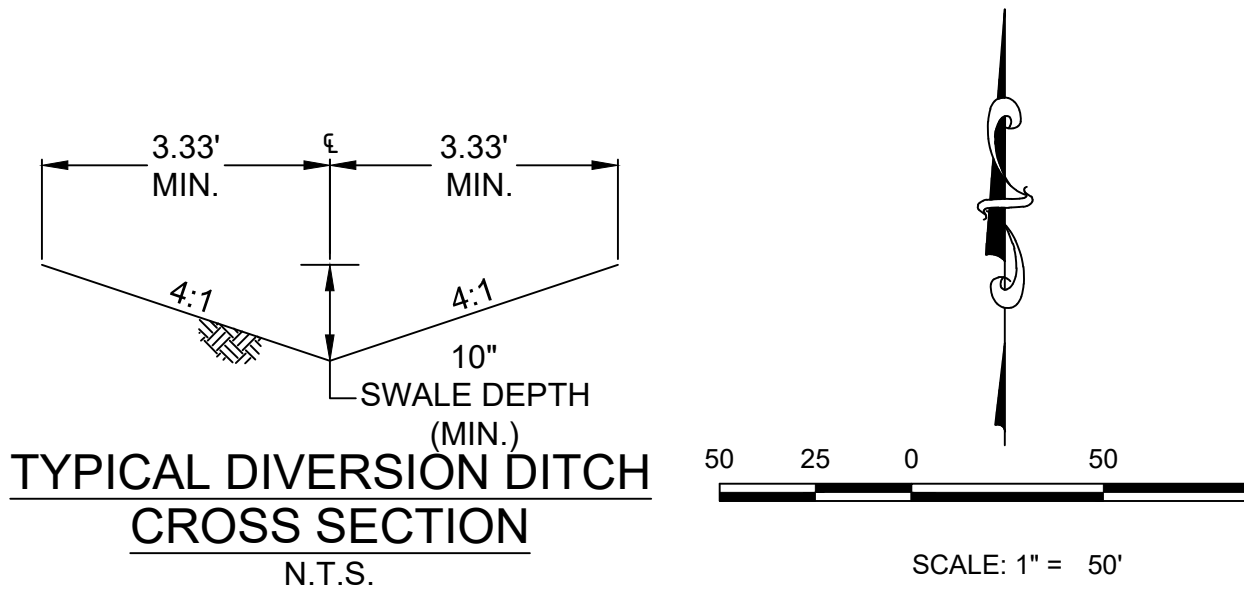
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GESC Cover.dwg



NOTES:
1. SEE THE STANDARD NOTES AND DETAILS IN FIELD WIDE REPORT, REVISED APRIL 2019 (4 SHEETS) FOR ALL STANDARD DETAILS & ARAPAHOE COUNTY RULES AND REGULATIONS REGARDING STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES, NOTES AND LEGENDS OF BMP NAMES AND SYMBOLS.
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EXISTING GRADE AT WELL HEAD 5-64 6-1 1BH = 5997.71'
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EXISTING GRADE AT WELL HEAD 5-64 6-1 3BH = 5996.77'
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CUT SLOPES = 4:1
FILL SLOPES = 4:1
PHASE 1 TOPSOIL = 11934 CY, 2082 CY PLACED AT 3" DEPTH ON PAD
CUT/FILL SLOPES, 9852 CY STOCKPILED
PHASE 1 TOTAL CUT = 35,493 CY (DOES NOT INCLUDE TOPSOIL, INCLUDES DD & SB)
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PHASE 1 ROAD DISTURBED AREA = 5.92 ACRES
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3. ALL DIVERSION DITCHES ARE ANTICIPATED TO BE UNLINED.
4. THE DIMENSION OF THE CRUSHED ROCK AROUND THE SEDIMENT BASIN RISER PIPE IS LARGER THAN THE HOLE DIAMETER.
5. ALL BMP'S ARE INITIAL/INTERIM.

SOILS
EROSION POTENTIAL: USING THE US DEPARTMENT OF AGRICULTURE'S WEB SOIL SURVEY, TWO SOIL TYPES EXIST WITHIN THE PROJECT BOUNDARY. FONDIS - COLBY SILT LOAMS, 3 TO 5 PERCENT SLOPES (F_{0.6}), RENOHILL-LITTLE-THEDALUND COMPLEX, 9 TO 30 PERCENT SLOPES (R_{1E}). THE SOILS LISTED ABOVE FALL INTO THE HYDROLOGIC CLASSIFICATION GROUP C AND D, WHICH HAVE A SLOW INFILTRATION RATE. THE K FACTOR INDICATES THE SUSCEPTIBILITY OF A SOIL TO SHEET AND RILL EROSION BY WATER AND VARIES FROM 0.02 (LOW SUSCEPTIBILITY) TO 0.69 (HIGH SUSCEPTIBILITY). THIS PROJECTS AREA'S SOIL HAS AN AVERAGE K OF 0.34.
TYPE OF GROUND COVER: RANGELAND.
APPROXIMATE PERCENTAGE OF VEGETATIVE GROUND COVER: 50%-70%.
DEWATERING
IF DEWATERING IS REQUIRED, A STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT IS REQUIRED FOR DISCHARGES TO A STORM SEWER, CHANNEL, IRRIGATION DITCH, ANY STREET THAT IS TRIBUTARY TO THE MENTIONED FACILITIES, OR ANY WATER OF THE UNITED STATES.
DRAINAGE
APPROXIMATE DRAINAGE PATTERNS: THE SITE LIES ON TOP OF A RIDGE AND DRAINS 2%-14% SLOPE EAST AND WEST.
RECEIVING WATERS/DRAINAGEWAY: THE PROJECT IS LOCATED WITHIN THE KERSTEN GULLY AND DEACON DRAW WATERSHED, WHICH ULTIMATELY DRAINS TO THE SOUTH PLATTE RIVER.
WETLANDS: THERE ARE NO WETLANDS WITHIN THE PROJECT LIMITS OF CONSTRUCTION.
SEDIMENT BASIN/TRAP: CALCULATIONS IN DRAINAGE LETTER.
DIVERSION DITCH CAPACITY: 2.39 CFS @ 0.25%



NO.		LEGEND	
1	(1)	CBC	CUT BACK CURB
2	(1)	CD	CHECK DAM
3	(1)	CWA	CONCRETE WASHOUT AREA
4	(1)	CF	CONSTRUCTION FENCE
5	(1)	CM	CONSTRUCTION MARKERS
6	(1)	CS	CURB SOCK
7	(1)	DW	DEWATERING
8	(2)	DD	DIVERSION DITCH
9	(2)	ECB	EROSION CONTROL BLANKET
10	(2)	GMS	GROUT MIXING STATION
11	(2)	IP	INLET PROTECTION
12	(2)	RCD	REINFORCED CHECK DAM
13	(2)	RRB	REINFORCED ROCK BERM
14	(2)	RRC	RRB FOR CULVERT PROTECTION
15	(2)	SB	SEDIMENT BASIN
16	(3)	SCL	SEDIMENT CONTROL LOG
17	(3)	ST	SEDIMENT TRAP
18	(3)	SM	SEEDING AND MULCHING
19	(3)	SF	SILT FENCE
20	(3)	SID	SLOPE INTERCEPT DITCH
21	(3)	SSA	STABILIZED STAGING AREA
22	(4)	SR	SURFACE ROUGHENING
23	(4)	TS	TEMPORARY SLOPE DRAIN
24	(4)	TSC	TEMPORARY STREAM CROSSING
25	(4)	VTC	VEHICLE TRACKING CONTROL
26	(4)	WW	VTC WITH WHEEL WASH
		LOC	ROCK AND RIPRAP GRADATIONS LIMITS OF CONSTRUCTION
		*EG	MAY MEET MAJOR MODIFICATION REQUIREMENTS

SCALE: AS SHOWN

CHECKED BY: MEL

DATE: 04-28-21

CALL 811

TWO WORKING DAYS

BEFORE YOU DIG

UNCC 1-800-922-1987

COLORED LICENSE

38413

06-08-21

PROFESSIONAL ENGINEER

10333 E. Dry Creek Rd.
Suite 240
Englewood, CO 80112
Tel: (720) 482-9546
Fax: (720) 482-9546

CWL a Westwood team

CRESTONE PEAK RESOURCES
OPERATING LLC
ATTN: KATHY DENZER
34501 E. QUINCY AVE. BUILDING 1
PHOENIX, AZ 85044
PHONE: (720) 410-4819

ALAMOSA 5-64 6-1 1BH, 2AH, 2BH,
3AH, 3BH, 4AH, 4BH, 5-4-3 1AH,
1BH, 2AH, 2BH, 3AH, 3BH, 4AH,
GESC PLANS

WELL PAD INITIAL-INTERIM

SCALE: AS SHOWN

CHECKED BY: MEL

DATE: 04-28-21

CALL 811

TWO WORKING DAYS

BEFORE YOU DIG

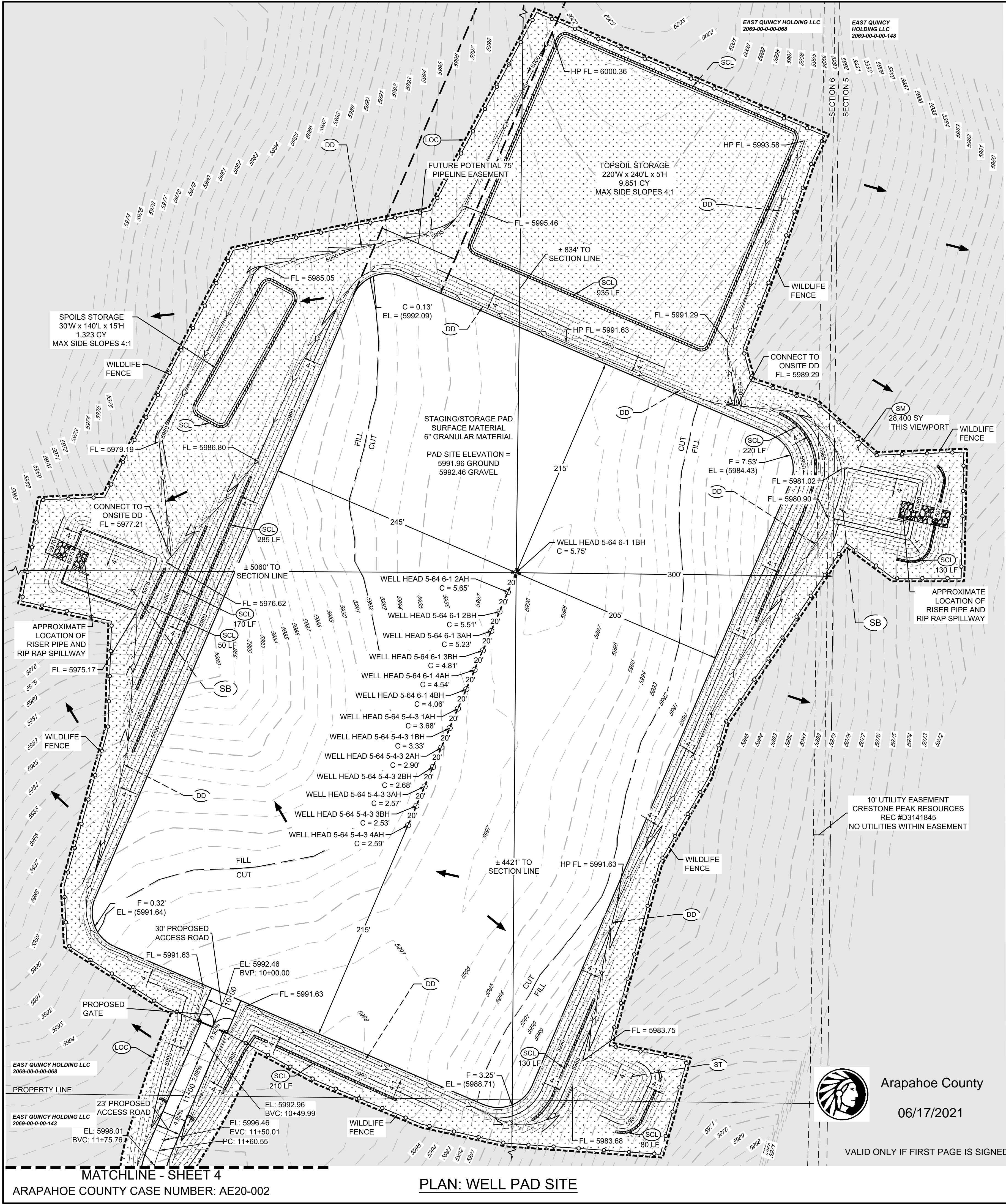
UNCC 1-800-922-1987

COLORED LICENSE

38413

06-08-21

PROFESSIONAL ENGINEER



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 - DASHED LINE TYPE BMP'S ARE INITIAL/INTERIM.

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TYPE OF GROUND COVER: RANGELAND.

APPROXIMATE PERCENTAGE OF VEGETATIVE GROUND COVER: 50%-70%.

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DRAINAGE

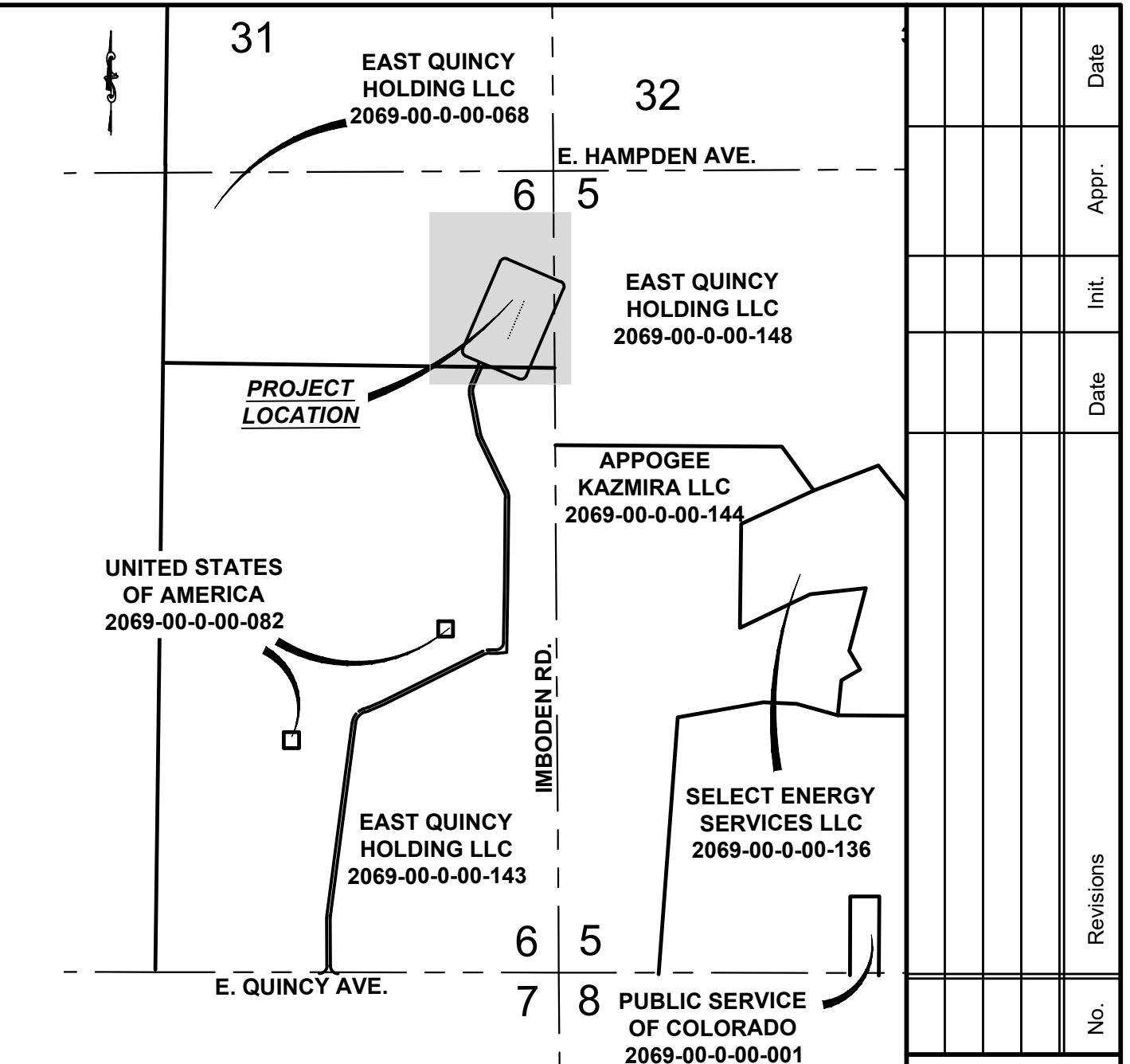
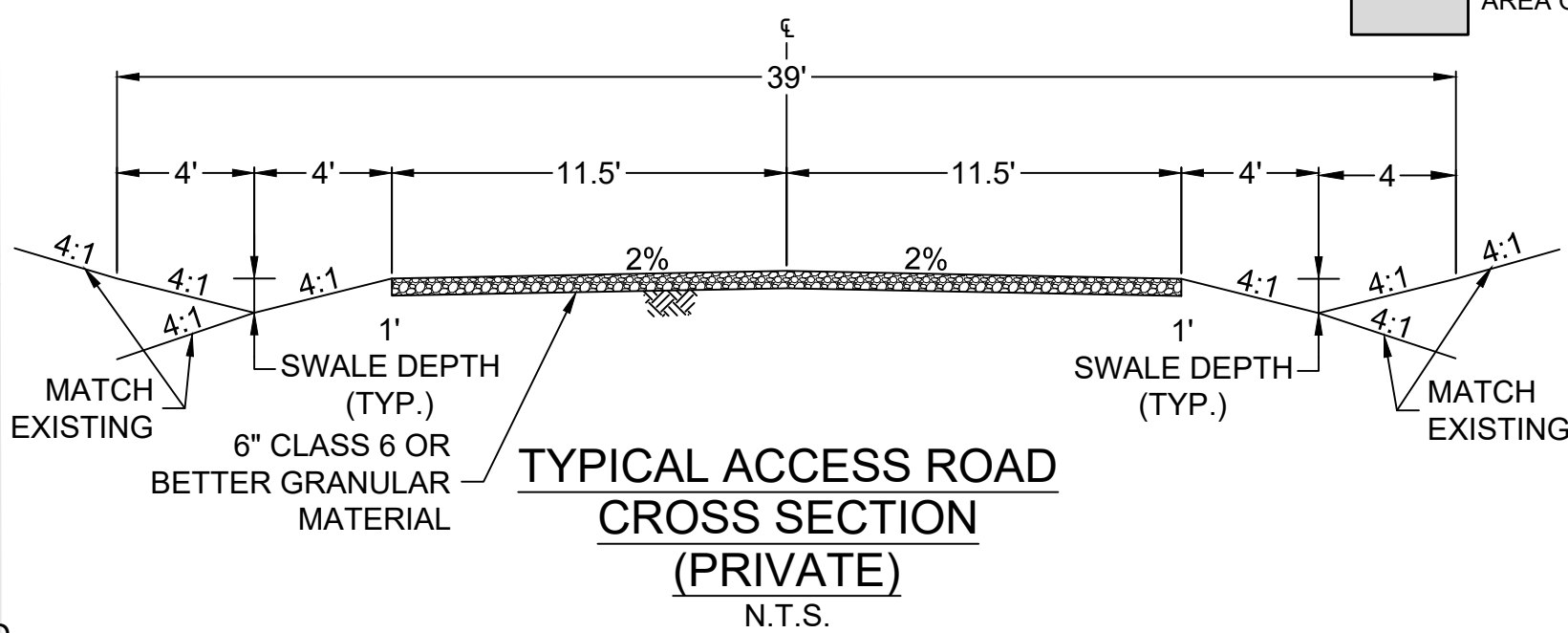
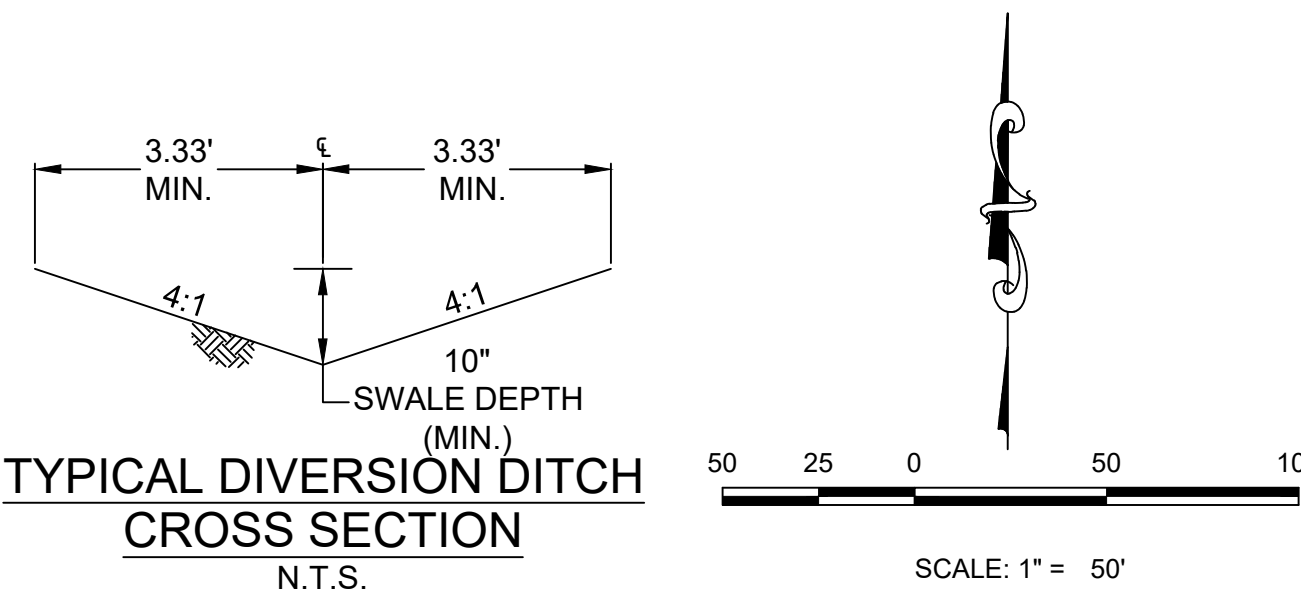
APPROXIMATE DRAINAGE PATTERNS: THE SITE LIES ON TOP OF A RIDGE AND DRAINS 2%-14% SLOPE EAST AND WEST.

RECEIVING WATERS/DRAINAGEWAY: THE PROJECT IS LOCATED WITHIN THE KERSTEN GULCH AND DEACON DRAW WATERSHED, WHICH ULTIMATELY DRAINS TO THE SOUTH PLATTE RIVER.

WETLANDS: THERE ARE NO WETLANDS WITHIN THE PROJECT LIMITS OF CONSTRUCTION.

SEDIMENT BASIN/TRAP: CALCULATIONS IN DRAINAGE LETTER.

DIVERSION DITCH CAPACITY: 2.39 CFS @ 0.25%



NO.		LEGEND	
1	(1)	CBC	CUT BACK CURB
2	(1)	CD	CHECK DAM
3	(1)	CWA	CONCRETE WASHOUT AREA
4	(1)	CF	CONSTRUCTION FENCE
5	(1)	CM	CONSTRUCTION MARKERS
6	(1)	CS	CURB SOCK
7	(1)	DW	DEWATERING
8	(2)	DD	DIVERSION DITCH
9	(2)	ECB	EROSION CONTROL BLANKET
10	(2)	GMS	GROUT MIXING STATION
11	(2)	IP	INLET PROTECTION
12	(2)	RCD	REINFORCED CHECK DAM
13	(2)	RRB	REINFORCED ROCK BERM
14	(2)	RRC	RRB FOR CULVERT PROTECTION
15	(2)	SB	SEDIMENT BASIN
16	(3)	SCL	SEDIMENT CONTROL LOG
17	(3)	ST	SEDIMENT TRAP
18	(3)	SM	SEEDING AND MULCHING
19	(3)	SF	SILT FENCE
20	(3)	SID	SLOPE INTERCEPT DITCH
21	(3)	SSA	STABILIZED STAGING AREA
22	(4)	SR	SURFACE ROUGHENING
23	(4)	TS	TEMPORARY SLOPE DRAIN
24	(4)	TSC	TEMPORARY STREAM CROSSING
25	(4)	VTC	VEHICLE TRACKING CONTROL
26	(4)	WW	VTC WITH WHEEL WASH
		LOC	ROCK AND RIPRAP GRADATIONS LIMITS OF CONSTRUCTION
		*EG	MAY MEET MAJOR MODIFICATION REQUIREMENTS



Arapahoe County
06/17/2021

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10333 E. Dry Creek Rd.
Suite 240
Englewood, CO 80112
Tel: (720) 482-9546
Fax: (720) 482-9546

CWL
a Westwood team

CRESTONE PEAK RESOURCES
OPERATING LLC
ATTN: KATHY DENZER
34501 E. QUINCY AVE., BUILDING 1
FONDIS, CO 80126
PHONE: (720) 410-4819

ALAMOSA 5-64 6-1 1BH, 2AH, 2BH,
3AH, 3BH, 4AH, 4BH, 5-4-3 1AH,
1BH, 2AH, 2BH, 3AH, 3BH, 4AH
GESC PLANS
WELL PAD FINAL

SCALE:
AS SHOWN

DRAWN BY:
KRW

CHECKED BY:
MEL

DATE:
04-28-21

FILE NO:
8.13.0302822

Date

Appr.

Init.

Revisions

No.





























PLAN: ACCESS ROAD STA: 38+50 TO 49+50

ARAPAHOE COUNTY CASE NUMBER: AE20-002

PLAN: ACCESS ROAD STA: 49+50 TO 57+18

PICAL ACCESS ROAD
CROSS SECTION
(PRIVATE)
N.T.S.

KEY MAP
SCALE 1" = 1000'

NO.	NO.	LEGEND
1	①	 CBC CUT BACK CURB
2	①	 CD CHECK DAM
3	①	 CWA CONCRETE WASHOUT AREA
4	①	 CF CONSTRUCTION FENCE
5	①	 CM CONSTRUCTION MARKERS
6	①	 CS CURB SOCK
7	①	 DW DEWATERING
8	②	 DD DIVERSION DITCH
9	②	 ECB EROSION CONTROL BLANKET
10	②	 GMS GROUT MIXING STATION
11	②	 IP INLET PROTECTION
12	②	 RCD REINFORCED CHECK DAM
13	②	 RRB REINFORCED ROCK BERM
14	②	 RRC RRB FOR CULVERT PROTECTION
15	②	 SB SEDIMENT BASIN
16	③	 SCL SEDIMENT CONTROL LOG
17	③	 ST SEDIMENT TRAP
18	③	 SM SEEDING AND MULCHING
19	③	 SF SILT FENCE
20	③	 SID SLOPE INTERCEPT DITCH
21	③	 SSA STABILIZED STAGING AREA
22	④	 SR SURFACE ROUGHENING
23	④	 TSD TEMPORARY SLOPE DRAIN
24	④	 TSC TEMPORARY STREAM CROSSING
25	④	 VTC VEHICLE TRACKING CONTROL
26	④	 WW VTC WITH WHEEL WASH
		 LOC ROCK AND RIPRAP GRADATIONS LIMITS OF CONSTRUCTION
		 EG MAY MEET MAJOR MODIFICATION REQUIREMENTS

AREA OUTSIDE OF LIMITS OF CONSTRUCTION, LOC

Suite 240
Englewood, CO 80112
Tel: (720) 482-9526
Fax: (720) 482-9546



**CRESTONE PEAK RESOURCES
OPERATING LLC
ATTN: KATHY DENZER
34501 E. QUINCY AVE., BUILDING 1
WATKINS, CO 80137
PHONE: (720) 410-8519**

ACCESS ROAD PLAN

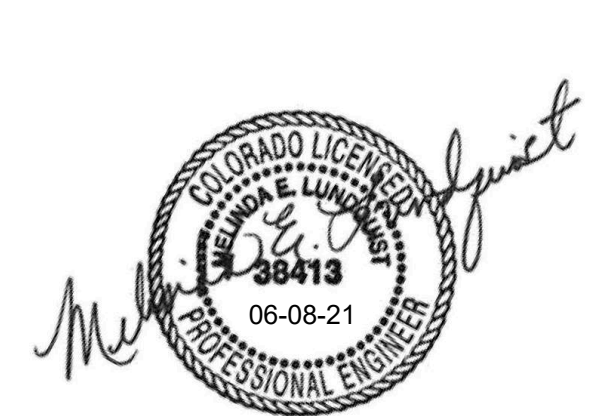
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DATE:	04-28-21	FILE NO:
		8.13.0302822

5

Arapahoe County

06/17/2021

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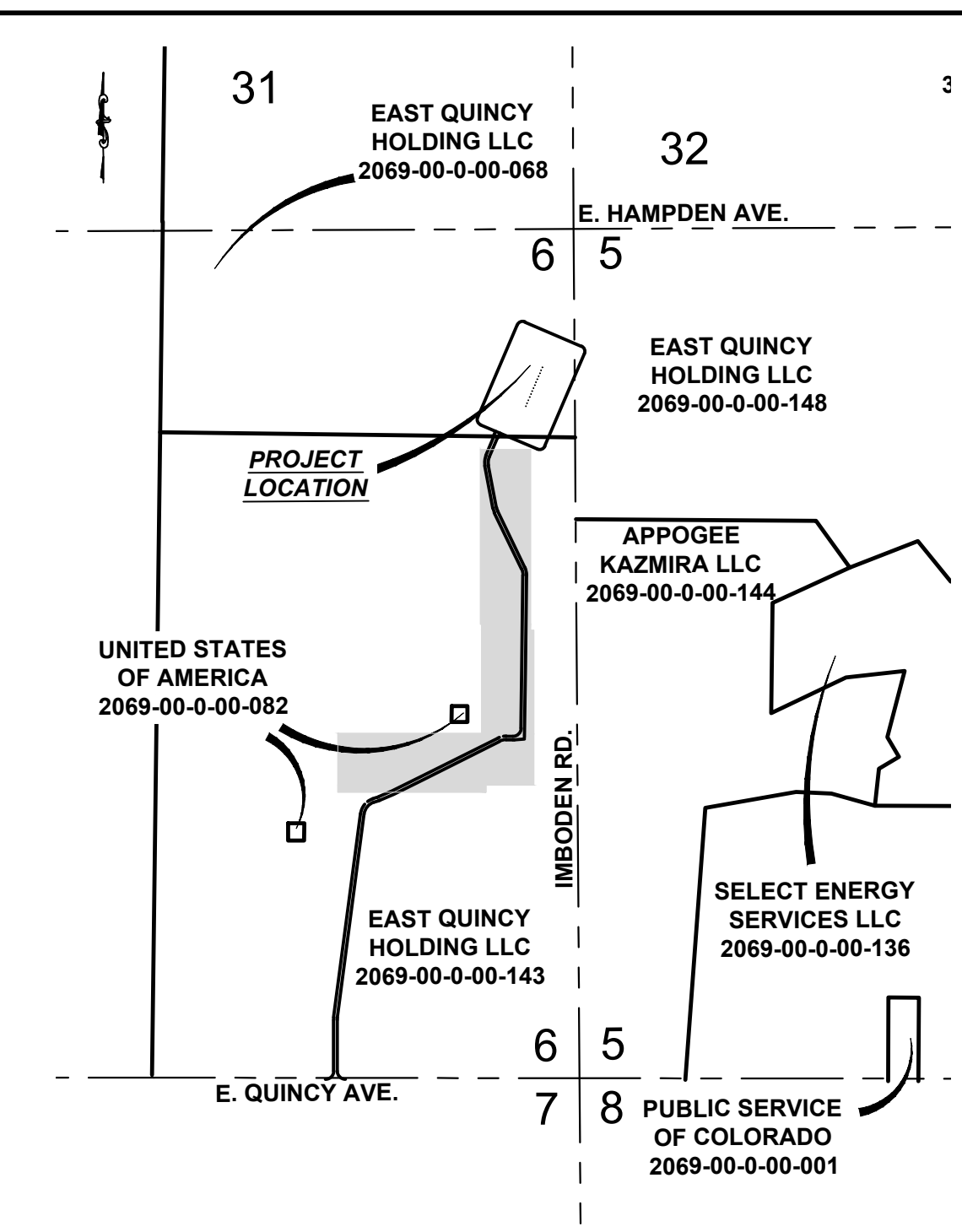


BENCH MARK
BENCHMARK 374 LOCATED ON THE SECTION LINE
BETWEEN SECTIONS 12 AND 13, T5S, R64W, 6TH
P.M., TAKEN FROM 1988 PUBLISHED DATUM BY THE
UNITED STATES DEPARTMENT OF THE INTERIOR,
GEOLOGICAL SURVEY AS BEING 6054.61 FEET.

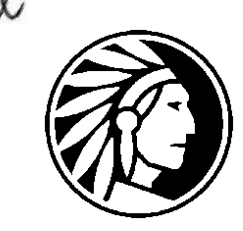
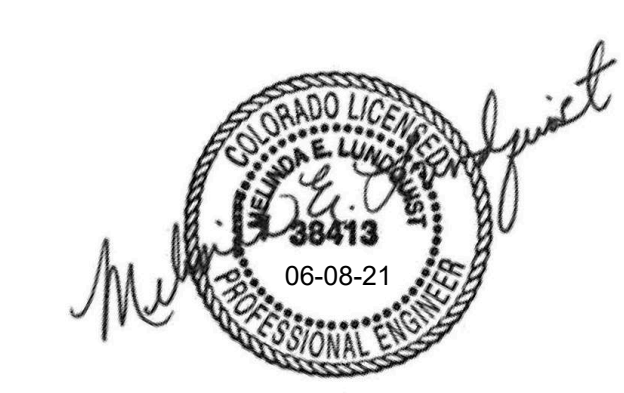


UNCC
UTILITY NOTIFICATION
CENTER OF COLORADO

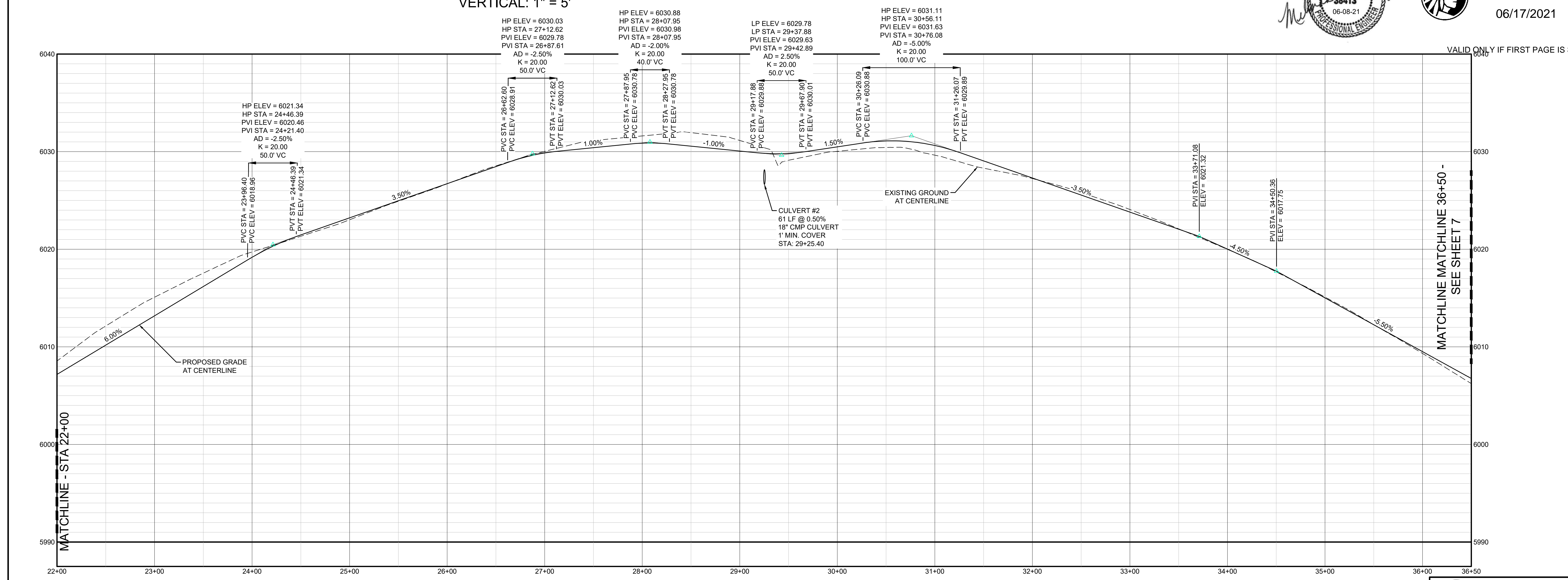
CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987



NOTE: INFORMATION FOR APPLICANT ONLY,
SHEET IS NOT APPLICABLE TO COUNTY APPROVAL




Arapahoe County
06/17/2021



ARAPAHOE COUNTY CASE NUMBER: AE20-002

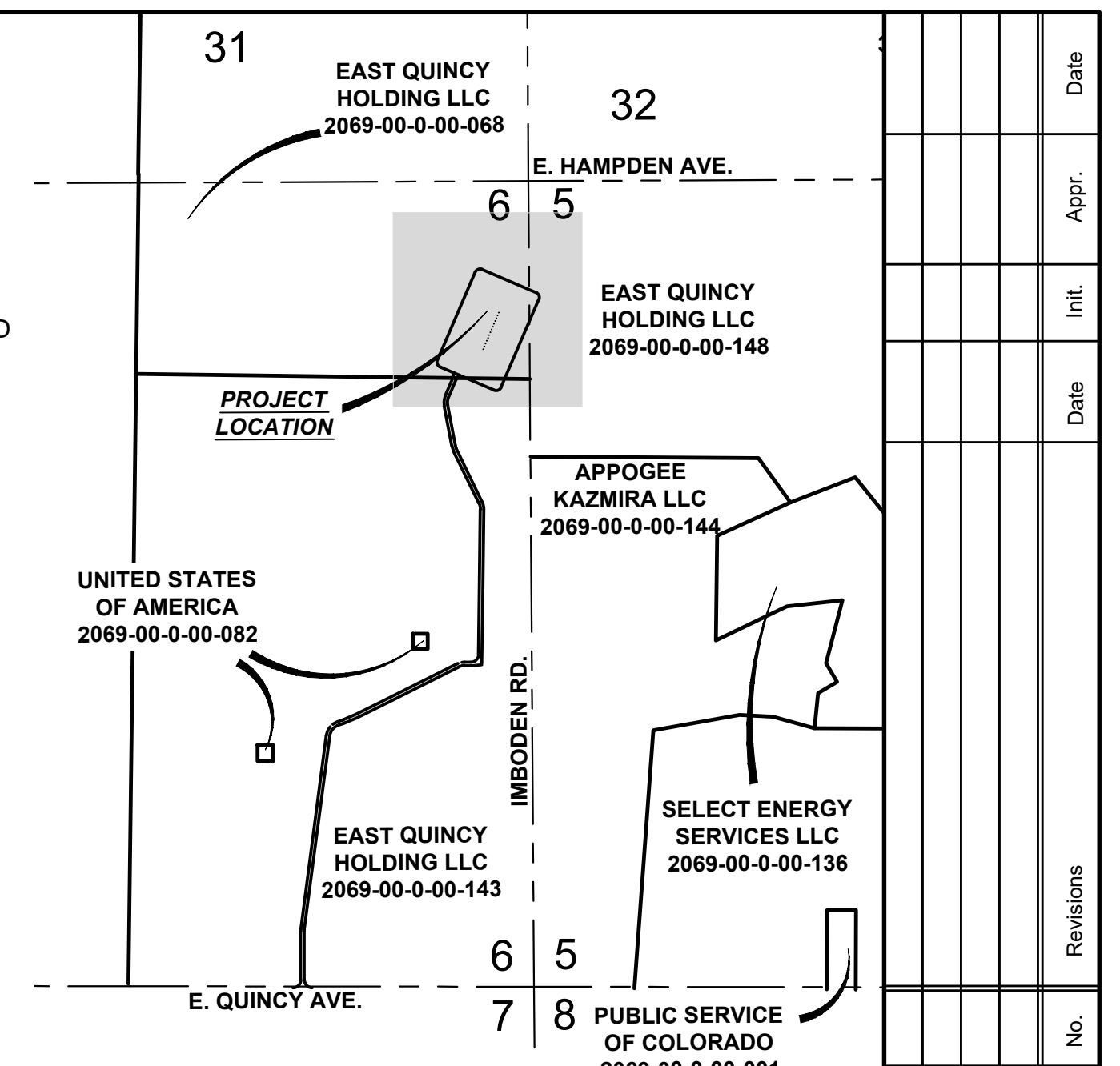
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SHEET NUMBER 6	DRAWN BY:	KRW	SCALE:	ALAMOSA 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH GESC PLANS		ACCESS ROAD PROFILES	CRESTONE PEAK RESOURCES OPERATING LLC ATTN: KATHY DENZER 34501 E. QUINCY AVE., BUILDING 1 WATKINS, CO 80137 PHONE: (720) 410-8519	 a Westwood team	10333 E. Dry Creek Rd. Suite 240 Englewood, CO 80112 Tel: (720) 482-9526 Fax: (720) 482-9546
	CHECKED BY:	MEL	FILE NO:						
	DATE:	04-28-21	8.13.030/2822						
	No.	Revisions	Date	Appr.					



VALID ONLY IF FIRST PAGE IS SIGNED

- NOTES:
1. SEE THE STANDARD NOTES AND DETAILS IN FIELD WIDE REPORT, REVISED APRIL 2019 (3 SHEETS) FOR ALL STANDARD DETAILS & ARAPAHOE COUNTY RULES AND REGULATIONS REGARDING STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES, NOTES AND LEGENDS OF BMP NAMES AND SYMBOLS.
 2. QUANTITIES:
 - PAD SITE ELEVATION = 5991.96' (GROUND), 5992.46' (GRAVEL)
 - SLOPES = 4:1
 - FILL SLOPES = 4:1
 - PHASE 1 RECLAMATION TOPSOIL = 1886 CY REPLACED, 7966 CY STOCKPILED
 - PHASE 1 RECLAMATION TOTAL CY = 6221 CY
 - PHASE 1 RECLAMATION TOTAL FILL = 8389 CY
(INCLUDES 10% ADJUSTMENT FOR COMPACTION)
 - PHASE 1 RECLAMATION GRAVEL REMOVED OFFSITE = 2166 CY
 - PHASE 1 RECLAMATION SPILL'S STOCKPILED = 1884 CY, 3207 CY STOCKPILED
 - PHASE 1 RECLAMATION TOTAL DISTURBED AREA = 5.78 ACRES
 - PHASE 1 RECLAMATION FENCED AREA = 9.54 ACRES
 - PHASE 1 RECLAMATION GRAVEL PAD AREA = 4.42 ACRES
 - SIZE OF LOCATION AFTER INTERIM RECLAMATION = 9.54 ACRES
 - ALL DIVERSION DITCHES ARE ANTICIPATED TO BE UNLINED.
 - 3. THE DIVERSION OF THE CRUSHED ROCK AROUND THE SEDIMENT BASIN RISER PIPE IS LARGER THAN THE HOLE DIAMETER.
 3. ALL BMP'S ARE INITIAL/INTERIM.



KEY MAP
SCALE 1" = 1000'

SOILS

EROSION POTENTIALSING THE US DEPARTMENT OF AGRICULTURE'S WEB SOIL SURVEY. TWO SOIL TYPES EXIST WITHIN THE PROJECT BOUNDARY. FONDIS - COLBY SILT LOAMS, 3 TO 5 PERCENT SLOPES (FOC), RENOHILL-LITTLE-THEDALUN COMPLEX, 9 TO 30 PERCENT SLOPES (RIE). THE SOILS LIE ABOVE FALL INTO THE HYDROLOGIC CLASSIFICATION GROUP C AND D, WHICH HAVE A SLOW INFILTRATION RATE. THE K FACTOR INDICATES THE SUSCEPTIBILITY OF A SOIL TO SHEET AND RILL EROSION BY WATER AND VARIES FROM 0.02 (LOW SUSCEPTIBILITY) TO 0.69 (HIGH SUSCEPTIBILITY). THIS PROJECTS AREA'S SOIL HAS AN AVERAGE K OF 0.34.

TYPE OF GROUND COVER: RANGELAND.

APPROXIMATE PERCENTAGE OF VEGETATIVE GROUND COVER: 50%-70%.

DEWATERING

IF DEWATERING IS REQUIRED, A STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT IS REQUIRED FOR DISCHARGES TO A STORM SEWER, CHANNEL, IRRIGATION DITCH, ANY STREET THAT IS TRIBUTARY TO THE MENTIONED FACILITIES, OR ANY WATER OF THE UNITED STATES.

DRAINAGE

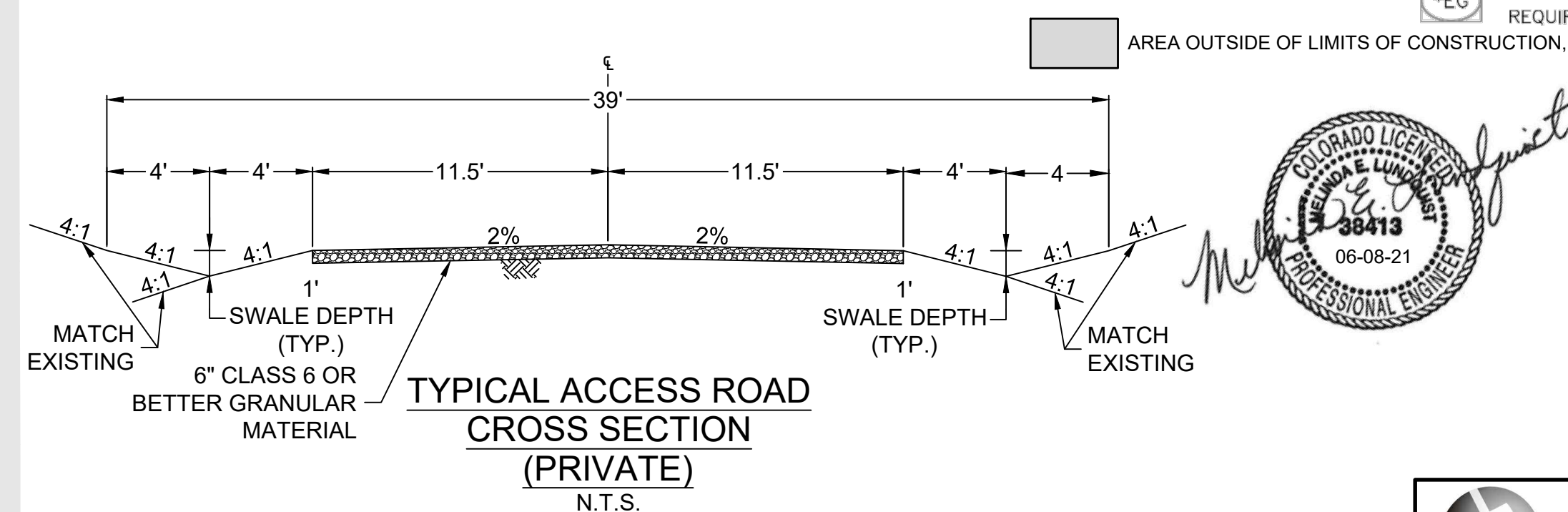
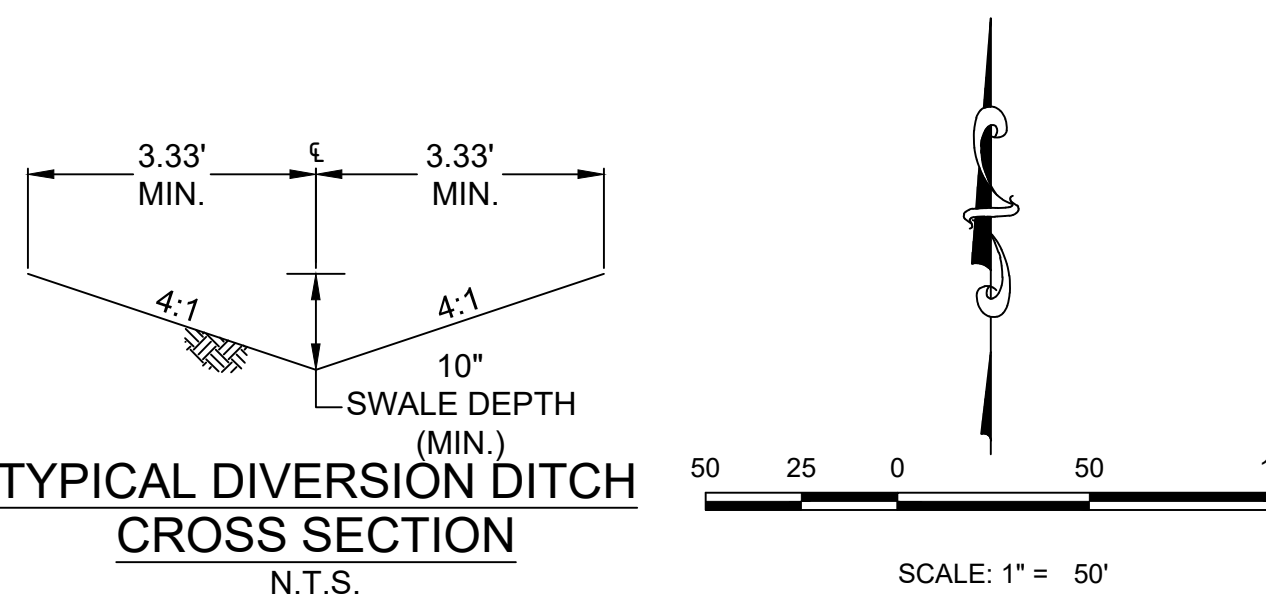
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SEDIMENT BASIN/TRAP: CALCULATIONS IN DRAINAGE LETTER.

DIVERSION DITCH CAPACITY: 2.39 CFS @ 0.25%




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UNCC
UTILITY NOTIFICATION
COUNCIL OF NORTH CAROLINA

CALL 811
TWO WORKING DAYS
BEFORE YOU DIG
1-800-922-1987

<div><div>SHEET NUMBER</div><div>8</div></div>	DRAWN BY: KRW	SCALE: AS SHOWN	ALAMOSA 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH, 5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH GESO PLANS RECLAMATION INITIAL-INTERIM	CRESTONE PEAK RESOURCES OPERATING LLC ATTN: KATHY DENZER 34501 E. QUINCY AVE. BUILDING 1 WATKINS, CO 80137 PHONE: (720) 410-9519	<div><div></div><div>a Westwood team</div></div>	10333 E. Dry Creek Rd. Suite 240 Englewood, CO 80112 Tel: (720) 482-9526 Fax: (720) 482-9546	No.	Revisions	Date	Init.	Appr.	Date				
	CHECKED BY: MEL	FILE NO:														
	DATE:	8.13.03028222														
		04-28-21														

GESO PHH REC-0093



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 - 4. THE 18" DIAMETER OF THE CRUSHED ROCK AROUND THE SEDIMENT BASIN RISER PIPE IS LARGER THAN THE HOLE DIAMETER.
 - 5. ALL BMP'S ARE FINAL UNLESS DASHED LINE TYPE.
 - DASHED LINE TYPE BMP'S ARE INITIAL/INTERIM.

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DRAINAGE

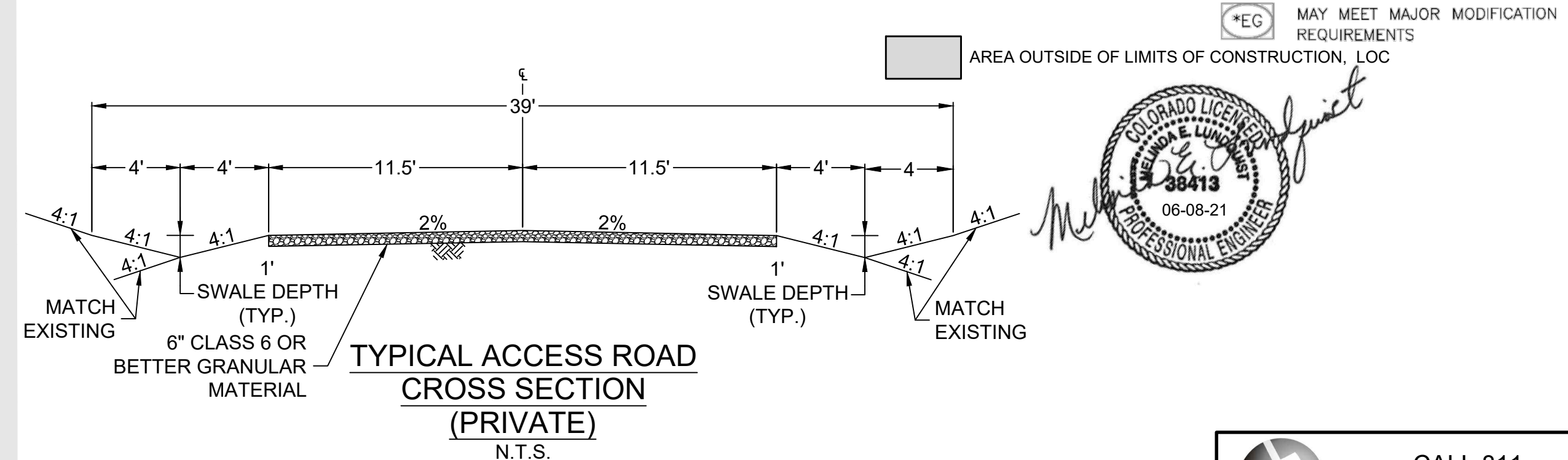
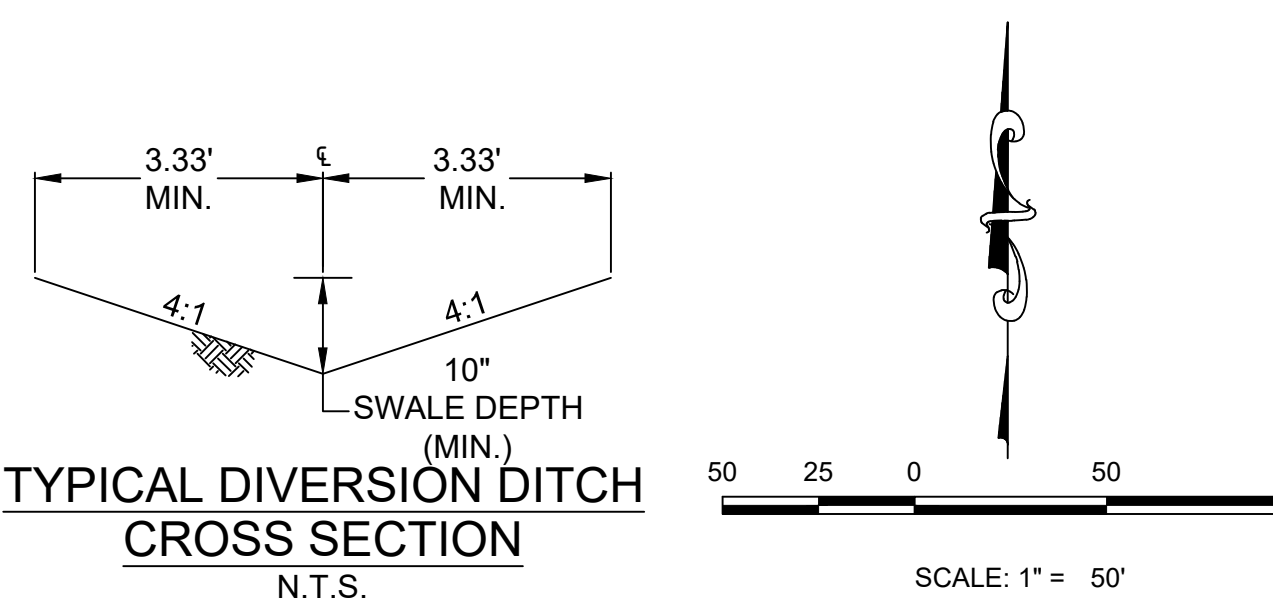
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Suite 240
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**RESTONE PEAK RESOURCES
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34501 E. QUINCY AVE. BUILDING 1
WATKINS, CO 80137
PHONE: (720) 410-8519

5-64 6-1 1BH, 2AH, 2BH,
1H, 4AH, 4BH, 5-4-3 1AH,
1H, 2BH, 3AH, 3BH, 4AH
GESC PLANS
DECLAMATION FINAL

OWN	02822
-----	-------

CHECKED BY:	KRW
DATE:	04-28-21

9 ESC PH1 REC.dwg

ARAPAHOE COUNTY CASE NUMBER: AE20-002

PLAN: RECLAMATION WELL PAD SITE



Arapahoe County

06/17/2021

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UTILITY NOTIFICATION CENTER
OF COLORADO
CALL BEFORE YOU DIG

811

Call 2 days prior to any digging, grading or
excavating for the marking of underground
member utilities

SOUTHEAST METRO STORMWATER AUTHORITY

7437 SOUTH FAIRPLAY STREET
CENTENNIAL COLORADO
80112-4486

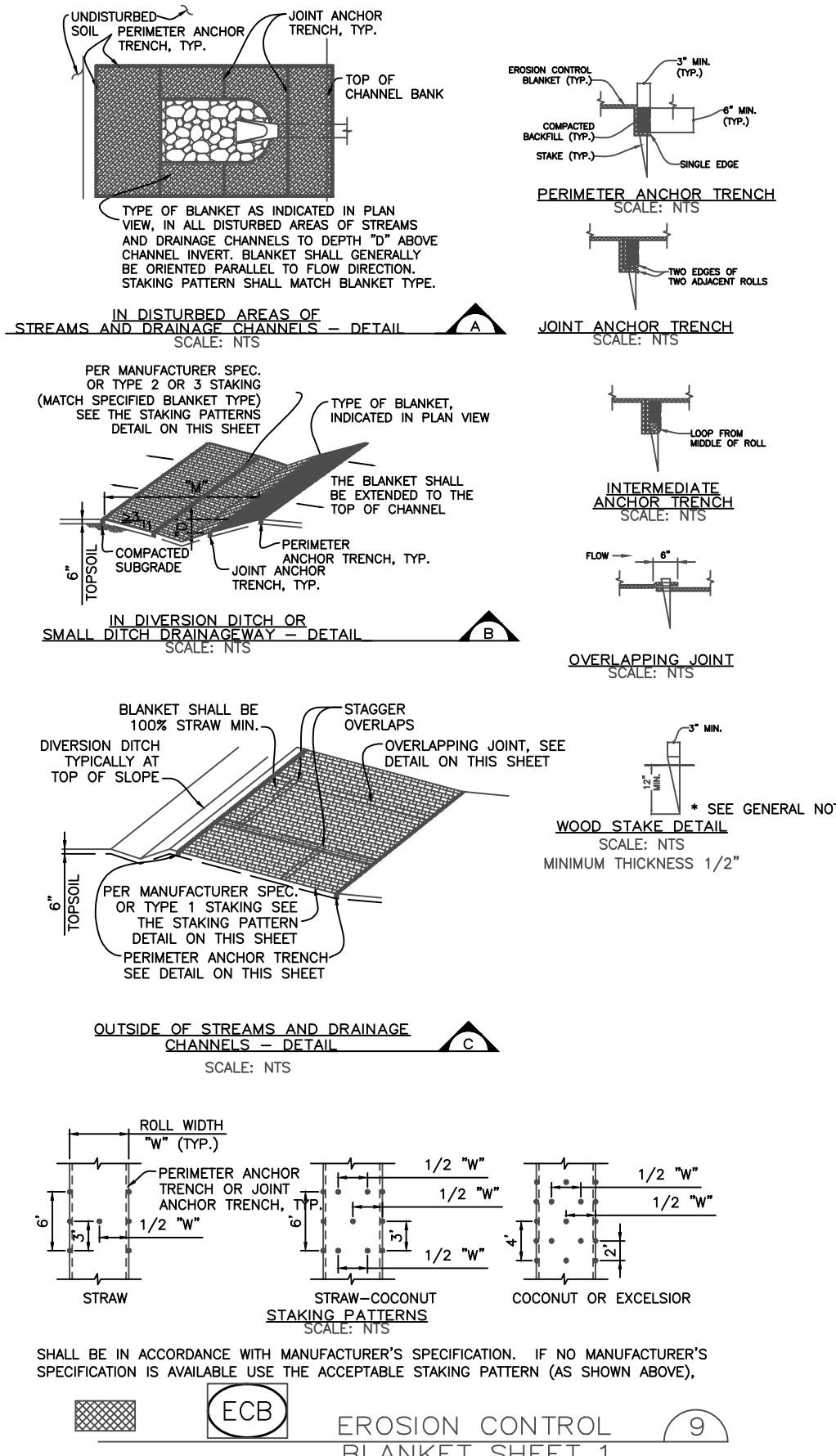
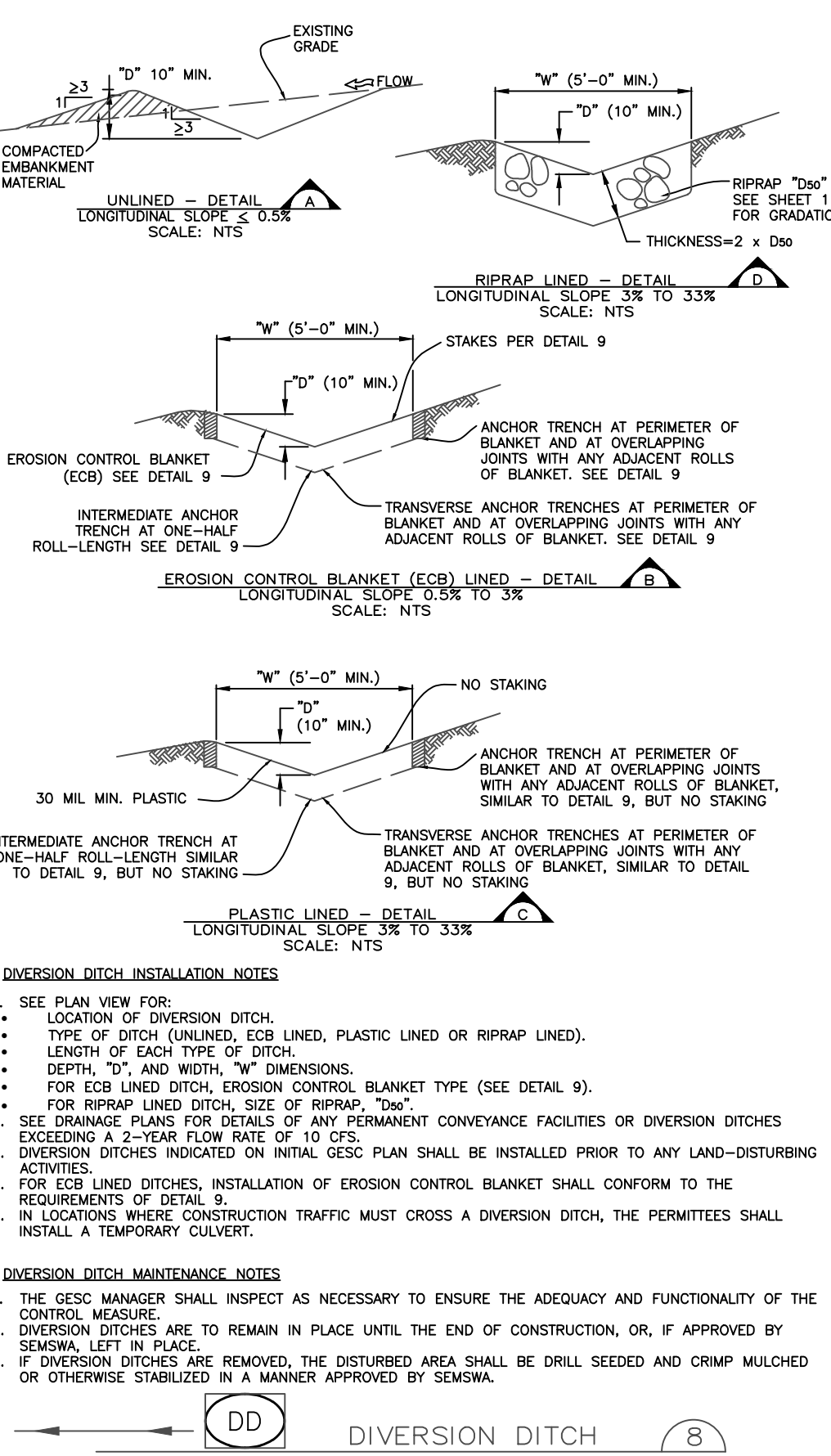
(303) 858-8844 - INSPECTION DIVISION



ARAPAHOE COUNTY
COLORADO'S FIRST

GRADING EROSION AND SEDIMENT CONTROL STANDARD NOTES AND DETAILS REVISED APRIL 2019

GESC
SHEET
2 OF 4



APPENDIX D

STORMWATER MANAGEMENT PLAN MAP

NOTE - Temporary BMP's will be installed as emergency measures when needed and may not be presented on this map if installed between inspection dates.



**Alamosa 5-64 6-1
Access Road
39.649750 / -104.586064**

Legend

- Proposed Ditch & Berm
- Proposed Pad Surface
- Soil Stockpile
- Construction Site Boundary
- Proposed Sediment Trap

Pollution Sources

- Port-o-let
- Equipment Storage
- Light Plant
- Secondary Containment
- Flare Stack
- Proposed Well

- 1 - Lubricant Storage
- 2 - Septic Tank
- 3 - Dry Chemical Storage
- 4 - Chemical Storage
- 5 - Fuel Tank
- 6 - Used Oil
- 7 - Generator
- 8 - Mud Tank
- 9 - Mud Pit
- 10 - Centrifuge
- 11 - Shaker
- 12 - Shale Bin
- 13 - Dewatering Skid
- 14 - Boiler House
- 15 - Fuel Transfer
- 16 - Dumpster
- 17 - Pump Truck
- 18 - Flowback Tank
- 19 - Filter Pod
- 20 - Frac Tank
- 21 - Crude Oil Tank
- 22 - Produced Water Tank
- 23 - Separator
- 24 - Combustor Unit
- 25 - Compressor
- 26 - Chemical Inj. Tank
- 27 - LACT Unit / Meter House
- 28 - Hydrovac Off-Load
- 29 - Concrete Washout
- 30 - Cuttings Storage
- 31 - Snow/Mud Storage
- 32 - Vapor Recovery Unit
- 33 - Cement Tank
- 34 - Concrete Solidification Bin
- 35 - Bore Pit
- 36 - Sand Tank
- 37 - Riser
- 38 - Transformer

Site Features

- 1 - Temporary Tank
- 2 - Trailer/Office
- 3 - Drill Rig
- 4 - Pipe Rack
- 5 - Data Van
- 6 - Water Tank
- 7 - Mod Tank
- 9 - Dewatering Ops

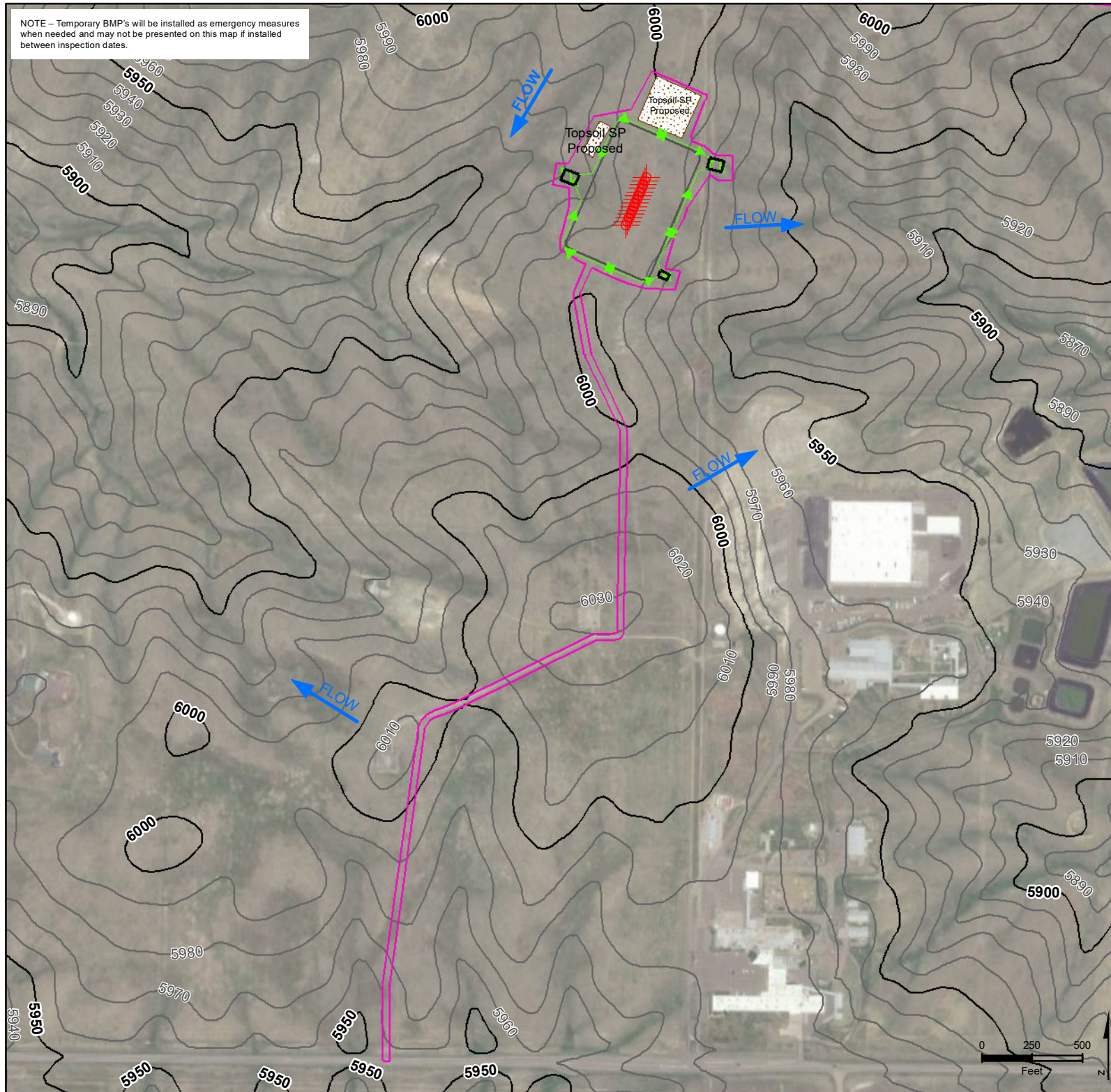
Feature symbols not to scale

Inspector:
Inspection Date: 2022

Site Characteristics

Legal Location: NENE, Sec 5 and 6, T5S R64W
County: Arapahoe
Land Use: Cropland
Pre-Construction Vegetation Coverage: NA
Pre-Construction Vegetation Cover: Grassland
Topography: 9-30% Slopes
Runoff Risk: High
Total Disturbed Area: 16.3 Acres
Soil Type: Renohill-Little-Thedalund complex
Receiving Waters: Intermittent stream
1,372-ft W

REVISED	BY	COMMENT
3/3/2022	MJW	Map Updated



NOTE – Temporary BMP's will be installed as emergency measures when needed and may not be presented on this map if installed between inspection dates.



Alamosa 5-64 6-1 Well Pad 39.649750 / -104.586064

Legend

- Proposed Ditch & Berm
- Proposed Pad Surface
- Soil Stockpile
- Construction Site Boundary
- Proposed Sediment Trap

Pollution Sources

- Port-o-let
 - Light Plant
 - Flare Stack
 - Equipment Storage
 - Secondary Containment
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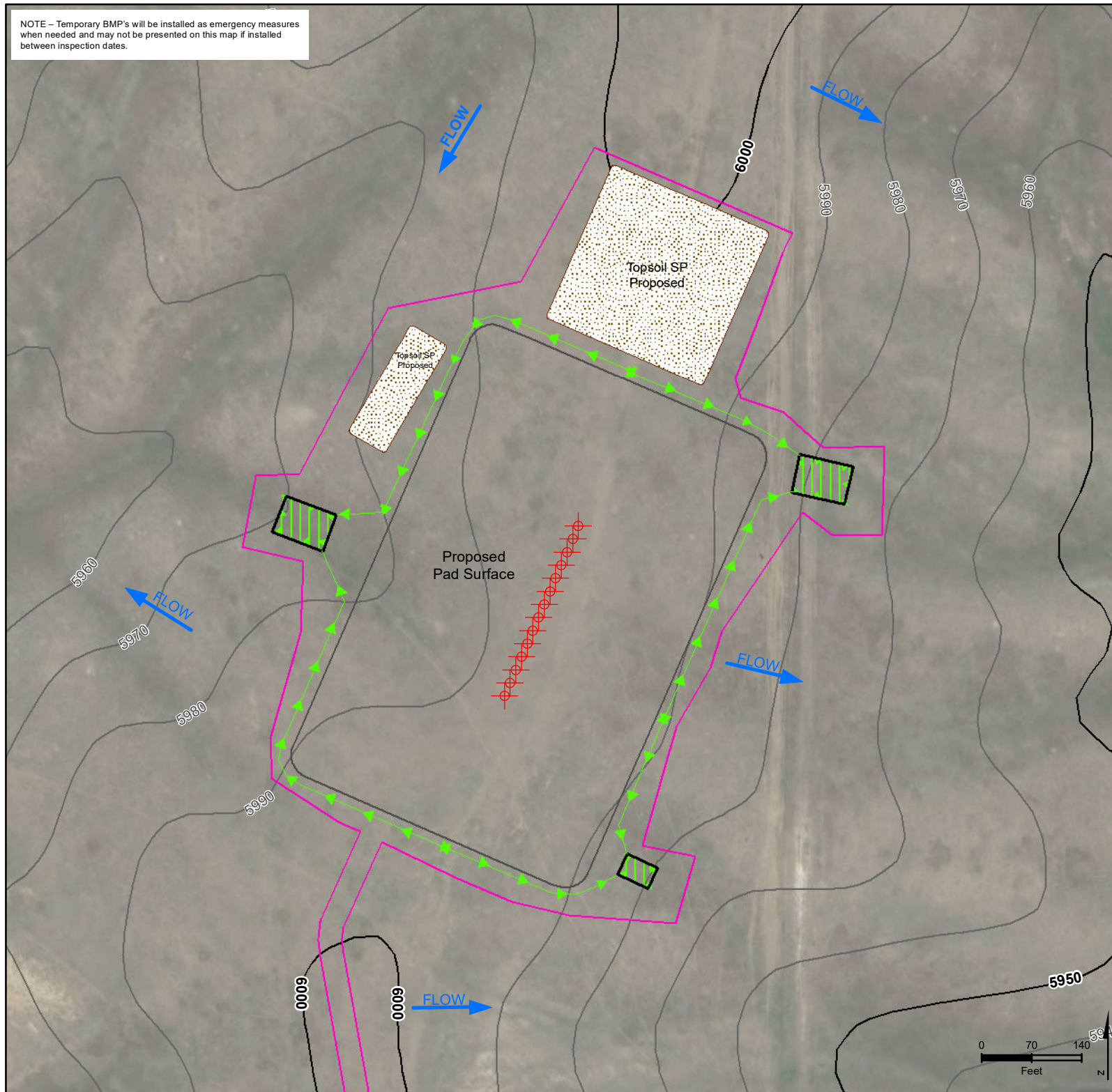
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Inspector:
Inspection Date: 2022

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Topography: 9-30% Slopes
Runoff Risk: High
Total Disturbed Area: 16.3 Acres
Soil Type: Renohill-Little-Thedalund complex
Receiving Waters: Intermittent stream
1,372-ft W

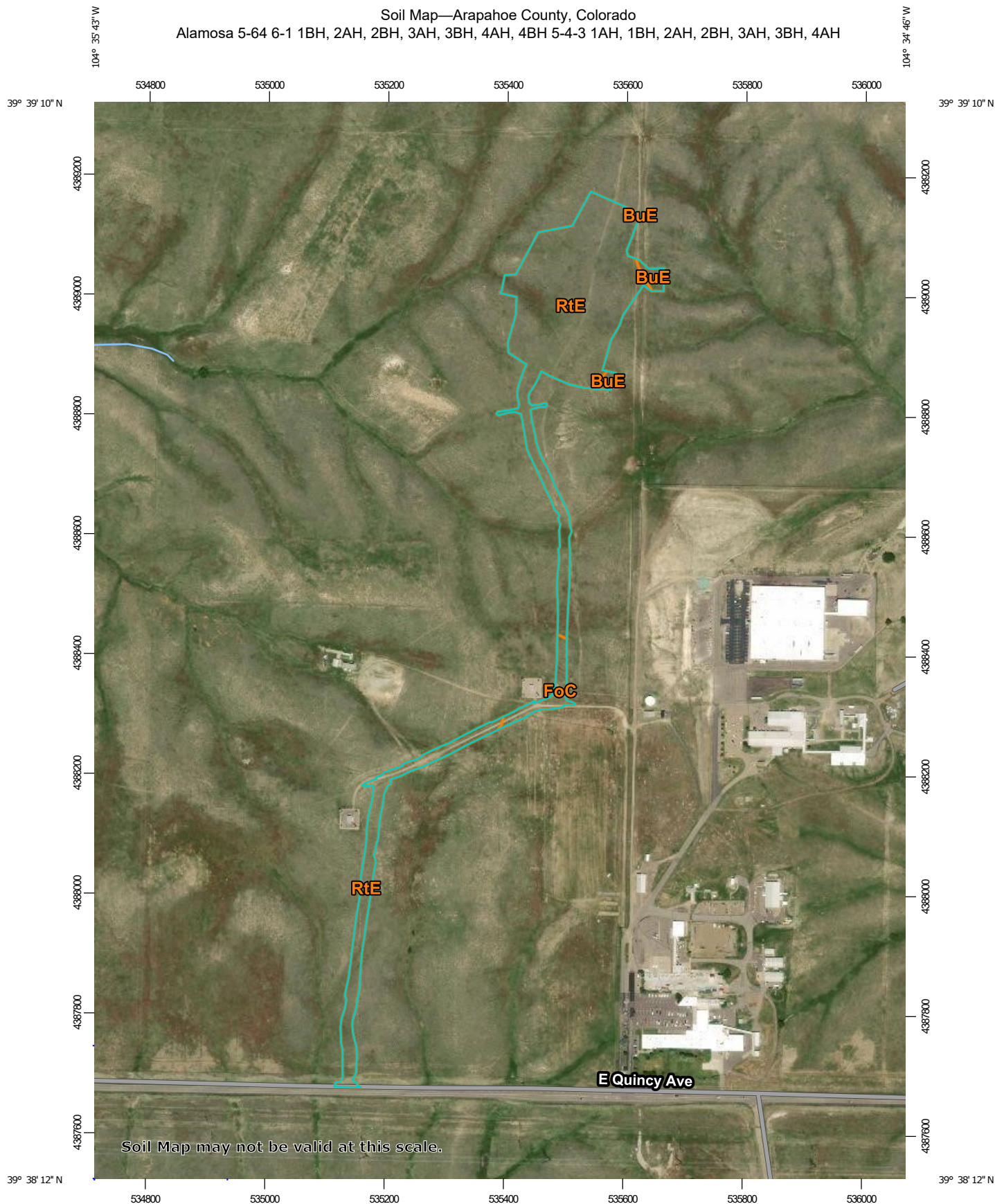
REVISED	BY	COMMENT
3/3/2022	MJW	Map Updated



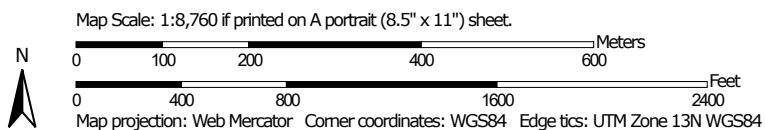
APPENDIX E

USDA WEB SOIL SURVEY

Soil Map—Arapahoe County, Colorado
 Alamosa 5-64 6-1 1BH, 2AH, 2BH, 3AH, 3BH, 4AH, 4BH 5-4-3 1AH, 1BH, 2AH, 2BH, 3AH, 3BH, 4AH



Soil Map may not be valid at this scale.



Soil Map—Arapahoe County, Colorado
(Limits Of Construction)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



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



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

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 1:20,000.

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: Arapahoe County, Colorado

Survey Area Data: Version 17, Aug 31, 2021

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

Date(s) aerial images were photographed: Jul 17, 2015—Oct 2, 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
BuE	Bresser-Stapleton sandy loams, 9 to 20 percent slopes	0.5	2.4%
FoC	Fondis-Colby silt loams, 3 to 5 percent slopes	0.9	4.8%
RtE	Renohill-Little-Thedalund complex, 9 to 30 percent slopes	18.1	92.8%
Totals for Area of Interest		19.5	100.0%

APPENDIX F

WATERSHED IMPAIRED WATER BODY REPORT

Listed Portion:	COSPUS16c_A	All tributaries to the South Platte River, including all wetlands, from the outlet of Chatfield Reservoir, to a point immediately below the confluence with Big Dry Creek, except for specific listings in the subbasins of the South Platte River, and in Seg	
		Analyte	Category/List
		E. Coli.	303(d) List
		Dissolved Selenium	303(d) List

Colorado Department of Public Health and Environment (CDPHE). 2018. CDPHE GIS Maps (<https://www.colorado.gov/pacific/cdphe/clean-water-gis-maps>). Stream Water Quality Standards

Comments

305(b) Stream and Waterbody Classification



- COSPMS03a
- COPSPUS16c

(https://maps.google.com/maps?d=89.650467101456cmgCchAgarVt2019Q35F5B89SC10456f66-MzXx8Atecsm1bicsUnS!Gib7bn1abSueapUSDvFPAC/GEO)

* Labels for waterbodies should appear upon zoom-in on the map.

Statistics

CDPHE 305(b) Stream and Waterbody Classification

Waterbody ID: COSPMS03a

Listed Portion:	COSPMS03a_A	All tributaries to the South Platte River, including all wetlands, from a point immediately below the confluence with Big Dry Creek to the Weld/Morgan County line, except for specific listings in the subbasins of the South Platte River, and in Segments 3			
		Agricultural Use	Aquatic Life Use	Recreational Use	Water Supply Use
		Fully Supporting	Fully Supporting	Fully Supporting	Fully Supporting

Waterbody ID: COSPUS16c

Listed Portion:	COSPUS16c_A	All tributaries to the South Platte River, including all wetlands, from the outlet of Chatfield Reservoir, to a point immediately below the confluence with Big Dry Creek, except for specific listings in the subbasins of the South Platte River, and in Seg			
		Agricultural Use	Aquatic Life Use	Recreational Use	Water Supply Use
		Fully Supporting	Not Supported	Not Supported	Not Applicable

Source

Colorado Department of Public Health and Environment (CDPHE). 2018. CDPHE GIS Maps (<https://www.colorado.gov/pacific/cdphe/clean-water-gis-maps>). Stream Water Quality Standards

Comments

Key:

WRAP: Watershed Rapid Assessment Program