



# **STORMWATER MANAGEMENT PLAN**

Rule 304.c.(15) and 1002.f.

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## **Introduction**

PDC Energy (PDC) has prepared this document to satisfy the requirements of COGCC Rule 304.c.(15) to develop a site-specific stormwater management plan (SWMP), consistent with the requirements of COGCC Rule 1002.f., to accompany the Form 2A in order to demonstrate the Commission's Rules for the operation of the proposed oil and gas location in a manner that is protective of and minimizes adverse impacts to public health, safety, welfare, the environment, and wildlife resources.

## **Project Summary**

### **Stormwater Management/Permit Coverage**

PDC has a field-wide stormwater management plan (SWMP) that covers construction activities within a permitted area of the Denver-Julesburg Basin. The **Trippett 3N66W3 1-48** pad construction will occur within this permitted area. Construction activities within this area are covered under and governed by the CDPS General Permit for Discharges Associated with Construction Activity (Permit No. COR-400000).

BMPs will be employed in accordance with good engineering, hydrologic, and pollution control practices in order to prevent pollution in stormwater discharges associated with the construction of the subject facility. All information and conditions represented herein are estimated and intended as a preliminary plan. The SWMP is intended to be a living document that will change and be updated routinely as field conditions change. Actual placement of BMP's etc. may deviate from the preliminary plan based on actual conditions discovered in the field and updates will be made accordingly.

### **Site Description/Nature of Construction**

PDC Energy (PDC) is proposing the construction, development, and operation of the two-Location/Well Pad Bubba-Trippett Oil and Gas Development Plan (OGDP), which includes the Bubba Federal 3N66W5 1-18 Well Pad (Bubba Pad) and the Trippett 3N66W3 1-48 Well Pad (Trippett Pad). The legal and location descriptions for the two Locations are summarized in Table 1.

**Table 1**  
**Location Information**

<b>Pad Name</b>	<b>Number of Wells</b>	<b>Formal Location Name</b>	<b>Legal Description</b>
Bubba Pad	18	Bubba Federal 3N66W5 1-18 Pad	SWNE4of S5 T3N R66W 6 <sup>th</sup> Principal Meridian
Trippett Pad	48	Trippett 3N66W3 1-48 Pad	E2SW and W2SE of S3 T3N R66W 6 <sup>th</sup> Principal Meridian

The Project consists of the development of the Trippett Pad and associated infrastructure to support the drilling and production of 48 new oil and gas wells. The Trippett Pad is in an area with other existing oil and gas operations as well as agricultural and rangeland activities. Construction of the new pad would consist of roughing in a new access road and then leveling the pad. Weld County Road 36 would serve as the access road connection to the Trippett Pad.

### **Well Pad Location**

The Trippett Pad would support a total of 48 new wells and their supporting production equipment. The Location would be constructed from the native earthen materials present and leveled by standard cut-and-fill techniques. The well pad would be constructed by clearing vegetation, stripping, and stockpiling topsoil, and leveling the pad areas. Construction of a typical well pad involves the use of heavy equipment, such as a dozer, flat blade, dump truck, and crane; however, equipment needs may vary depending on the site-specific conditions.

Separate stockpiles for both topsoil and subsoil would be established within the permitted location boundary and will be maintained for future backfilling and rehabilitation of the disturbed areas for interim reclamation and final abandonment after the life of the wells.

Construction of the Trippett Pad, with associated cut and fill slopes, would initially disturb approximately 30.7 acres. Following interim reclamation of 14.7 acres, the total Project residual surface disturbance would be reduced to approximately 16.0 acres, which would remain for the life of the proposed wells. Total well pad surface disturbances are summarized in Table 2.

### **Access Roads**

A total of approximately 0.4 miles of new access road would be required to provide access to the proposed Trippett Pad. The new access road would be constructed such that it provides an approximate 24-foot running surface within a 30-foot-wide corridor. The construction and maintenance of this access road would disturb approximately 2.0 acres of land, which would be a residual disturbance for the life of the operation of the wells. Total access road disturbance is summarized in Table 2.

### **Water Lines and Flowlines**

The Trippett Pad would require up to 0.6 miles of temporary surface-laid, lay-flat water lines. While these water lines would be surface laid and would not require a trench, it is conservatively assumed that a corridor of approximately 30-feet would be cleared of vegetation and graded prior to installation of the lay-flat water line. This 30-foot corridor would be temporarily maintained while the water lines are needed but would not result in any residual disturbance. Water line corridors would be reclaimed during interim reclamation of each location and would result in a short-term disturbance of approximately 2.1 acres. Total water line disturbance is summarized in Table 2.

Additionally, flowlines installed for production operations of the Trippett Pad would be installed within the footprint of well pad. Therefore, flowline disturbance is not calculated separately from the overall disturbance of the pad.

## Interim Reclamation

In accordance with COGCC Rule 1003, interim reclamation for the Project will commence as soon as practicable and, at minimum, within 6 months following drilling and subsequent operations. Debris, waste material, and equipment associated with drilling, re-entry, and completion operations will be removed from the facility. All disturbed, non-working areas affected by drilling or subsequent operations, except those areas needed for production operations or for subsequent drilling operations to be commenced within 12 months, shall be reclaimed as nearly as practical to their original condition or their designated final land use. Although the historic land-use at the location is dryland agriculture, the location will not be farmed following interim reclamation. Instead, all reclaimed areas will be seeded/mulched in the first favorable season following rig demobilization. Areas needed for production operations or for subsequent drilling operations to be commenced within 12 months will be stabilized and maintained to minimize dust and erosion to the extent possible.

## Surface Disturbance Totals

Construction associated with the Trippett Pad Location would result in an estimated initial disturbance of approximately 34.8 acres and residual disturbance of 18.0 acres. Total initial and residual disturbance including well pad, access road, and water line disturbance, is summarized in Table 2. Residual disturbance includes acreage that would remain disturbed for the life of the project (LOP), which is approximately 25-30 years plus the time required to successfully reestablish vegetation (those acres not subject to interim reclamation). As previously stated, site reclamation would be initiated for portions of the Trippett Pad not required for the continued operation of the well within 6 months of completion, weather permitting.

**Table 2**  
**Total Estimated Surface Disturbance**  
**(Including Flowlines and Access Roads)**

<b>Pad Name</b>	<b>Length (miles)</b>	<b>Initial (acres)</b>	<b>Residual (acres)<sup>1</sup></b>
Trippett Pad	-	30.7	16.0
Access Road	0.4	2.0	2.0
Temporary Lay-Flat Water Line	0.6	2.1	0.00
Total Disturbance <sup>2</sup>	1.0	34.8	18.0

<sup>1</sup> Residual disturbance calculations assume that interim reclamation would be successful.

<sup>2</sup> Total acreage estimates are based on Geographic Information System (GIS) software calculations and match what is presented in the Form 2A Plat package. These totals may not equal the total summation when using mathematic equation due to rounding, removal of overlapping development and minute boundary discrepancies. GIS-based calculations are considered more accurate than estimates calculated using simple addition and therefore will be used throughout this document.

Additionally, the development of the locations would result in the plugging and reclaiming (P&R) of 88 wells in the vicinity of the Bubba and Trippett Pads. This P&R activity equates to approximately 106 acres of vegetation and wildlife habitat that will be restored to the ecosystem surrounding the Bubba and Trippett Pads. The P&R of these older wells also reduces the spider web effect created by historic development of single, vertical wells, resulting in more connectivity of wildlife habitat.

## **Project Schedule**

Pending OGDG approval from the COGCC, the Trippett Location would likely be constructed in Q3 2023. Drilling would commence in Q4 2023, and completions in Q4 2024. The anticipated production life of each well is 25-30 years.

## **Facility Construction**

To begin construction of the pad location, the area will be cleared and stripped of topsoil. Topsoil is stored onsite for future use in reclaiming disturbed areas. COGCC regulations for topsoil stock pile construction state “All stockpiled soils shall be protected from degradation due to contamination, compaction and, to the extent practicable, from wind and water erosion during drilling and production operations. Best management practices to prevent weed establishment and to maintain soil microbial activity shall be implemented.” Commonly accepted BMPs for topsoil stockpile construction call for a maximum height of 10 feet and topsoil stockpile slope no greater than 3:1. PDC plans to follow these specifications with regards to the topsoil stockpile at the subject location. Cut and fill, grading, and compaction activities are conducted as necessary to prepare the location as designed. The working/driving surface areas will be armored with crushed rock or road base when necessary, to prevent rutting and erosion. Initial pad construction is anticipated to take about eight weeks.

Installation of storage tanks, separators, other tank battery equipment, and any associated appurtenances will typically begin once pad construction is complete and may continue through the drilling or completion phases.

## **Drilling & Completions**

Once the facility construction is complete, a drilling rig will mobilize to the site and begin drilling the wells. The timing of the rig moving onsite can be variable due to any number of factors. 48 wells are anticipated to be drilled at the subject location starting Q4 2023.

In support of the drilling rig, portable offices, dining facilities, storage containers, chemical storage, and/or living/sleeping quarters are sometimes moved onsite. Light-duty and heavy-duty vehicle traffic becomes prominent at this phase.

Once drilling is complete, the drill rig is mobilized offsite and a completions rig and the associated equipment and personnel arrive onsite. Completions and flowback are anticipated to be completed in Q4 2024.

The completions phase requires extensive onsite equipment and materials, especially during the stimulation process. Typically, the largest disturbance footprint for a location will occur during the completions phase.

## **Disturbance Reduction (Pad Pull-Back) / Interim Reclamation**

Once all drilling and completion activities are complete, the pad size will be reduced to 16 acres to minimize the long-term disturbance during the production phase. Enough working area must remain to ensure a safe working environment for continued work by pumpers, liquids haulers, and periodic work

over operations, etc. All areas needed for ongoing operations will be armored and stabilized for the long-term life of the interim pad. On the pull-back/reclaimed area, all segregated soil horizons removed when clearing topsoil will be replaced to their original relative positions and contour as near as practicable to achieve erosion control and long-term stability, and will be tilled adequately in order to establish a proper seedbed. All reclaimed areas will then be seeded/mulched in the first favorable season following rig demobilization. Although the former land-use as the subject location is agricultural-use, this property will not be farmed moving forward, so interim reclamation consists entirely of seeding/mulching. The reclamation will be monitored regularly during routine stormwater inspections against the interim reclamation completion vegetation requirements, and weed mitigation will occur according to PDC's maintenance schedule, until COGCC interim reclamation is achieved.

### *Compaction Alleviation*

Compacted soils and areas of the location impacted by construction that are to be reclaimed will be ripped to a minimum depth of 18 inches prior to topsoil replacement. Decomaction will be performed by a parabolic ag-style ripper capable of fracturing the soil ensuring soil layers are not mixed. Proper decomaction will allow for greater water infiltration and promote vegetation growth.

### *Recontouring*

Working in conjunction with the site-specific storm water plan, PDC will complete interim reclamation by reestablishing all slopes, drainages, and natural contours that existed before initial construction began.

PDC will document the existing topography and natural drainages and the site will be planned in such a way to not impeded these drainages upon completion. The height of the well heads and tank battery will be set at native elevation, if not in conflict with the site-specific stormwater plan. The outer limits of the location will be blended back to native topography by matching the surrounding area of the location, as this area will remain undisturbed from the construction phase. Recontouring will take place in such a way that the depth of the topsoil is accounted for with the initial regrading of the site, this will ensure that an even and adequate amount of topsoil is spread over the entire site in a way that will not inhibit any natural drainages.

PDC will cross-rip slopes and prepare the reclaimed areas for seeding/mulching.

### *Revegetation*

Seed mix may be required by surface owner and/or local agency in some cases. If no requirement is stated, the seed mix should be determined based on land use and soil type. Seed composition should be a mix of both warm and cool season grasses to ensure plant diversity and reclamation success. Application rate and seed mix design should be developed based on local conditions including soil type, time of year, and historical precipitation data. The seed mix selected for the Trippett interim reclamation is 20% Dahurian wildrye, 20% wildrye Amazon, 15% smooth brome, 15% pubescent wheatgrass, 15% intermediate wheatgrass and 15% orchard grass. PDC estimates application rate should be 40 pounds per acre.



### *Seedbed Preparation & Seeding*

After decompaction, the top 3-4 inches of soil will be prepared for seed application using a high-speed disk and/or a mulcher as needed. Straw mulch will be applied and crimped to topsoil adding further stabilization and increasing moisture retention. Seedbed will be void of earthen clods and firm enough to keep seed from being applied too deeply. Soil samples will be collected and analyzed prior to seed application to identify any amendments needed. Compost and fertilizer will be applied based on current site conditions and on an as needed basis.

Seed application will be performed using a disc seed drill equipped with depth bands, capable of direct seed placement no deeper than ¼ to ¾ inches, and functioning packer wheels with row spacing not exceeding 8 inches to adequately cover and stabilize the seed. Seeding will follow interim reclamation and be conducted during a spring or fall planting window to achieve maximum germination rates.

### *Fencing*

Fencing will not be used at the subject location due to its location being on property with no risk of livestock grazing.

### *Management of Invasive Plants*

Invasive plants will be managed by performing a site assessment during the spring and upon completion of the first growing season after interim reclamation. This assessment will identify and inventory any/all invasive plants on the location. The assessment will include GPS coordinates and maps detailing the location of the invasive plants. Management will be performed by either mowing or spraying and in some rare occasions both methods may be necessary. Routine inspections throughout the life of the pad will also aid in identifying when weed mitigation is needed.

### *Interim Reclamation Completion*

Interim reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and all disturbed areas have been either built on, compacted, covered, paved, or otherwise stabilized in such a way as to minimize erosion to the extent practicable, or a uniform vegetative cover has been established that reflects pre-disturbance or reference area forbs, shrubs, and grasses with total percent plant cover of at least eighty percent (80%) of pre-disturbance levels or reference areas, excluding noxious weeds. Although the historic land-use at the location is dryland agriculture, the location will not be farmed following interim reclamation. Instead, all reclaimed areas will be seeded/mulched in the first favorable season following rig demobilization.

Once interim reclamation is achieved, a vegetation coverage assessment is conducted to confirm and document successful reclamation. When a vegetation coverage assessment confirms that the requirements have been met, photos are collected to document interim reclamation completion. Four photos are taken from the pad reclamation during the growing season facing each cardinal direction, and one photo is taken to document the vegetation in an undisturbed/reference area adjacent to the pad. Each photograph is identified by date taken, well name or location number (for Weld County – location name), GPS coordinates, and direction of view. A COGCC Form 4 Sundry Notice is then submitted to document interim reclamation completion, accompanied by the requisite photos documenting the reclamation and vegetation analysis. The Form 4 submission will also outline a description of the

reclamation procedures, associated mitigation measures, changes to final land use, and the total cover of live perennial vegetation to evaluate the success of interim reclamation.

Weld County Code Sec. 21-5-555 requires the operator to also notify Weld County via the 1041 WOGLA Sundry Form to document interim reclamation completion, with the same requirements and procedures as the COGCC.

#### *CDPHE Final Stabilization*

CDPHE final stabilization is reached when all construction activities are complete and permanent stabilization methods have been implemented on all areas needed for ongoing production operations. In areas where seed/mulch has been applied, final stabilization is met when evenly distributed perennial vegetation has been established with a density of perennial plants of at least 70% of pre-disturbance levels has been achieved. When CDPHE final stabilization has been met for sites in non-crop land, quantitative vegetation density analyses are conducted to confirm and document that the site has met the vegetation requirement.

#### **Production**

The production phase of the pad is characterized by the time from when the wells become productive until P&A and the final reclaim of the site. All areas not needed for ongoing operation will have been reclaimed and all areas needed for ongoing operation will have been stabilized for the long-term operating life of the pad.

#### **Abandonment/Final Reclaim**

Once the wells are no longer economical to operate, they will be P&A'd and the location recontoured and reclaimed to pre-disturbance conditions and/or in accordance with the surface owner's wishes.

When a well is P&A'd, the well head assembly is removed and the well permanently plugged downhole. All equipment associated with the well is removed from the location unless the equipment is also used by other wells on the pad or in the area. Flow lines may be re-routed or abandoned as necessary.

Once all equipment has been removed from the location and the well or wells are P&A'd, the location and associated access roads will be recontoured and reclaimed to pre-disturbance conditions and/or in accordance with the surface owner's wishes.

Rock surfacing on the pad and access roads will be removed for beneficial re-use or offsite disposal. Topsoil will be respread following recontouring and decompaction to pre-disturbance conditions. All culverts, cattle guards, or other extractable structural BMPs will be removed and either reused at new construction sites, recycled as scrap, or disposed of as solid waste.

Once the location is recontoured, topsoil is reapplied across the location in preparation for seeding. Appropriate seed mixtures are determined based on surface owner requirements, pre-existing site conditions and terrain characteristics. The reclamation is monitored until COGCC requirements are met and the location is cleared for final reclamation.

## **Supplemental Site Information**

### **Distance to Water/Receiving Waters**

The nearest waterbody is Evans No. 2 Ditch located less than 0.1-miles north of the subject project. This is a tributary of Gilmore Ditch, which is a tributary of Box Elder Creek which is a tributary of the Empire Intake Canal, which is a tributary of Empire Reservoir.

### **Disturbance Estimates**

The initial pad disturbance is expected to be 30.7 acres. After drilling, completions, and interim reclamation, the interim pad disturbance is expected to be reduced to 16 acres, which is the anticipated size for the remainder of the life of the pad.

### **Soils & Erosion Risk**

To determine anticipated site characteristics for the project site, Geographic Information System (GIS) data from the Natural Resource Conservation Service (NRCS) along with aerial photography was overlain on the site proposed disturbance boundary to derive potential ecological site descriptions (ESDs) and NRCS soil map units. A desktop review of the proposed project area indicates the presence of three soils map units – 64% consisting of Olney loamy sand (1 to 3 percent slopes), 33% Vona loamy sand (0 to 3 percent slopes), and 3% Vona loamy sand (3 to 5 percent slopes).

The Olney loamy sand (1 to 3 percent slopes) soils map unit shows an anticipated top soil depth of 0 to 10 inches. The depth to a restrictive feature is more than 80 inches. The drainage class is well drained, and the available water capacity is moderate (about 6.5 inches).

The Vona loamy sand (0 to 3 percent slopes) soils map unit shows an anticipated top soil depth of 0 to 6 inches. The depth to a restrictive feature is more than 80 inches. The drainage class is well drained, and the available water capacity is moderate (about 6.5 inches).

The Vona loamy sand (3 to 5 percent slopes) soils map unit shows an anticipated top soil depth of 0 to 7 inches. The depth to a restrictive feature is more than 80 inches. The drainage class is well drained, and the available water capacity is moderate (about 6.4 inches).

Slopes in the project area range from 0-5%. The risk of susceptibility to erosion/runoff is low based on K factor values; the overall erosion hazard is slight.

Soils and erosion maps and soils reports can be found in Appendix A and B, respectively.

### **Pre-Disturbance Land Use and Vegetation**

The pre-disturbance land use at the subject location is agriculture.

No vegetation density or coverage assessments were conducted at the project location due to the project being located within agricultural land-use. There are no known noxious weed infestations onsite.

Land use maps and pre-existing conditions/vegetation photo series and maps can be found in Appendix A.

## **Potential Sources of Pollution**

This section considers potential pollutant sources generated by the construction process.

### **Disturbed and Stored Soils**

The construction process will expose topsoil and sub-soils to wind and water erosion which can become pollutants to stormwater and waters of the state. The process of removing topsoil, cut and fill, grading and compaction operations will greatly decrease infiltration rates and increase runoff potential. Increased erosion and sediment movement by stormwater and wind will occur once existing vegetation is disturbed, especially along cut and fill slopes and large areas of disturbance.

Topsoil will be stockpiled onsite for later use in the reclamation process. Subsoils may also be stockpiled and stored depending on the cut and fill designs. Stockpiled soils are susceptible to erosion/sediment movement and can become a pollutant to stormwater and waters of the state. All stockpiled soils will be shown on the site-specific maps/diagrams along with appropriate BMPs.

When possible, existing vegetation will be preserved in place to minimize the disturbance footprint and prevent erosion using natural controls.

Stormwater runoff from all disturbed areas and soil storage areas for which permanent or temporary stabilization is not implemented, must flow to at least one control measure to minimize sediment in the discharge. This may be accomplished through filtering, settling, or straining. The control measure must be selected, designed, installed and adequately sized in accordance with good engineering, hydrologic and pollution control practices. The control measure(s) must contain or filter flows in order to prevent the bypass of flows without treatment and must be appropriate for stormwater runoff from disturbed areas and for the expected flow rate, duration, and flow conditions (i.e., sheet or concentrated flow).

The site-specific maps/diagrams in Appendix A and in future inspection reports show the areas of disturbance including cut and fill and soils stock piles, along with the BMPs implemented to manage stormwater.

### **Vehicle Tracking Controls**

Offsite sediment tracking by vehicles is a potential pollutant source to stormwater and waters of the state. To address offsite sediment tracking, access roads shall be properly built to specifications and surfaced with rock/road base. Also, the working area on pads will be surfaced with rock/road base to limit the potential for vehicles to track mud offsite.

The subject location's access road leads to a dirt/unpaved road (CR-36). If/where deemed necessary, vehicle tracking controls will be selected from PDC's BMP manual and installed to assist in removing mud from vehicles leaving the site if trackout to a paved road is deemed a material risk. Installation of rock track pads, or other similar portable tracking installations, will be determined on a case-by-case basis and documented in the site-specific records. Cattle guards may be installed along access roads alone, or in conjunction with, track pads, to assist in removing mud before vehicles enter roadways.

Staff and contractor training will also reduce the likelihood of offsite sediment tracking by limiting the areas of operations during muddy conditions. If offsite sediment tracking onto adjacent paved roads is identified during inspections, street sweeping will be implemented as necessary and where practicable.

### **Management of Contaminated Soils**

If contaminated soils are excavated at a PDC location, BMPs will be implemented to protect stormwater from contacting or becoming polluted by contaminated soils. Stockpiles of contaminated soil will be placed inside berms or containers, placed on a liner and/or removed from the site and disposed of as soon as practicable at a location certified to handle such material.

### **Loading & Unloading**

Loading and unloading operations of various materials can occur during any phase of construction, with the majority of events occurring during drilling and completions. Well drilling and completion surfactants, friction reducers, dilute hydrochloric acid, potassium chloride solutions, drilling mud, and other fluids/materials can be transported or unloaded directly into the well or to onsite tanks. Dry drilling mud components are contained in packaging and are stacked on pallets, which are unloaded using a forklift and stored in designated areas. Chemical loading and unloading will be conducted by onsite personnel and/or third-party contractors.

### **Outdoor Storage Activities**

Outdoor storage is a potential pollutant source primarily during drilling and completion phases. Chemicals used in drilling and completion phases are stored in designated material storage areas and in staging areas. Dry and liquid materials are typically stored in original containers until ready for use. Dry materials are kept wrapped, covered or otherwise protected from contact with stormwater. Liquid materials are kept in sealed impermeable containers including bottles, buckets, drums and tanks. Secondary containment will be implemented under/around dry and liquid materials.

Storage areas shall be kept clean and organized in order to reduce the risk of polluting stormwater and facilitating identification of leaks and spills.

Diesel fuel, propane, gasoline, oil, hydraulic fluids, and solvents may be stored onsite. Materials of these types will be properly labeled and stored in temporary enclosures or bermed containment areas to avoid contact with stormwater. Dry chemicals, including dry drilling mud and similar materials, may be stored onsite. These materials will be properly labeled and stored off the ground surface or on ground protection to avoid impact from adverse weather conditions. PDC personnel are trained in spill response procedures that are established in the field-wide SPCC plan. PDC also implements waste control measures when appropriate at its construction sites.

### **Vehicle & Equipment Maintenance and Fueling**

Routine vehicle and equipment maintenance and fueling operations shall be conducted offsite when possible. If required onsite, operations shall be conducted a safe distance from streams, wetlands, or other conveyances to waters of the state. All maintenance and fueling operations shall be continually

monitored by the personnel conducting the operations to prevent or minimize leaks or spills. Maintenance and fueling operations typically occur during the facility construction, drilling and completions phases.

If bulk storage tanks are stored on location, secondary containment will be installed according to the applicable SPCC regulations and the PDC field-wide SPCC plan.

### **Dust or Particulates**

Dust/particulates are a potential pollutant source generated by earthmoving equipment during facility construction, vehicular traffic on graveled access roads, and during high wind events at sites with un-stabilized soils. Dust/particulates potential as a pollutant increases during hot and dry times of the year. All dirt/gravel roads and areas of disturbed soil shall be watered as often as necessary to mitigate dust/particulates as a pollutant. The Construction Foreman (construction phase), Company Man (drilling/completion phases), or EHS personnel (production phase) shall be responsible for determining when onsite conditions warrant applying dust suppression BMPs.

Dust suppression is typically achieved by applying either freshwater or a magnesium chloride solution.

### **Routine Maintenance**

Maintenance involving fertilizers, pesticides, detergents, fuels, solvents, and oils may periodically be conducted on location. Maintenance associated with detergents, fuels, solvents and oils during each phase is possible, but predominantly occurs during the drilling and completions phases to support the drill rig and ancillary equipment.

There exists the potential for one-off applications of fertilizers and/or herbicides to a location primarily during the production phase. An example would be where reclamation success has not been achieved due to a soil limiting factor or where undesirable vegetation has become established.

Herbicides shall only be applied by trained personnel under the direct supervision of a licensed pesticide applicator.

Fertilizers will only be applied by experienced applicators. Fertilizers used for soil augmentation, hydro mulching, etc. will not be stored onsite and only brought onsite at the time of intended application. The amount of fertilizer brought onsite will vary by location and will be based on the application rate required and the size of the facility. Fertilizers will be stored in sealed containers, inside enclosed trailers or as otherwise protected to prevent contact with stormwater. Personnel applying the fertilizer will be responsible for monitoring leaks and spills. In the event of a leak or spill, applicator personnel shall notify EHS staff as soon as possible.

### **Onsite Waste Management Practices**

Non-hazardous wastes generated during each operational phase will be collected in appropriate receptacles and periodically transported to licensed disposal or recycling facilities. Storage receptacles shall be designed to prevent contact of stormwater to stored wastes. Storage receptacles shall be routinely emptied on a schedule deemed appropriate by the Construction Supervisor, Company Man, or EHS personnel depending on the phase.

In the event that hazardous wastes are generated, the storage, transport and disposal shall meet all applicable local, state and federal regulations.

Hazardous and non-hazardous wastes will only be disposed of offsite. The dumping, burying or littering of wastes on the location are strictly prohibited. Proper training and enforcement for staff and contractors will ensure compliance with this plan and the protection of waters of the state.

### **Non-Industrial Waste Sources**

The disposal of trash and litter on location or along the associated access roads is strictly prohibited except in designated receptacles. All trash and litter found on location or along access roads shall be cleaned up when found provided it is non-hazardous. Proper training of staff and contractors will mitigate the potential for trash and litter on locations.

Portable toilets and/or living facilities with sanitary waste systems will typically be onsite during the construction, drilling, and completions phases. Portable toilets may be stored at select locations throughout the field during the production phase. All portable toilets shall be staked, anchored or trailer mounted to prevent accidental tipping.

The routine cleaning and maintenance of these sanitary waste systems is handled by contractors on a schedule dictated by the volume of use.

## **Implementation of Control Measures**

### **Structural Practices for Erosion & Sediment Control**

Structural practices are those that require physical construction, installation, or manipulation. This includes structural features of a facility or access road designed to prevent erosion or control sediment movement. Structural erosion and sediment controls focus on two different processes although some of the BMP's can be applicable to both.

### **Erosion Control**

Erosion control is the preferred method for protecting stormwater quality from degradation by sediment. Erosion control focuses on preventing soil from moving from its original/current location. Successful implementation of erosion control BMPs can prevent the need for sediment control BMPs. Erosion control BMPs will be implemented at each phase of construction, with site specific circumstances driving the selection of BMP type and installation location.

Structural erosion controls include, but are not limited to, the following (\*indicates planned use at Trippett 3N66W3 1-48 Pad):

- Earthen dike/berm\*
- Ditch/drainage swale\*
- Check dam
- Culvert with armored inlet / outlet\*
- Surface roughening\*

- Erosion control blanket / rolled product
- Hydro mulch / seeding\*
- Mulching\*
- Rip-rap
- Surface armor\*
- Slope drain
- Slope grade / terracing
- Stream / water crossing
- Wind fence / walls

### **Sediment Control**

Sediment control BMPs are designed to retain sediment onsite and prevent degradation of stormwater quality. Sediment controls focus on settling or capturing suspended soil in stormwater before stormwater leaves the location. Sediment control BMPs will be implemented at each phase of construction, with site-specific circumstances driving the selection of BMP type and installation location.

Structural sediment control BMPs include, but are not limited to, the following (\*indicates planned use at Trippett 3N66W3 1-48 Pad):

- Check dam
- Surface roughening\*
- Sediment trap / basin\*
- Sediment log / sock / wattle / Ecoguard
- Silt fence / s-fence
- Vehicle tracking control

### **Non-Structural Practices for Erosion & Sediment Control**

Non-structural practices are those which are not physical, but instead consist of rules, practices, or procedures acquired through policy, planning, or training.

### **Erosion Control**

Non-structural erosion controls include, but are not limited to, the following (\*indicates planned use at Trippett 3N66W3 1-48 Pad):

- Minimize disturbance footprint\*
- Minimize soil compaction in reclaimed areas\*
- Preserving vegetation
- Protecting sensitive habitats
- Proper site selection\*
- Re-vegetation\*
- Wind erosion/dust control



## **Sediment Control**

Non-structural sediment controls include, but are not limited to, the following (\*indicates planned use at Trippett 3N66W3 1-48 Pad):

- Preserving vegetation
- Proper site selection\*
- Routine inspections\*
- Street sweeping
- Vegetative buffer

## **Good Housekeeping**

Good housekeeping practices must be implemented in order to prevent storm water contamination with solid and liquid wastes generated in the construction process. Good housekeeping practices include but are not limited to employee and contractor training, designating material storage/staging areas, having standard policies and procedures regarding materials handling and waste management, implementing spill prevention procedures, developing spill response and cleanup procedures, and having equipment and vehicle fueling and maintenance policies and procedures.

### *Training*

- Is key to ensuring all employees and contractors understand the importance of good housekeeping and the protection of storm water from pollutant sources
- Ensures all employees and contractors understand the requirements of the storm water plan and associated BMPs
- Ensures all employees and contractors are prepared to identify and respond to an uncontrolled pollutant source
- Facilitates discussion between the owner/construction manager and their employees and contractors

### *Material Handling and Storage/Staging*

- Retain all Safety Data Sheets (SDS) in an accessible location for all stored materials, chemicals, and hydrocarbons
- Do not remove original manufacturer labels
- Keep stored materials, chemicals, and hydrocarbons in original containers or properly designated containers
- Keep bagged and boxed materials on pallets or similar elevated storage area (do not place directly on ground)
- Provide appropriately sized secondary containment or storage containers for applicable materials, chemicals, and hydrocarbons
- Clearly designate delivery and storage areas
- Routinely inspect storage for damaged, leaking, or improperly stored materials, chemicals, or hydrocarbons
- Storage sheds/containers must be leak free
- Minimize storage of materials, chemicals, and hydrocarbons on location (limit to anticipated need in a timely manner)

- Keep well organized and leave adequate room between stored products to facilitate inspection, cleanup, or emergency response actions

#### *Waste Management*

- Provide designated containers for trash disposal and recycling (if applicable)
- Ensure all waste containers are covered to prevent storm water contact or wind movement
- Segregate wastes by type for proper disposal
- Ensure all employees and contractors working on location are routinely cleaning the construction site of trash
- Locate waste collection containers near waste sources or at the construction entrance
- Routinely empty waste containers to prevent overfilling

#### *Hazardous Materials and Waste*

- If applicable, designate hazardous waste collection area(s)
- Provide adequately sized secondary containment for all hazardous waste storage
- Properly label and handle all hazardous wastes
- Follow company specific waste management guidelines

#### *Sanitary and Septic Waste*

- Provide onsite toilet facilities while construction is ongoing
- Locate toilet facilities in convenient locations but away from waterways, wetlands, or other sensitive areas
- All portable toilets must be staked, tied, or otherwise secured to prevent tipping
- Routinely dispose of sanitary and septic waste in accordance with state or local regulations

#### *Equipment/Vehicle Fueling and Maintenance*

- Minimize the fueling and maintenance of equipment and vehicles on the construction site
- Only minor unscheduled maintenance should be conducted on location, provided it can be done while protecting storm water
- Routine and major maintenance should be conducted off location
- Keep spill kits/materials on location near on-site fueling and maintenance areas
- Routinely inspect vehicles and equipment for leaks
- All chemical and fuel transfer operations shall be continuously monitored to minimize the risk of spills
- Use absorbent pads, drip pans, or other fluid control measures when drips or spills are possible

#### *Equipment/Vehicle Washing*

- Minimize on-site vehicle and equipment washing
- Use off-site dedicated washing facilities when possible
- Keep wash water on location and treat with applicable BMPs
- Do not allow wash water to discharge off of the construction location

#### *Spill Prevention and Response Plan*

- Develop a written spill prevention and response plan (may incorporate SPCC plan(s))
- Identify employees and/or contractors responsible for spill prevention and response
- All employees and contractors shall adhere to company specific environmental, health, and safety plans, rules, and programs

- Prioritize employee, contractor, and public safety followed by stopping the source of a spill and containing on-site
- Keep an ample supply of spill cleanup materials and equipment near storage, loading/unloading, and refueling areas
- Adhere to all federal, state, and local rules and regulations for response, cleanup, reporting, and disposal

### **Other Considerations**

Other related BMPs or considerations that indirectly affect erosion and sediment control:

- Implement controls before, during, and after construction as necessary to manage stormwater
- Implement temporary stabilization where construction activities will stop for 14 days or more
- Maintain clearly defined construction boundaries
- Preservation of topsoil for reclamation is key to re-establishing vegetation during the production and abandonment phases
- Preconstruction site selection is important for minimizing the potential for erosion (level/gentle slopes)
- Restriction of livestock access to seeded/reclaimed areas until mature vegetation is established
- Run-on stormwater shall be avoided/mitigated through the use of BMPs including diversion ditches, berms, and dikes
- Slopes steeper than 3:1 on cut and fill areas shall be avoided or minimized where possible (in the event that a 3:1 slope is unavoidable, additional planning and BMPs may be required)

### **Preventative Maintenance**

Preventative maintenance of pipes, pumps, storage tanks, and stormwater management devices to ensure equipment and structures are in good condition and will not pollute stormwater. This includes replacing worn gaskets and valves before leaks occur and removing trash and residue from overflowing containers and receptacles.

### **Routine Inspections**

Routine inspections ensure equipment, machinery, vehicles, and storage tanks are not leaking. PDC employees and contract personnel perform routine visual inspections at all PDC locations.

## **Inspections**

### **Inspection Frequency**

Active Construction Inspections: site inspections shall start within 7 calendar days of the commencement of construction activities at a new site. Inspections will then be conducted either, at least every 7 calendar days, or, at least every 14 calendar days and after precipitation and melting-events that cause surface erosion.

Non-Cropland Sites – Inactive/30-Day Inspections: at sites that are not located in cropland (if seed/mulch was used in final stabilization), once all ground disturbing activities have been completed and the location has been pulled-back and has been seeded/mulched (or is awaiting seeding/mulch), and all final stabilization measures have been implemented, the inspection frequency will be reduced to the 30-day/inactive frequency. Inspections will proceed until the site has met CDPHE final stabilization criteria, at which point it will move into the COGCC post-construction stormwater program.

Post-Construction Locations: when a location moves into the COGCC post-construction stormwater program, the location will be assessed against the COGCC Tier 1 criteria to determine COGCC Tier 1 exemption applicability. If the location is not Tier 1-exempted, risk-based criteria will be used to determine post-construction stormwater inspection frequencies (annual, bi-annual, quarterly), which will be conducted until final reclamation, or until conditions change to allow a transition to being Tier 1-exempted.

### Inspection Scope

At a minimum, the following will be inspected for adequate protection of stormwater and compliance:

- Construction site perimeter
- All disturbed areas
- Designated haul routes
- Material and waste storage areas
- Discharge or potential discharge locations
- Vehicle access locations
- All BMPs

Inspection requirements:

- Visually verify whether all implemented control measures are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges.
- Determine if there are new potential sources of pollutants.
- Assess the adequacy of control measures at the site to identify areas requiring new or modified control measures to minimize pollutant discharges.
- Identify all areas of non-compliance with the permit requirements and, if necessary, implement corrective action(s) in accordance with the general permit (Part I.B.1.c.).

At a minimum, the following information is recorded with each inspection:

- Inspection date
- Names and titles of personnel conducting the inspection
  - Inspector needs to be a Qualified Stormwater Manager (see Section 6.5)
- Weather
- Phase of construction
- Estimate acreage of disturbance

- Location(s) and identification of control measures requiring routine maintenance
- Location(s) and identification of discharges of sediment or other pollutants from the site
- Location(s) and identification of inadequate control measures
- Location(s) and identification of additional control measures needed that were not in place at the time of inspection
- Description of corrective action(s) for previous three items above, dates corrective action(s) were completed, including requisite changes to the SWMP, as necessary
- Description of minimum inspection frequency
- Deviations from inspection schedule
- After adequate corrective action(s) and maintenance have been taken, or where a report does not identify any incidents requiring corrective action or maintenance, the report shall contain the following statement, to be signed by the Qualified Stormwater Manager (QSM):

*I verify that, to the best of my knowledge and belief, that if any corrective action items were identified during the inspection, those corrective actions are complete, and the site is currently in compliance with the permit.*

### Site Map

Site-specific maps/diagrams are generated for each facility and include the following information at a minimum:

- Construction site boundaries
- Flow arrows that depict stormwater flow directions onsite and runoff direction
- All areas of ground disturbance including cut and fill
- Areas used for storage of soil
- Locations of all waste accumulation
- Locations of dedicated asphalt, concrete batch plants (if applicable)
- Locations of all structural control measures
- Locations of all non-structural control measures
- Locations of springs, streams, wetlands, and other state waters, including areas that requires pre-existing vegetation to be maintained within 50 feet of a receiving water, where determined feasible
- Locations of all stream crossings located within the construction site boundary
- Locations where alternative temporary stabilization schedules apply

### Maintenance Procedures for BMPs

The operator is responsible for implementing control measures (inclusive of seeding/mulching and weed mitigation) and performing routine maintenance, as needed, to ensure BMPs are in effective operating condition. BMPs requiring maintenance are identified in inspection reports and are addressed in the field as soon as practicable.

### Training Requirements

The CDPHE general permit does not indicate any specific training or certifications required to manage a stormwater program/project or conduct inspections. The permit does, however, indicate that the person designated as responsible for implementing the SWMP, and the persons responsible for conducting

inspections, need to meet the definition of a Qualified Stormwater Manager (QSM). A QSM is defined as an individual knowledgeable in the principles and practices of erosion and sediment control and pollution prevention, and with the skills to assess conditions at construction sites that could impact stormwater quality and to assess the effectiveness of stormwater controls implemented to meet the requirements of the permit. The person responsible for implementing the SWMP at Trippett 3N66W3 1-48 Pad, and all stormwater inspectors are QSMs.

### **Reporting and Recordkeeping Requirements**

Copies of documentation required by the CDPHE general permit, including records of all data used to complete the application for permit coverage, must be retained for at least three years from the date that permit coverage expires or is terminated.

### **Summary of Best Management Practices (BMPs)**

The following is a list of minimization and mitigation BMPs related to PDC stormwater management plan and approach at the Trippett 3N66W3 1-48 Pad. COGCC clarified in a previous submission that this list should only include *physical* sediment or erosion control BMPs that will be employed on location (no non-structural BMPs or non-physical practices, etc.).

- Culvert – Culverts are typically constructed of concrete, steel, aluminum, or plastic pipe and are used to direct stream flow or ditch water under a road or construction area. Culvert will be utilized at the Trippett along the perimeter ditch under the access road at the entrance to the pad.
- Culvert protection – Culvert protection may be required at the inlet (upstream side) of the culvert and/or the outlet (downstream side) of the culvert. Protection helps to reduce erosion from culverts with concentrated, high velocity flows. Culvert protection will be utilized at culvert at the Trippett at the entrance to the site.
- Ditch/drainage swale – a ditch or drainage swale is a drainage with a parabolic, trapezoidal, or V-shaped cross-section and may include a dike/berm on the lower side that is constructed across the slope. The purpose of a ditch is to prevent off-site storm water runoff (run-on) from entering a disturbed area, to prevent sediment laden storm runoff from leaving the construction site or disturbed area, to prevent flows from eroding slopes, and to direct sediment laden flows to a trapping device. Ditches will be utilized at the Trippett in conjunction with berms as perimeter control around the disturbance.
- Earth dike/berm: an earth dike (berm) is a temporary or permanent ridge of compacted soil located at the top or base of a sloping disturbed area to intercept and divert surface runoff away from areas not yet stabilized. It can also be installed around a pollutant source to prevent storm water and pollutants from leaving the location. Berms will typically be constructed from compactable subsoils which are sufficiently impermeable to retain water. Berms may be combined with lined or unlined drainage swales/ditches to divert storm water to additional sediment control BMPs prior to discharge from a site. Berms will be utilized at the Trippett in conjunction with ditches as perimeter control around the disturbance.
- Mulching – mulching is a temporary erosion control used to stabilize exposed soils while waiting for vegetation to establish. Mulch protects soils from rain impacts and wind erosion, increases

infiltration, and helps regulate soil temperatures. Typically, agricultural straw or hay is mechanically applied and crimped in or wood splinters/fibers are surface applied by hand or machinery. Tackifiers may be sprayed over the applied mulch to enhance stabilization. Mulching will be utilized in conjunction with seeding at the Trippett during interim reclamation on all reclaimed areas that cannot be feasibly returned to farmland.

- Sediment trap/basin – sediment traps/basins are temporary sediment control BMPs constructed by excavating a depression or by placing an earthen berm across a low area or drainage swale. Sediment traps/basins slow and temporarily detain sediment laden runoff. The reduction in velocity (energy) allows sediment to fall out of suspension and collect in the sediment trap before the runoff is discharged into a stabilized area or offsite. The SWMP plans for the Trippett pad include engineered schematics for detention areas with outlets and spillways, to be located in the north and northeast areas of the pad. Conceptually, these retention areas are similar to traditional sediment traps or basins and perform the same function.
- Seeding – seeding, to establish perennial vegetative cover following construction, is the best long term stabilization control for areas not stabilized with other permanent controls (pavement, concrete, road base, or returned to agricultural-use, etc.). Establishing perennial vegetation stabilizes the soil, reduces wind and water erosion, minimizes sheet flow, increases infiltration, and reduces overall runoff volumes. Seeding can be used to establish temporary stabilization when dirt moving activities have ceased and will not resume for an extended period of time, or as a final stabilization technique as part of the reclamation plan for a site. Seed application at the Trippett location will be performed using a disc seed drill equipped with depth bands, capable of direct seed placement no deeper than ¼ to ¾ inches, and functioning packer wheels with row spacing not exceeding 8 inches to adequately cover and stabilize the seed. All areas being reclaimed during interim reclamation will be seeded at the Trippett.
- Seed mix – the seed mix selected for the Trippett interim reclamation is 20% Dahurian wildrye, 20% wildrye Amazon, 15% smooth brome, 15% pubescent wheatgrass, 15% intermediate wheatgrass and 15% orchard grass. PDC estimates application rate should be 40 pounds per acre.
- Surface armor – surface armor is a combination of various materials (e.g., clay, concrete, dirt, rock, etc.) used to stabilize a surface on location where erosion could occur. The armor reduces erosion caused by runoff and/or raindrop impact, and provides a stable working surface for various construction related activities. Surface armor is often utilized throughout the life of a location and can be incorporated on access roads, tank battery locations, and well head locations. Surface armor will be utilized on the working pad surface at the Trippett.

## **Appendix A – Stormwater Management Plan Maps**

- Initial Construction SWMP Overview Map
- Construction Layout Drawings
  - Initial Construction
  - Interim Reclamation
- Soils/Erosion Maps
- Pre-Disturbance Land Use Map
- Pre-Disturbance Vegetation Identification/Analysis and Photo Series





## Stormwater Management Plan Overview Map

Trippett 3N66W3 1-48 Pad



0 1,550 3,100  
Feet

Scale: 1:14,140

Prepared by:

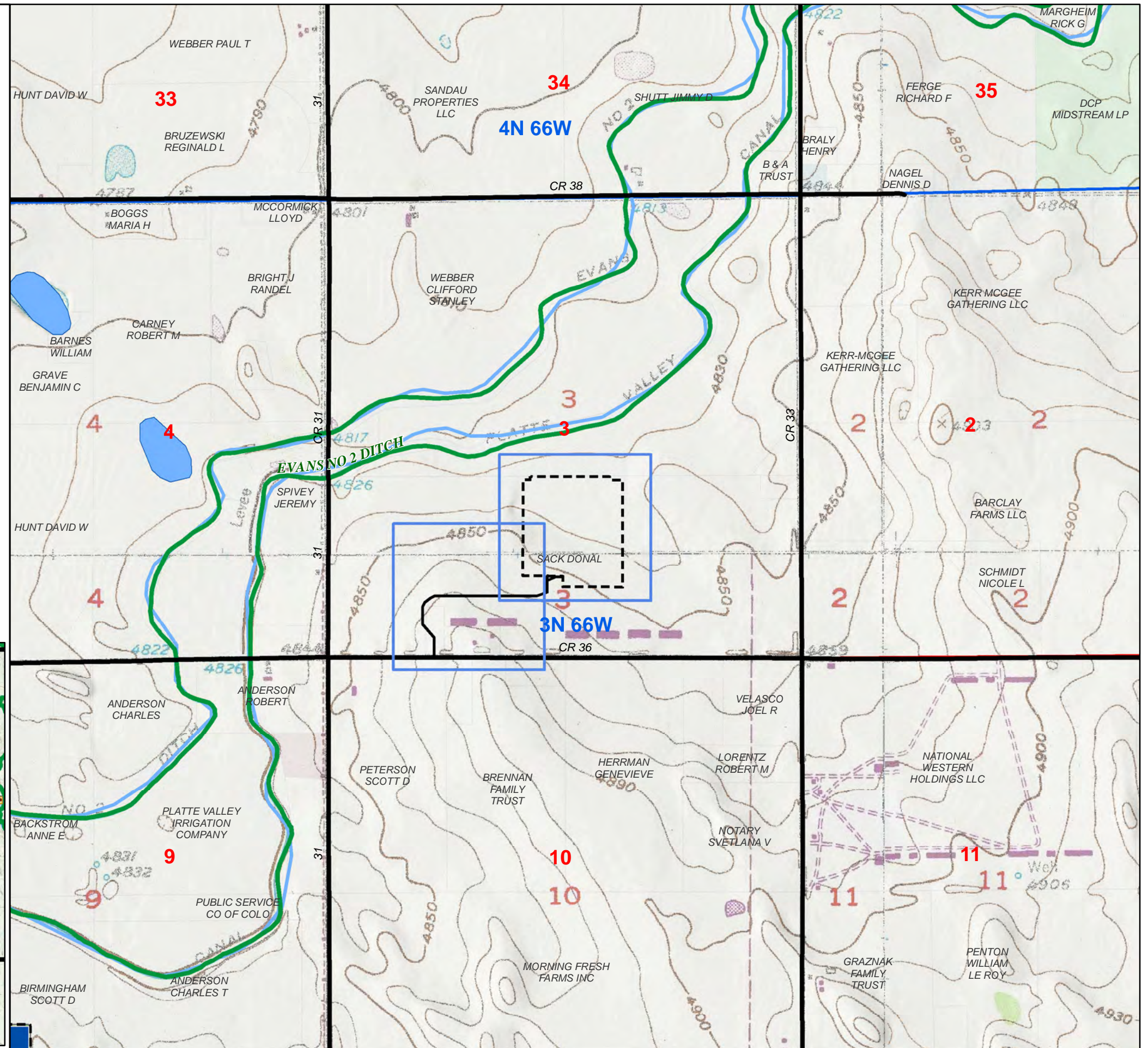
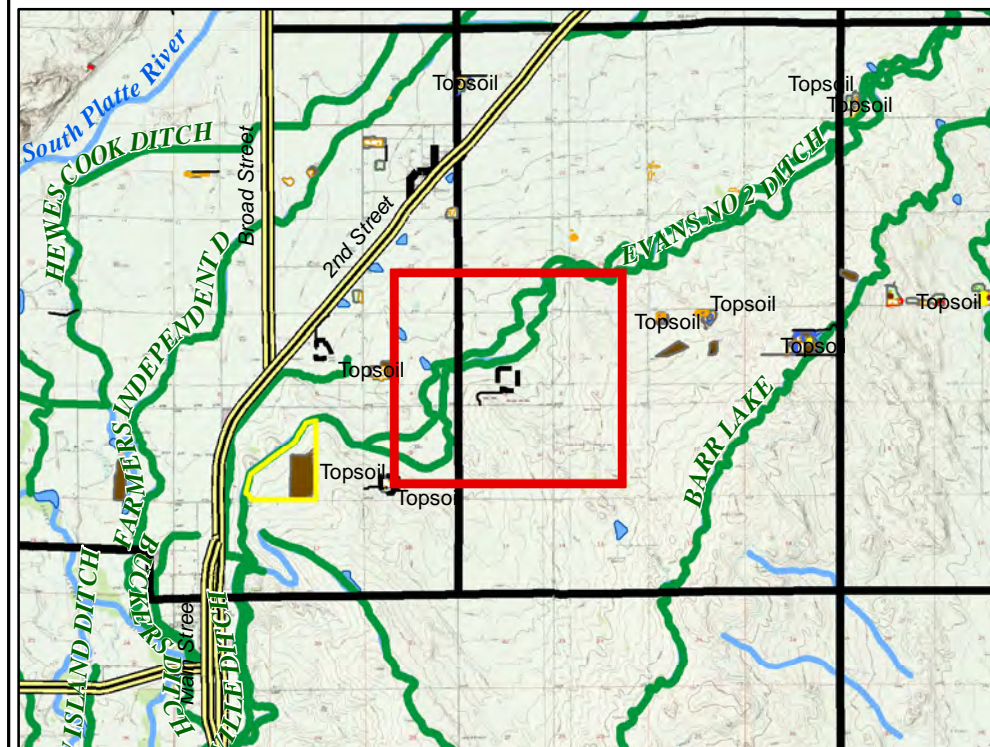


Editor: nwilson

Date: 7/11/2022

File: PDC\_PreConstr\_Overview\_V2

- |  |                       |  |                        |
|--|-----------------------|--|------------------------|
|  | Construction Boundary |  | County/Local Road      |
|  | Disturbance           |  | Sections               |
|  | MLVT                  |  | twnsnp                 |
|  | Reclaimed             |  | Canal/Irrigation Ditch |
|  | Road - Access Road    |  | Waterbody              |
|  | Highway               |  | Waterway               |
|  | Major Roads           |  |                        |

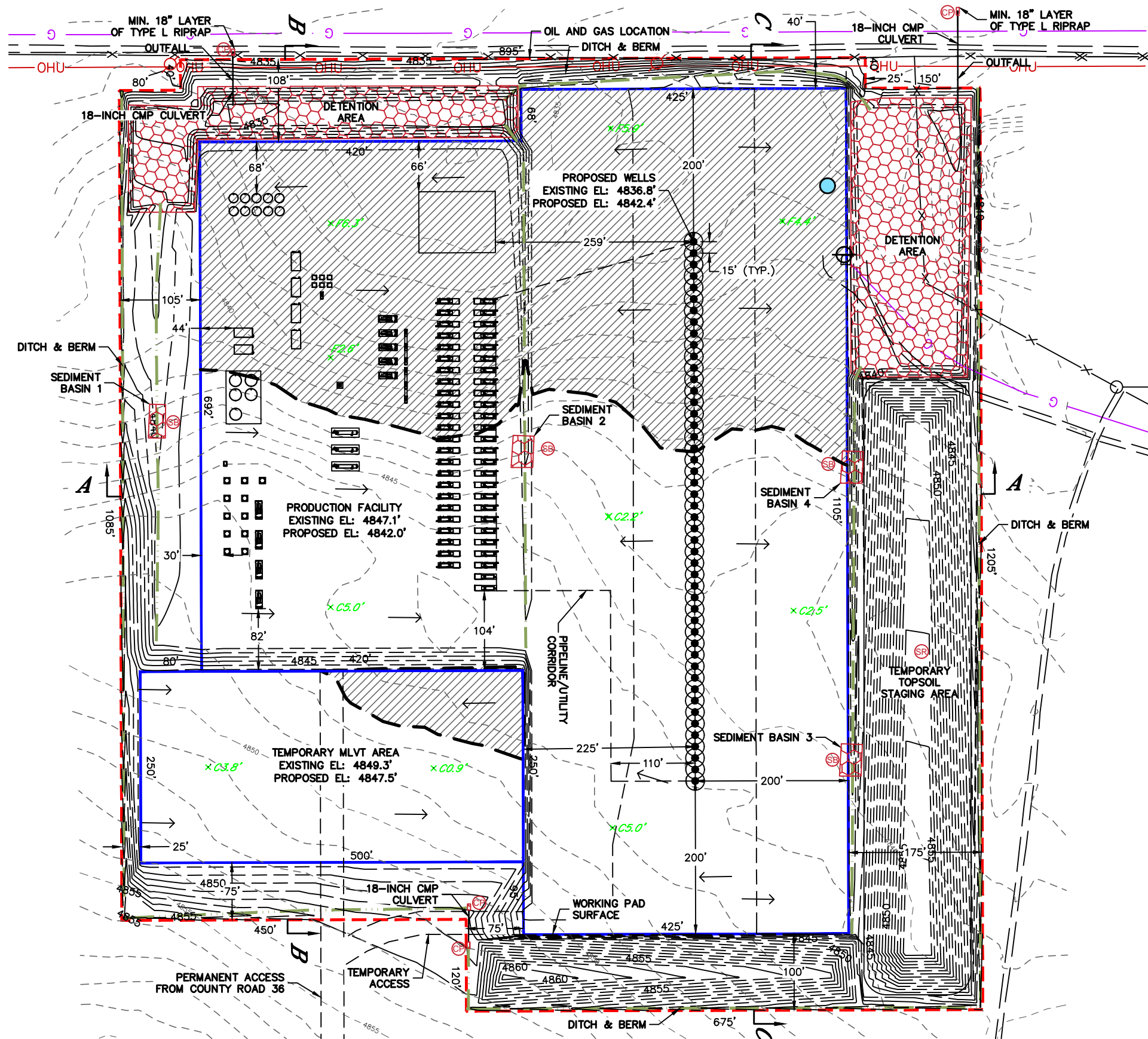






Lat40°, Inc. 6250 W. 10th Street, Unit 2, Greeley, CO 970-515-5294  
**CONSTRUCTION LAYOUT DRAWINGS - PLAN VIEW**  
TRIPPETT 3N66W3 1-48 PAD  
PDC ENERGY

Q: E2SW4, W2SE4  
SECTION: 3  
TOWNSHIP: 3N  
RANGE: 66W  
6TH. P.M.  
WELD COUNTY, CO



**CUT VOLUME: 54,370 CY**  
**FILL VOLUME: 54,300 CY**  
**EXPORT VOLUME: 70 CY**  
**TOPSOIL (10") VOLUME: 41,290 CY**  
**GRAVEL (6") IMPORT: 16,400 CY**

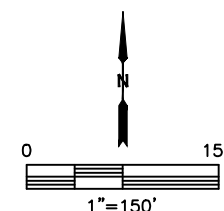
**SEE PROPOSED GRADING PLAN FOR ADDITIONAL  
INFORMATION AS PREPARED BY OTHERS**

**OIL AND GAS LOCATION: ±30.7 ACRES**  
**WORKING PAD SURFACE: ±20.3 ACRES**  
**PERMANENT ACCESS ROAD: ±1.9 ACRES**  
**TEMPORARY ACCESS ROAD: ±0.2 ACRES**  
**PIPELINE/UTILITY CORRIDOR: ±3.1 ACRES**

LEGEND

- WORKING PAD SURFACE
- OIL AND GAS LOCATION
- FILL
- INSTALL SEDIMENT BASIN
- DITCH & BERM
- EXISTING CONTOUR - 1' INTERVAL
- PROPOSED CONTOUR - 1' INTERVAL
- CUT/FILL LINE
- SURFACE ROUGHENING
- INSTALL CULVERT PROTECTION
- INSTALL CULVERT
- FLOW ARROW
- INSTALL EROSION CONTROL BLANKET
- PROPOSED CUT/FILL DEPTH

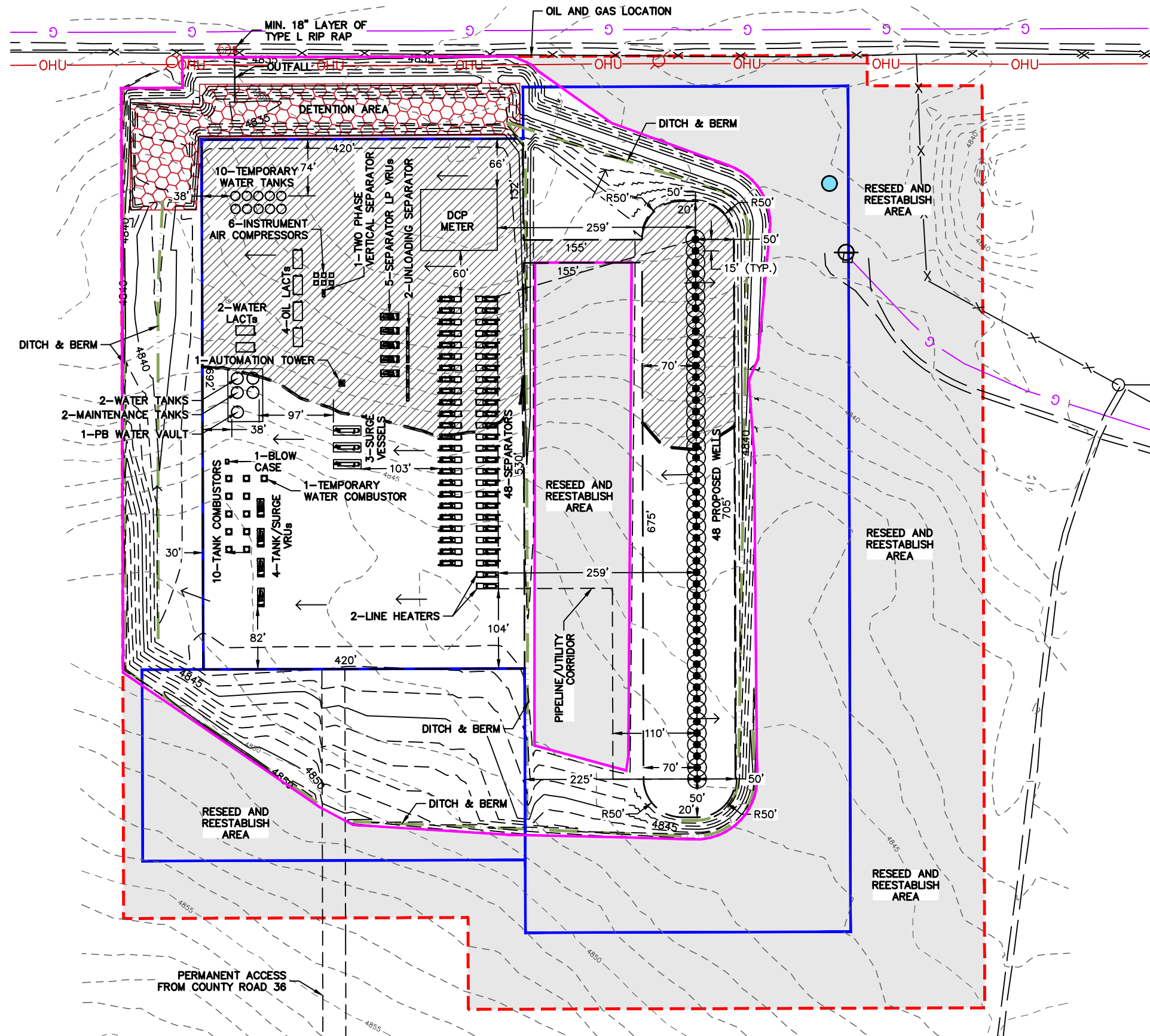
- NOTE:
1. Ground elevations are based on an observed GPS elevation (NAVD 1988 DATUM).
  2. No offsite flowlines proposed.
  3. Third party custody transfer occurs at LACT for oil.
  4. Third Party custody transfer occurs at meter for gas.



# OIL AND GAS FACILITIES LAYOUT DRAWING

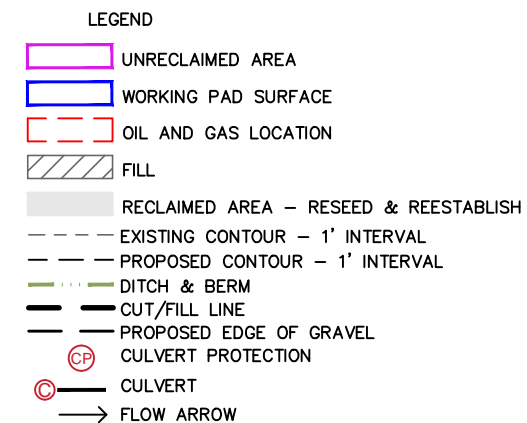
TRIPPETT 3N66W3 1-48 PAD  
PDC ENERGY

Q: E2SW4, W2SE4  
SECTION: 3  
TOWNSHIP: 3N  
RANGE: 66W  
6TH. P.M.  
WELD COUNTY, CO

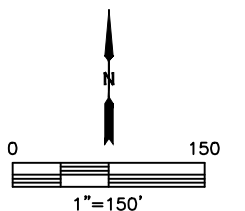


SEE PROPOSED GRADING PLAN FOR ADDITIONAL  
INFORMATION AS PREPARED BY OTHERS

OIL AND GAS LOCATION: ±30.7 ACRES  
RECLAIMED AREA: ±14.7 ACRES  
UNRECLAIMED AREA: ±16.0 ACRES



NOTE:  
1. Ground elevations are based on an observed GPS elevation (NAVD 1988 DATUM).  
2. All equipment is PROPOSED unless otherwise noted.

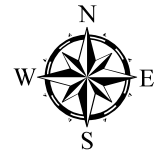






## Stormwater Management Plan Soils Map

Trippett 3N66W3 1-48 Pad



Date: 7/11/2022  
0 0.2 0.4  
Miles  
1:12,000



Prepared by:

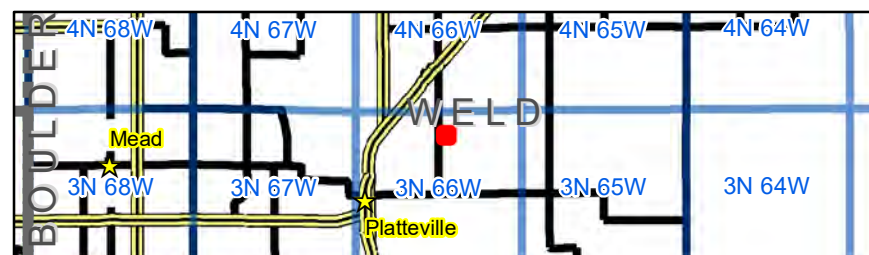
### Map Unit Name:

### Map Unit Name

- Loup-Boel loamy sands, 0 to 3 percent slopes | 95214
- Olney loamy sand, 1 to 3 percent slopes | 95224
- Olney loamy sand, 3 to 5 percent slopes | 95225
- Valent sand, 0 to 3 percent slopes | 95251
- Valent sand, 3 to 9 percent slopes | 95253
- Vona loamy sand, 0 to 3 percent slopes | 95255
- Vona loamy sand, 3 to 5 percent slopes | 95256
- Vona sandy loam, 1 to 3 percent slopes | 95259

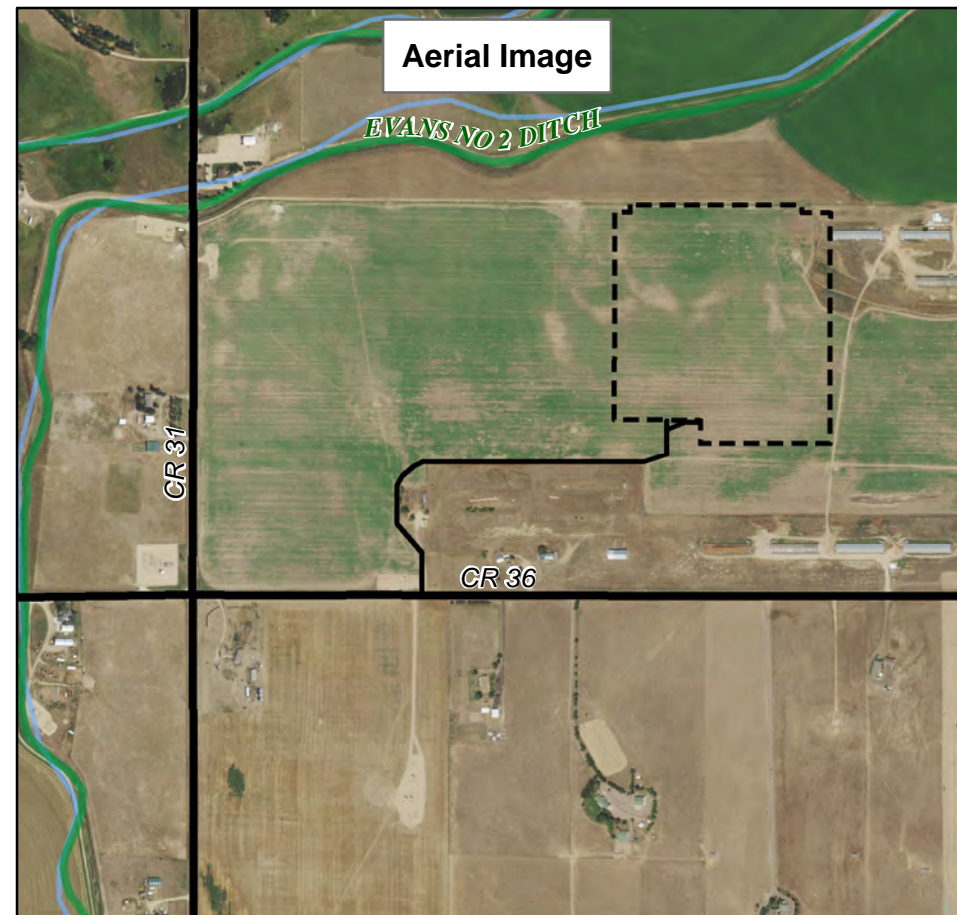
### K Factor Value Groupings (Approximate):

- Low susceptibility to erosion/runoff:  $\leq 0.2$
- Moderate susceptibility to erosion/runoff:  $> 0.2 - 0.4$
- High susceptibility to erosion/runoff:  $> 0.4$

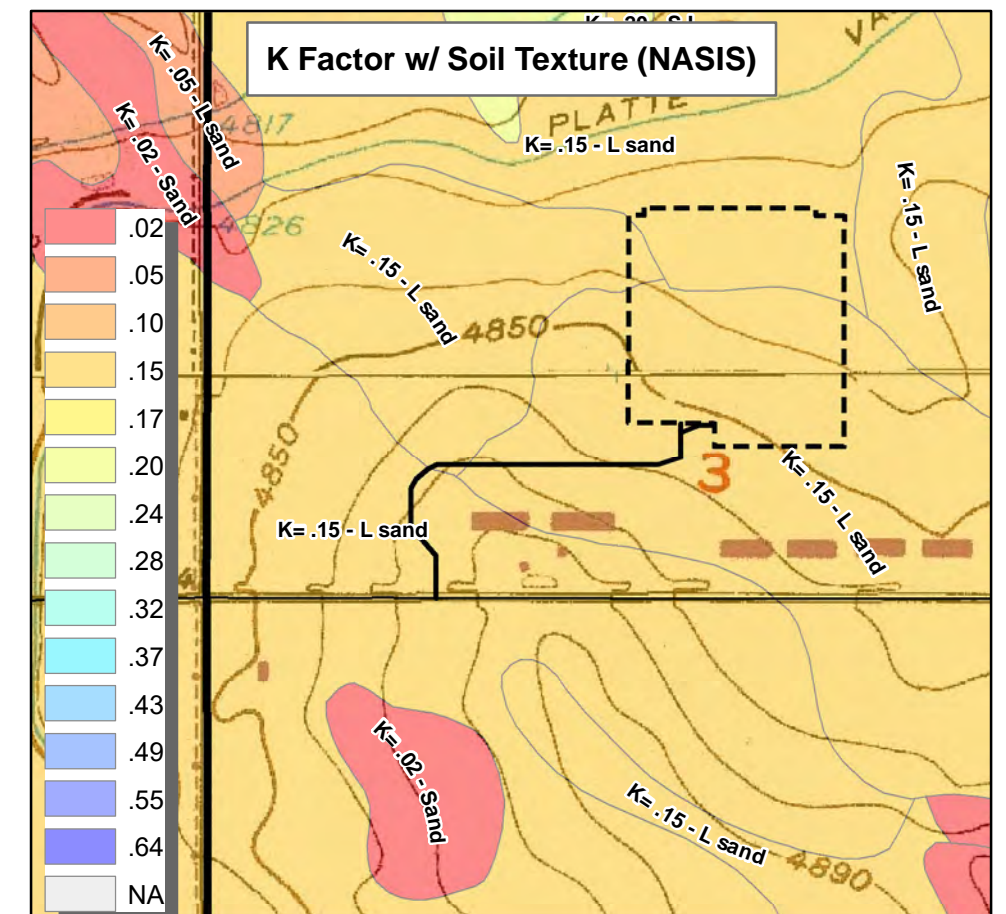
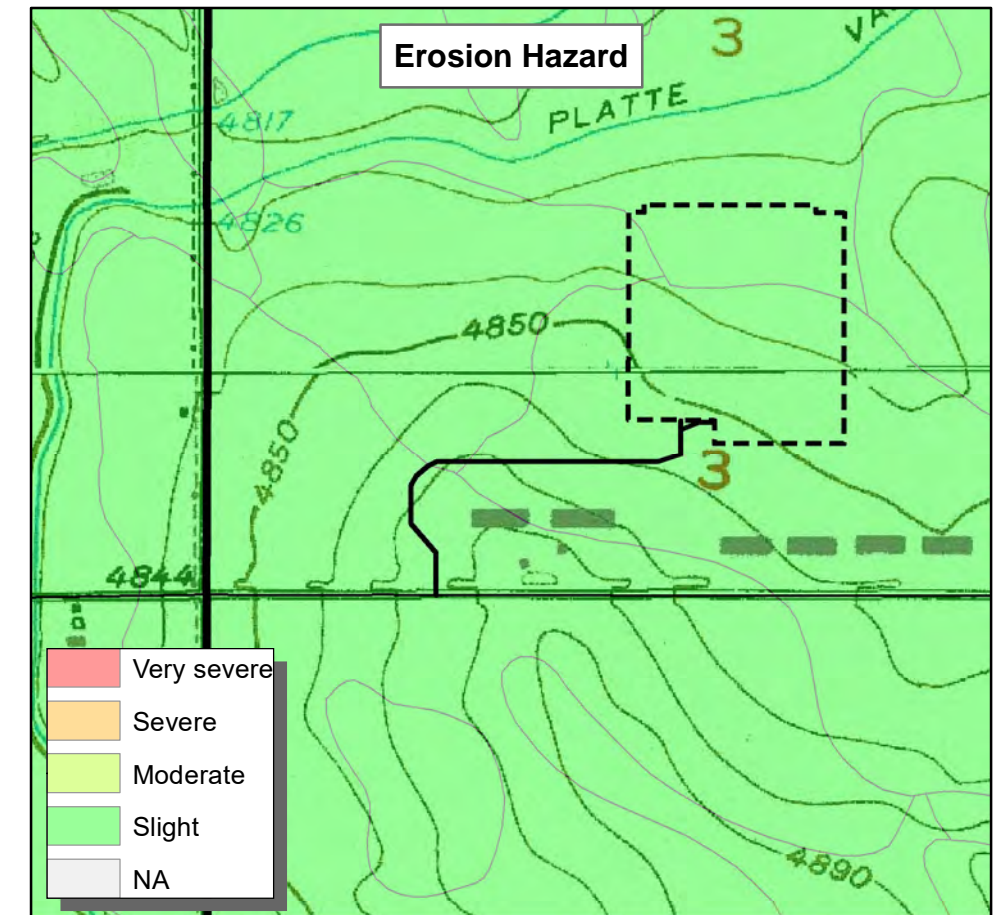
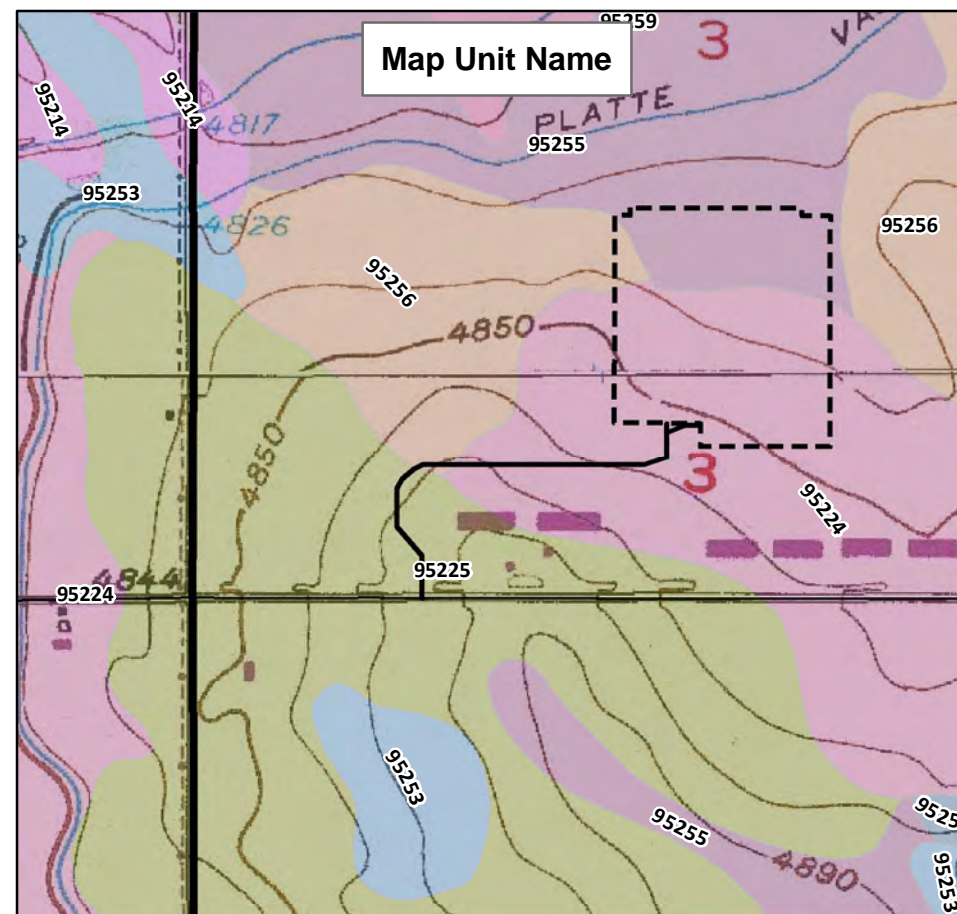


Document Name: PDC\_Soils\_V8

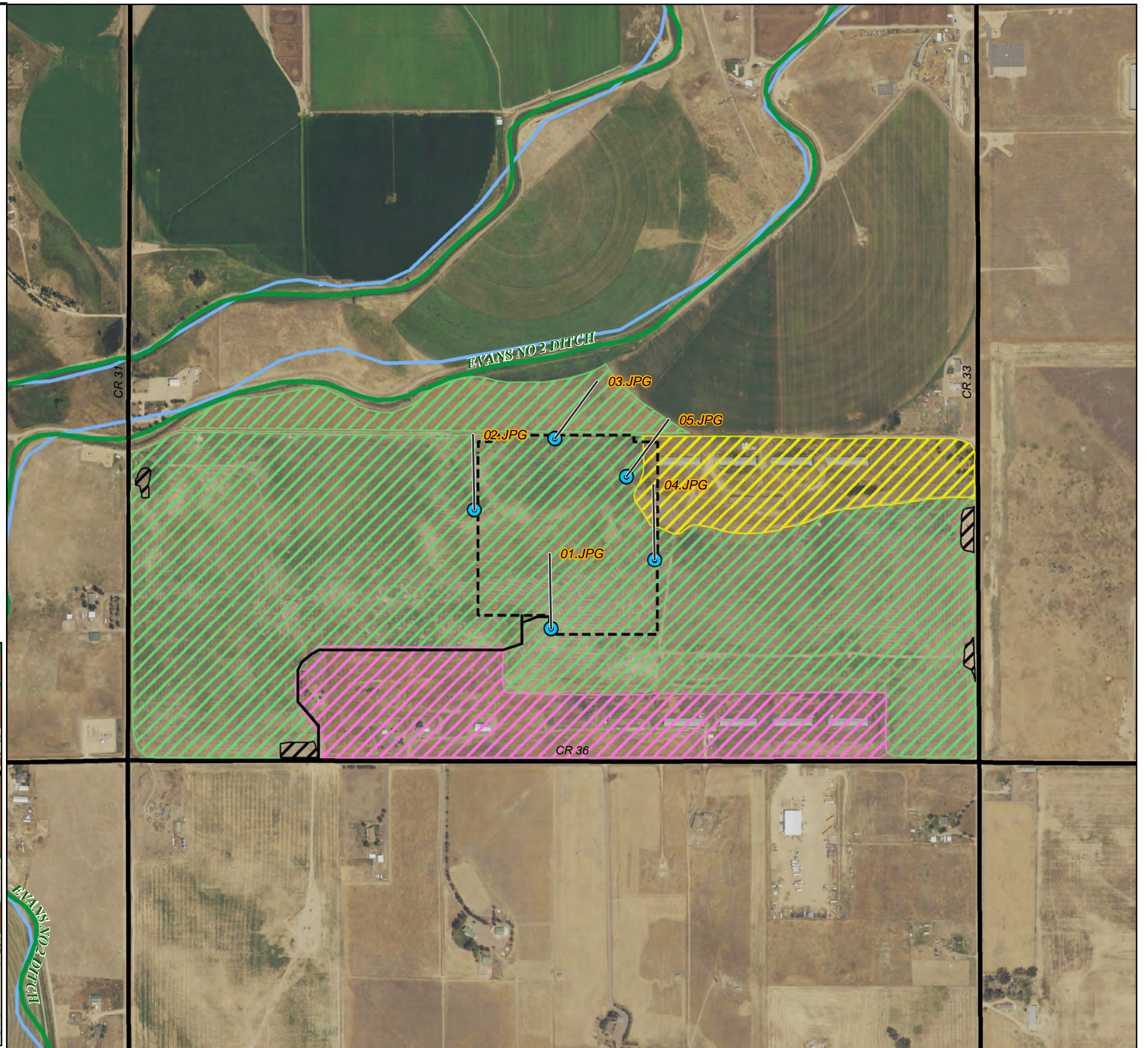
User Name: nwilson



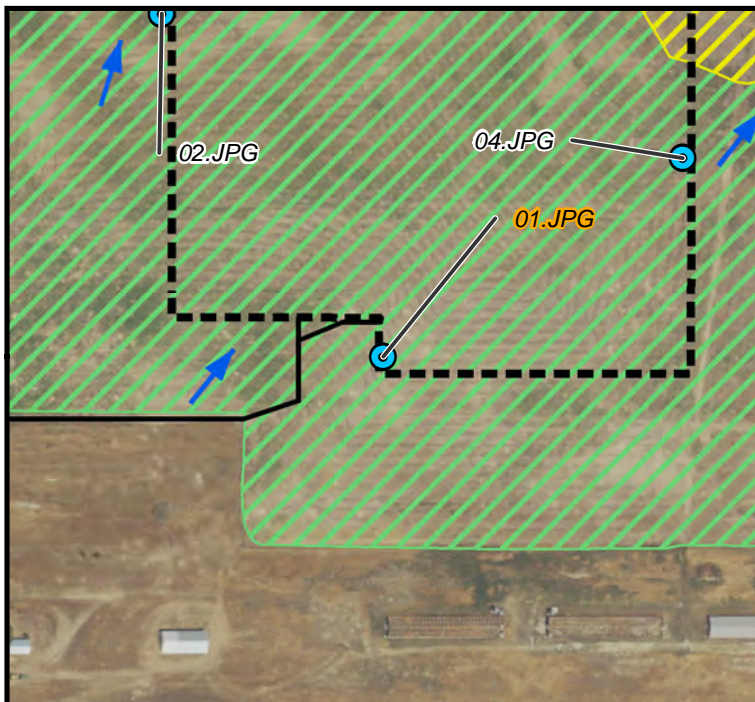
All data is from the NRCS soil surveys and is useful for overview purposes only. Onsite verifications are required to confirm accuracy when used for planning.











## Stormwater Management Plan Map

Trippett 3N66W3 1-48 Pad

01.JPG

D\_WGS\_1984: 40.249030 -104.763400



Photo Point



Flow



Access Road



Construction Boundary



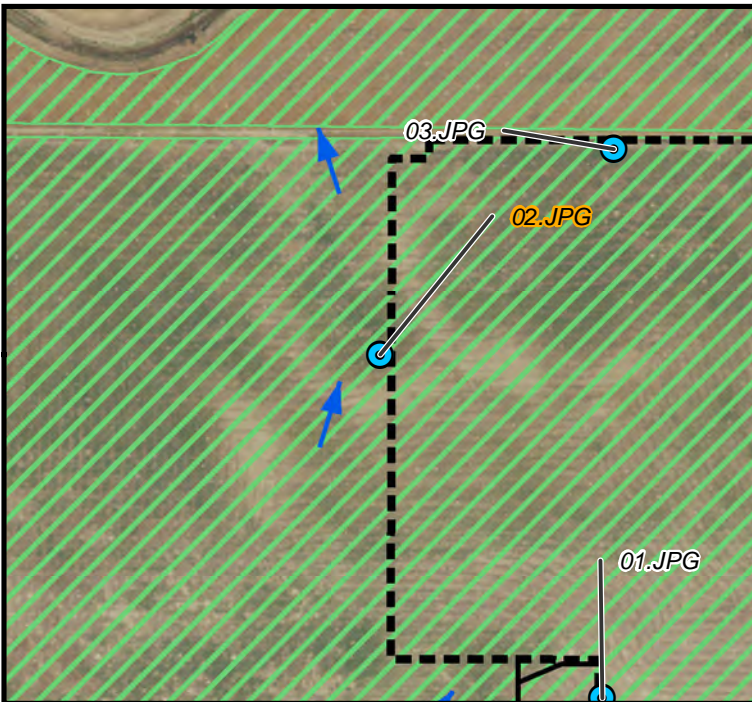
Cropland



Disturbed Grassland

Photo taken facing north at the southern edge of the proposed construction facility across the dormant/developing agriculture field. In this photo, a large bare patch can be seen, which is the only bare patch across the proposed disturbance.






## Stormwater Management Plan Map

Trippett 3N66W3 1-48 Pad


02.JPG

D\_WGS\_1984: 40.251080 -104.765200

 Photo Point

 Flow

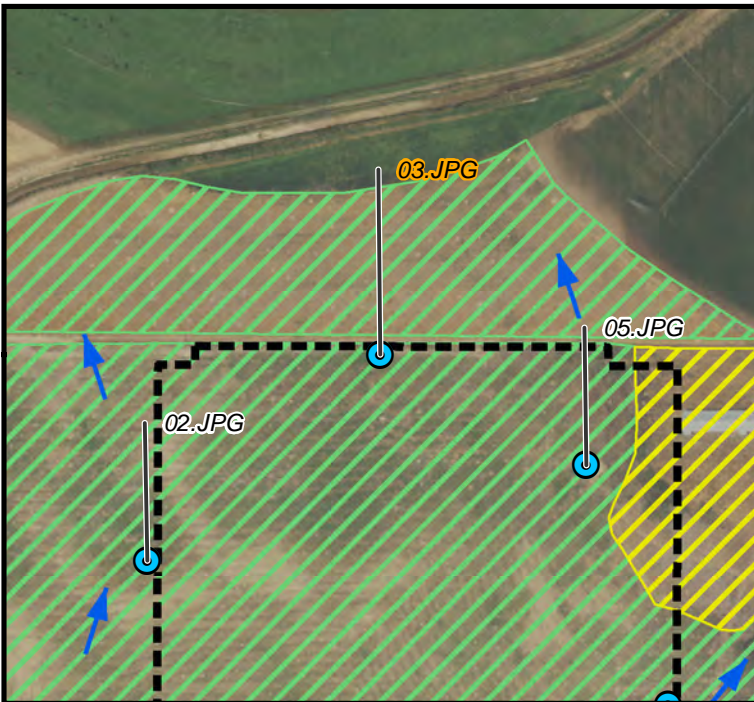
 Access Road

 Construction Boundary

 Cropland

Photo taken facing east across the dormant/developing ag field at the western edge of the future construction boundary.





## Stormwater Management Plan Map

Trippett 3N66W3 1-48 Pad

03.JPG

D\_WGS\_1984: 40.252300 -104.763300

● Photo Point

→ Flow

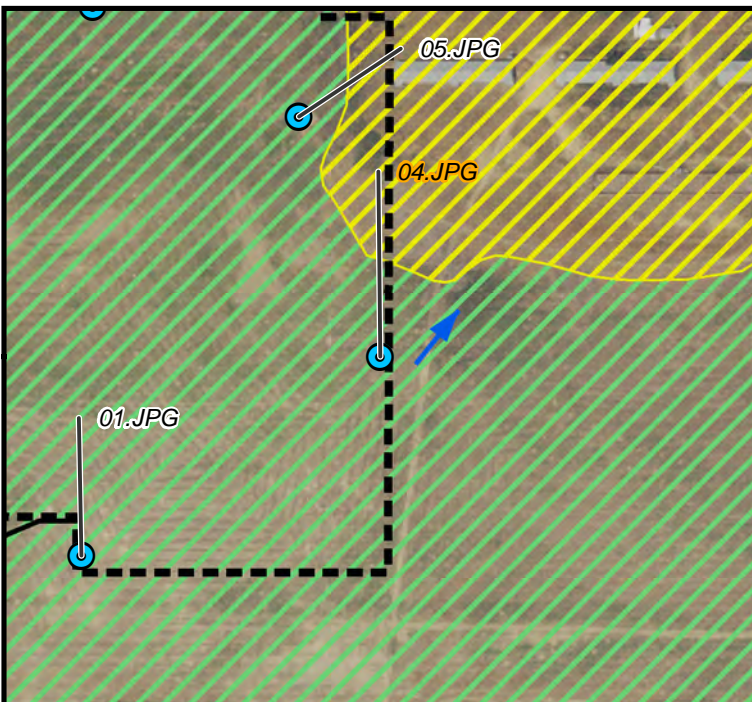
--- Construction Boundary

▨ Cropland

▨ Disturbed Grassland

Photo taken facing south across the dormant/developing ag field at the northern perimeter of the proposed facility.





## Stormwater Management Plan Map

Trippett 3N66W3 1-48 Pad

04.JPG

D\_WGS\_1984: 40.250210 -104.761100

● Photo Point

→ Flow

— Access Road

--- Construction Boundary

▨ Cropland

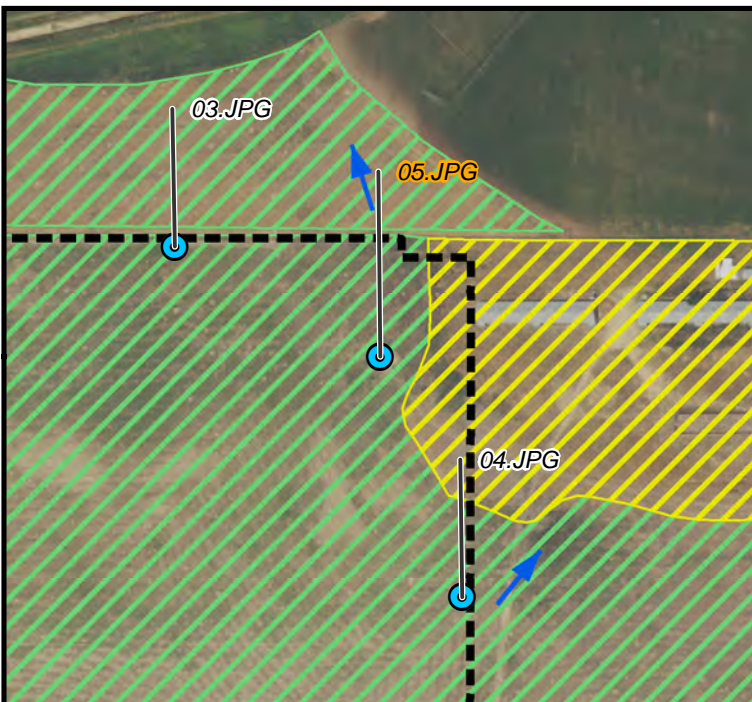
▨ Disturbed Grassland

Photo taken facing west across the dormant/developing ag field at the eastern edge of the future construction boundary.





04.28.2022



## Stormwater Management Plan Map

Trippett 3N66W3 1-48 Pad

05.JPG

D\_WGS\_1984: 40.251640 -104.761700



Photo Point



Flow



Construction Boundary



Cropland



Disturbed Grassland

Photo taken facing west towards the project high point near the northeastern corner of the future facility.

## **Appendix B – Soils Reports**

## Weld County, Colorado, Southern Part

### 44—Olney loamy sand, 1 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 362r

*Elevation:* 4,600 to 5,200 feet

*Mean annual precipitation:* 11 to 15 inches

*Mean annual air temperature:* 46 to 54 degrees F

*Frost-free period:* 125 to 175 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Olney and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Olney

##### Setting

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Mixed deposit outwash

##### Typical profile

*H1 - 0 to 10 inches:* loamy sand

*H2 - 10 to 20 inches:* sandy clay loam

*H3 - 20 to 25 inches:* sandy clay loam

*H4 - 25 to 60 inches:* fine sandy loam

##### Properties and qualities

*Slope:* 1 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water*

*(Ksat):* Moderately high to high (0.60 to 2.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Moderate (about 6.5 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 4c

*Hydrologic Soil Group:* B

*Ecological site:* R067BY024CO - Sandy Plains

*Hydric soil rating:* No

#### **Minor Components**

##### **Vona**

*Percent of map unit:* 8 percent

*Hydric soil rating:* No

##### **Zigweid**

*Percent of map unit:* 7 percent

*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Weld County, Colorado, Southern Part

Survey Area Data: Version 20, Aug 31, 2021

## Weld County, Colorado, Southern Part

### 72—Vona loamy sand, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 363r

*Elevation:* 4,600 to 5,200 feet

*Mean annual precipitation:* 13 to 15 inches

*Mean annual air temperature:* 48 to 55 degrees F

*Frost-free period:* 130 to 160 days

*Farmland classification:* Farmland of local importance

#### Map Unit Composition

*Vona and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Vona

##### Setting

*Landform:* Terraces, plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium and/or eolian deposits

##### Typical profile

*H1 - 0 to 6 inches:* loamy sand

*H2 - 6 to 28 inches:* fine sandy loam

*H3 - 28 to 60 inches:* sandy loam

##### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High  
(1.98 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 15 percent

*Maximum salinity:* Nonsaline to slightly saline (0.0 to 4.0  
mmhos/cm)

*Available water supply, 0 to 60 inches:* Moderate (about 6.5  
inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* A

*Ecological site:* R067BY024CO - Sandy Plains

*Hydric soil rating:* No

**Minor Components**

**Remmit**

*Percent of map unit:* 10 percent

*Hydric soil rating:* No

**Valent**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

**Data Source Information**

Soil Survey Area: Weld County, Colorado, Southern Part

Survey Area Data: Version 20, Aug 31, 2021



## Weld County, Colorado, Southern Part

### 73—Vona loamy sand, 3 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2x0j8

*Elevation:* 4,100 to 5,200 feet

*Mean annual precipitation:* 12 to 17 inches

*Mean annual air temperature:* 46 to 52 degrees F

*Frost-free period:* 130 to 155 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Vona and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Vona

##### Setting

*Landform:* Hills, hillslopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Convex, linear

*Parent material:* Eolian sands

##### Typical profile

*A - 0 to 7 inches:* loamy sand

*Bt1 - 7 to 14 inches:* sandy loam

*Bt2 - 14 to 20 inches:* sandy loam

*Bk - 20 to 45 inches:* sandy loam

*C - 45 to 80 inches:* loamy sand

##### Properties and qualities

*Slope:* 3 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* High  
(2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 10 percent

*Maximum salinity:* Nonsaline (0.1 to 1.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Moderate (about 6.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3e



*Land capability classification (nonirrigated): 4s*  
*Hydrologic Soil Group: A*  
*Ecological site: R067BY015CO - Deep Sand*  
*Hydric soil rating: No*

### Minor Components

#### Ascalon

*Percent of map unit: 5 percent*  
*Landform: Interfluves*  
*Landform position (three-dimensional): Interfluve*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Ecological site: R067BY024CO - Sandy Plains*  
*Hydric soil rating: No*

#### Manter

*Percent of map unit: 5 percent*  
*Landform: Hills, interfluves*  
*Landform position (two-dimensional): Backslope*  
*Landform position (three-dimensional): Side slope, interfluve*  
*Down-slope shape: Convex, linear*  
*Across-slope shape: Convex, linear*  
*Ecological site: R067BY024CO - Sandy Plains*  
*Hydric soil rating: No*

#### Olneest

*Percent of map unit: 3 percent*  
*Landform: Interfluves, hills*  
*Landform position (two-dimensional): Footslope, toeslope*  
*Landform position (three-dimensional): Interfluve, base slope*  
*Down-slope shape: Linear, concave*  
*Across-slope shape: Linear, concave*  
*Ecological site: R067BY024CO - Sandy Plains*  
*Hydric soil rating: No*

#### Valent

*Percent of map unit: 2 percent*  
*Landform: Dunes*  
*Landform position (two-dimensional): Summit, shoulder, backslope*  
*Landform position (three-dimensional): Nose slope, side slope, crest*  
*Down-slope shape: Convex, linear*  
*Across-slope shape: Convex, linear*  
*Ecological site: R067BY015CO - Deep Sand*  
*Hydric soil rating: No*

## Data Source Information

Soil Survey Area: Weld County, Colorado, Southern Part  
Survey Area Data: Version 20, Aug 31, 2021