



STORMWATER MANAGEMENT PLAN

FOR

Bigfoot 11

Prepared For:



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1. INTRODUCTION

The intent of this plan is to provide site-specific guidance and recommended best management practices (BMPs) to ensure erosion and sediment control during the construction and interim reclamation of Confluence's proposed Bigfoot 11 location. Confluence, the operator, has developed this plan to comply with Federal, State and local criteria and guidelines as they relate to stormwater management.

2. SITE DESCRIPTION

The Bigfoot 11 Well Pad will be located entirely on fee surface. During construction and active operations, the total area of disturbance will be approximately 17.7 acres, with a working pad surface of 11.2 acres. The post-drilling and completion area is estimated to be roughly 6.9 acres upon conclusion of interim reclamation activities. The Bigfoot 11 Well Pad is scheduled to be constructed upon permit approval and no sooner than March 2022. Drilling, completion, flowback and initial production operation activities are scheduled to occur sequentially for the remainder of the year with interim reclamation of site expected no later than the second quarter of 2023. This location is not located within any High Priority Habitats.

3. LAND USE, TOPOGRAPHY, AND NATURAL FEATURES

The topography on site is undulating and grades are in the 1-8% range. The land use in the area is rangeland. The nearest surface water is an unnamed ditch approximately 0.7 miles north of the project area. See Appendix A for NRCS Soils data.

4. FIELD-WIDE STORMWATER MANAGEMENT PLAN

An approved field-wide stormwater management plan (SWMP) for Confluence is in place and is referenced throughout this plan. All personnel, including applicable contractors, shall comply with the contents of the SWMP plan.

5. QUALIFIED STORMWATER MANAGER

The Qualified Stormwater Manager is responsible for developing, implementing, maintaining, and revising the SWMP. The Qualified Stormwater Manager has the authority to dedicate the financial and human resources to implement the SWMP. The Qualified Stormwater Managers for Confluence are:

Trent Watne (Olsson)
Katy Sprouse (Olsson)

The Qualified Stormwater Manager will ensure that the SWMP is followed and delegates responsibility for coordination of the SMWP inspections and maintenance of stormwater records. Third party contractors will support the Qualified Stormwater Manager in managing the SWMP. Third party contractors are responsible for:

- Implementing spill/upset cleanup procedures;

- Notification to local authorities if a significant release of stormwater and sediment leaves a disturbed area;
- Coordinating the construction of control measures (CMs);
- Conducting inspections;
- Maintenance of all records; and
- Coordination of a preventive maintenance program and housekeeping measures.

6. STATE INSPECTION REQUIREMENTS

Site inspections must be conducted in accordance with the following requirements. The required inspection schedules are a minimum frequency and do not affect the permittee's responsibility to implement control measures in effective operating condition, as proper maintenance of control measures may require more frequent inspections. Site inspections shall start within 7 calendar days of the commencement of construction activities on site.

6.1. Person Responsible for Conducting Inspections

The person(s) inspecting the site may be on the permittee's staff or a third party hired to conduct stormwater inspections under the direction of the permittee(s). The permittee is responsible for ensuring that the inspector meets the definition of a Qualified Stormwater Manager. The inspector may be different than the individual(s) listed in Section 5 (Qualified Stormwater Manager).

6.2. Inspection Frequency

Permittees must conduct site inspections in accordance with the following minimum frequencies, unless the site meets the requirements of Section 6.3. All inspections must be recorded.

- a. At least one inspection every 7 calendar days; or
- b. At least one inspection every 14 calendar days, if post-storm event inspections are conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Post-storm inspections may be used to fulfill the 14-day routine inspection requirement.
- c. When site conditions make the schedule required in this section impractical, the permittee may petition the division to grant an alternate inspection schedule. The alternative inspection schedule must not be implemented prior to written approval by the division and incorporation into the SWMP.

6.3. Inspection Frequency for Discharges to Outstanding Waters

Permittees must conduct site inspections at least once every 7 calendar days for sites that discharge to a water body designated as an Outstanding Water by the Water Quality Control Commission.

6.4. Reduced Inspection Frequency

The permittee may perform site inspections at the following reduced frequencies when one of the following conditions exists:

a. Post-Storm Inspections at Temporarily Idle Sites

For permittees choosing an inspection frequency pursuant to Section 6.2.b above and if no construction activities will occur following a storm event, post-storm event inspections must be conducted prior to re-commencing construction activities, and no later than 72 hours following the storm event. If the post-storm event inspection qualifies under this section, the inspection delay must be documented in the inspection record per Section 6.5.c below. Routine inspections must still be conducted at least every 14 calendar days.

b. Inspections at Completed Sites/Areas

When the site, or portions of a site, are awaiting establishment of a vegetative ground cover and final stabilization, the permittee must conduct a thorough inspection of the stormwater management system at least once every 30 days. Post-storm event inspections are not required under this schedule. This reduced inspection schedule is allowed if all of the following criteria are met:

- i. All construction activities resulting in ground disturbance are complete;
- ii. All activities required for final stabilization have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and
- iii. The SWMP has been amended to locate those areas to be inspected in accordance with the reduced schedule allowed for in this paragraph.

c. Winter Conditions Inspections Exclusion

Inspections are not required for sites that meet all of the following conditions: construction activities are temporarily halted, snow cover exists over the entire site for an extended period, and melting conditions posing a risk of surface erosion do not exist. This inspection exception is applicable only during the period where melting conditions do not exist, and applies to the routine 7-day, 14-day and monthly inspections, as well as the post-storm-event inspections. When this inspection exclusion is implemented, the following information must be documented:

- i. Dates when snow cover existed;
- ii. Date when construction activities ceased; and
- iii. Date melting conditions began.

6.5. Inspection Scope

a. Areas to be Inspected

When conducting a site inspection, the following areas, if applicable, must be inspected for evidence of, or the potential for, pollutants leaving the construction site boundaries, entering the stormwater drainage system or discharging to state waters:

- i. Construction site perimeter;
- ii. All disturbed areas;
- iii. Locations of installed control measures;
- iv. Designated haul routes;
- v. Material and waste storage areas exposed to precipitation;
- vi. Locations where stormwater has the potential to discharge offsite; and
- vii. Locations where vehicles exit the site.

b. Inspection Requirements

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

c. Inspection Reports

The permittee must keep a record of all inspections conducted for each permitted site. Inspection reports must identify any incidents of noncompliance with the terms and conditions of this permit. All inspection reports must be signed and dated. Inspection records must be retained in accordance with the SWMP. At a minimum, the inspection report must include:

- i. The inspection date;
- ii. Name(s) and title(s) of personnel conducting the inspection;
- iii. Weather conditions at the time of inspection;
- iv. Phase of construction at the time of inspection;
- v. Estimated acreage of disturbance at the time of inspection;
- vi. Location(s) and identification of control measures requiring routine maintenance;
- vii. Location(s) and identification of discharges of sediment or other pollutants from the site;

- viii. Location(s) and identification of inadequate control measures;
- ix. Location(s) and identification of additional control measures needed that were not in place at the time of inspection;
- x. Description of corrective action(s) for items vii, viii, ix, above, dates corrective action(s) were completed, including requisite changes to the SWMP, as necessary;
- xi. Description of the minimum inspection frequency utilized when conducting each inspection.
- xii. Deviations from the minimum inspection schedule. This would include documentation of division approval for an alternate inspection schedule;
- xiii. After adequate corrective action(s) have been taken, or where a report does not identify any incidents requiring corrective action, the report shall contain a statement.

7. LOCAL INSPECTION REQUIREMENTS

As required by the MS4 Permit, the County is required to routinely inspect construction sites at a frequency of at least every 45 days. The Department of Public Works maintains the authority to increase inspection frequencies based on historical violations. It is the responsibility of the applicant to contact the Department of Public Works to schedule the first inspection, at which time, the temporary control measures necessary to begin construction will be inspected (i.e. perimeter control and vehicle tracking control). The applicant shall provide notice a minimum of 7 days prior to commencing construction activity. Failure to schedule an inspection is considered a violation of MS4 requirements, and a Stop Work Order or other enforcement actions may be pursued.

During routine inspections, the inspector shall review the current site conditions using the documents submitted during the review process. Significant changes in plans may require modifications to be submitted for approval. Minor changes should be noted in the Grading Plan and Sediment & Erosion Control Plan, MS4 Pollution Prevention Plan, or SWMP, which are to be kept onsite at all times. The inspector shall assess all onsite control measures, pollutant sources, and discharge points to determine if an illicit discharge has occurred or has the potential to occur. If violations are found, the applicant will be notified both verbally and with a written inspection report. A compliance inspection then will be scheduled no later than 14 days from the date of the violation. If violations are not corrected by the time of the compliance inspection, escalating enforcement procedures shall be followed until the site reaches compliance. This may include a formal Notice of Violation (NOV) and the issuance of a Stop Work Order, for which all construction activity will cease until violations have been corrected. If violations continue to exist, judicial enforcement responses may be pursued depending on the severity and recalcitrance of the violations. Indicator (drive-by) inspections may be conducted at any time to assess site conditions. If the site passes indicator inspections, routine inspections may occur less frequently. However, if violations are found during indicator inspections, the applicant will be contacted to remedy the violations and to schedule a follow-up compliance inspection. When construction activity is completed, inspections shall occur at least every 90 days until the site has reached final stabilization, all temporary control measures have been removed, and the Colorado Discharge Permit System (CDPS) Construction Stormwater Permit has been terminated. If the contractor is no longer associated with the site, the CDPS permit shall be transferred to the

landowner, and the completed transfer shall be emailed to Public Works. A final walkthrough will be performed to release the Grading Permit.

8. INSPECTION PROCEDURES & FREQUENCY

Site inspections will be conducted to document the status of erosion and sediment control structures and re-vegetation efforts. Inspection forms will document non-compliance conditions such as uncontrolled releases of mud, muddy water, or measurable quantities of sediment that are found offsite. Required actions or modifications as documented on the SWMP Inspection Report will be implemented in a timely manner after the inspection. Routine inspections may be conducted at sites during all phases of work and after a precipitation-related event. All inspection observations will be recorded on the stormwater Inspection Report and maintained as a record with this stormwater management plan. Dates that construction activity begins, ceases, or is temporarily idle, as well as the site stage, will be recorded. The form provides a standardized format that will be completed during all inspections and includes a signature line for the inspector to ensure compliance with the regulations. For stormwater regulation purposes, construction sites have been divided into the following stormwater inspection stages: Active Construction, Temporarily Idle, Completed Construction, and Final Stabilization. For the purposes of this SWMP, only Active, Temporarily Idle, and Completed sites will be inspected. Each of these stormwater inspection stages is discussed below. Once a site is finally stabilized, it will be removed from this stormwater construction permit program. Personnel responsible for inspections will be qualified stormwater managers that have been trained to evaluate stormwater management concerns, erosion and sediment control structures, and to evaluate the site and surrounding area vegetation.

8.1. Fourteen-day Inspection/Active Construction and Temporarily Idle

During construction, this phase of work is classified as the Active Construction phase, per stormwater regulations. The inspection frequency is every 14 days during the active phase and within 24 hours after any precipitation or snowmelt event that causes surface erosion.

The site perimeter, disturbed areas, and any stored materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants that may enter the drainage system. Erosion and sediment control systems that are identified on the site-specific SWMP Inspection Report will be inspected to ensure that they are in good condition and operating properly.

If no construction activities will occur following a storm event at a temporarily idle site, post-storm event inspections will be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The occurrence of any such delayed inspection will be documented on the stormwater Inspection Report. Routine inspections will still be conducted at least every 14 calendar days.

8.2. Monthly Inspection/Completed Stage

If a site is not able to be re-seeded due to weather or seasonal conditions, but construction activities are completed, inspections will be conducted at least once a month. This phase is considered “Completed” according to stormwater regulations. The monthly inspection frequency will be continued until the pad area achieves or reaches final stabilization vegetation conditions. This reduced inspection schedule is allowed if all of the following criteria are met:

- All ground disturbing construction activities are complete;

- All activities required for final stabilization, with the exception of seeding, have been completed; and
- The SWMP has been amended to show all areas that qualify for reduced inspection frequency.

In addition, Confluence has defined an intermediate stage known as “Interim Stabilization” as similar to the Completed stage listed above, with one distinct difference: the site has been re-seeded.

Inspections at sites in the interim stabilization phase will be conducted at least once a month until final stabilization is reached.

8.3. Final Stabilization Stage

When a site has reached final stabilization, it will be removed from the stormwater construction inspection routine.

8.4. Winter Conditions Inspection Exclusion

See Section 6.4.c.

8.5. Precipitation Event Inspections

Site inspections will be conducted within 24 hours after a precipitation or snowmelt event that causes surface erosion on sites where construction is occurring. If no ground disturbing activities will occur at a site following a storm event (temporarily idle sites), post-storm event inspections will be conducted prior to re-commencing ground disturbing activities, but no later than 72 hours following the storm event. Surface erosion generally occurs when precipitation or snowmelt results in surface water flow. If the precipitation infiltrates, then no inspection is required. To determine if surface erosion or surface water flow resulted from a precipitation or snowmelt event, selected sites will be evaluated for surface erosion, offsite sediment transportation, and/or offsite release of muddy water. These selected sites may have an assumed worst-case surface erosion or sediment transportation scenario. If the selected sites and associated areas do not show any offsite surface erosion, offsite sediment release and transport, or offsite muddy water releases, none of the remaining construction and completed sites will be inspected. Inspection results of the facilities will determine or trigger the inspection of all facilities in the construction phase. Selection of sites to be evaluated are based on the following criteria:

- A site that has a cut or fill slope that has a steeper grade than 1:4;
- A site that has erosion and/or sediment control structures installed;
- A site that has vegetation or erosion situations;
- Total precipitation in an area based on NOAA weather data.

8.6. Reporting & Recordkeeping Requirements

All inspection observations are recorded on the stormwater Inspection report form. The report provides a standardized format for noting inspection observations and includes a signature line for the inspector. The site-specific information is updated following the inspection. See Section 6.5.c for the list of items that need to be documented during an inspection.

9. DESCRIPTION & MAINTENANCE OF SITE-SPECIFIC BMPs

Each of the BMPs listed below are intended for use at this site specifically. These BMPs are also consistent with the field-wide SWMP. The exact location of each of these BMPs can be seen on the attached Stormwater Management Plan Exhibit (Appendix B).

9.1. Berm

Description

A berm is a ridge of soil located at the top or base of a sloping disturbed area, used to contain or divert surface water runoff. Berms may be constructed from excavated topsoil or subsoil. The purpose of a berm is to control runoff velocity, divert onsite surface runoff into a sediment trapping device, and divert offsite water away from disturbed areas.

Applicability

Berms are usually appropriate for drainage basins smaller than five acres, but with modifications they can be capable of servicing areas as large as ten acres. With regular maintenance, earthen berms have a useful life span of approximately 18 months. Berms may be used for the following applications:

- Up-slope of cut or fill slopes to divert water away from disturbed areas.
- Down-slope of cut or fill slopes to divert onsite runoff.

Limitations

- Berms may erode if not properly maintained. Berms which are adjacent to concentrated flows may require other means of stabilization.
- If a berm crosses a vehicle roadway or entrance, its effectiveness may be reduced. Wherever possible, berms should be designed to avoid crossing vehicle pathways.

Construction Considerations

- Prior to berm construction, remove all trees, brush, stumps, and other objects in the path of the berm. Fill may consist of topsoil or subsoil excavated during the construction of nearby roads or location.
- All berms should have positive drainage to an outlet so runoff does not collect within location, but instead flows along the berm until it reaches an outlet. Berm location should be adjusted as needed. The outlet may be a vegetated area, a well pad detention pond, or a sediment control such as a silt fence or sediment trap.
- Berms should be constructed prior to commencement of major up-slope land disturbance. A ditch may be coupled with a berm for additional run on/runoff diversion.

Maintenance Considerations

The frequency of inspections should be in accordance with the Stormwater Management Plan (SWMP). Berms should be inspected for evidence of erosion or deterioration to ensure continued effectiveness.

Removal

Berms should remain in place and in good condition until all up-slope disturbed areas are permanently stabilized.

9.2. Check Dam

Description

Check dams are temporary dams constructed across a diversion or roadside ditch. Check dams can be constructed using gravel, rock, sandbags, gravel bags, earth with erosion control blanketing, straw bales, or synthetic materials. Check dams slow the velocity of concentrated flow in a channel reducing erosion potential.

Applicability

Check dams are most often used in small, open channels with contributing drainage areas.

Check dams may be used in the following applications:

- In diversion or roadside ditches where it is not practical to line the channel.
- In diversions or roadside ditches where temporary seeding has been recently implemented but has not had time to take root and fully develop.

Limitations

- Check dams should not be used in live, continuously flowing streams unless approved by an appropriate regulatory agency.
- Check dams may require frequent removal of accumulated sediments.
- Straw bale check dams decompose over time and may be consumed by livestock.

Construction Considerations

- Install straw bale check dams, rock check dams, and other check dams according to the SWMP
- Check dams should be in areas accessible to maintenance vehicles for the periodic removal of accumulated sediments.
- Check dams can be constructed from several different materials. Most commonly, they are made of straw bales or rock. When using rock, the material diameter may vary depending on the expected velocity and quantity of runoff within the channel.
- Check dams should have sufficient space up-slope from the barrier to allow ponding and to provide room for sediment storage.
- Additional stability can be achieved by implanting the dam material.
- To be most effective, check dams used in a series should be spaced such that the base of the upstream check dam is at the same elevation as the top of the next downstream check dam.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. During inspection, large debris, trash, and leaves should be removed. Accumulated sediment should be removed from the upstream side of a check dam.

Removal

Removal of check dams is optional. Check dams within roadside ditches are usually used as temporary controls, where other check dams may be left in place. If removing a check dam, all accumulated sediment should be removed. Removal of a check dam should be completed only after the contributing drainage area has been completely stabilized.

9.3. Ditch

Description

A ditch consists of a channel constructed to collect and divert runoff. The ditch may remain bare, or when necessary to protect it from erosion, it may be vegetated. The purpose of this practice is to divert surface water from one area to other.

Applicability

Ditches are usually appropriate where runoff can be diverted safely to prevent flooding, erosion, or sedimentation accumulation.

Specific locations and conditions include:

- Above steep slopes to limit surface runoff onto the slope.
- Across long slopes to reduce slope length to prevent erosion.
- Below steep grades where flooding, or sediment depositions may occur.
- Around buildings or areas that are subject to damage from runoff.

Limitations

A ditch is an effective means of diverting sediment laden runoff around a disturbed area. The effectiveness of a ditch can be greatly reduced if the ditch crosses a vehicle roadway or entrance. It is recommended that a ditch be coupled with a sediment trapping device at the outfall of the ditch.

Construction Considerations

The ditch may be parabolic, V-shaped, or trapezoidal in shape. A ditch may be designed to deliver runoff to a stable outlet at a point where the outflow will not cause damage. A ditch may be coupled with a berm for additional run on/runoff diversion.

- All trees, brush, stumps, obstructions, and other objectionable material should be removed and disposed of so as not to interfere with the proper functioning of the ditch.
- Diverted runoff from a disturbed or undisturbed area should outlet to a sediment trapping device or into an undisturbed stabilized area at non-erosive velocities.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. Ditches should be cleared of any sediment and repairs completed when necessary. Maintenance efforts should be adequate to preserve ditch capacity.

Removal

The ditch shall remain in place only until the disturbed areas are re-graded and prepared for permanent stabilization.

9.4. Mulching

Description

Mulching is a temporary erosion control practice in which materials such as grass, hay, wood chips, wood fibers, or straw are placed on exposed or recently planted soil surfaces. Mulching stabilizes soils by minimizing rainfall impact and reduces stormwater runoff velocity. Mulching can aid plant growth by holding seeds, fertilizers, and topsoil in place, preventing birds from eating seeds, retaining moisture, and insulating plant roots against extreme temperatures.

Applicability

Mulching is often used after (or in combination with) seeding to help aid in the establishment of vegetation. Mulch can last for one to two years.

Limitations

- Mulching, matting, and netting might delay seed germination because the cover changes soil surface temperatures.
- The mulches are subject to erosion and may be washed away in a large storm.
- Maintenance may be necessary to ensure that mulches provide effective erosion control.

Construction Considerations / Site Preparation

- Prior to mulching, install the necessary temporary or permanent erosion control practices and drainage system within or adjacent to the area to be mulched.
- Slope, grade, and smooth the side to fit the needs of the selected mulch products.
- Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Mulching and anchoring

- Select the appropriate material and application rate that will best meet the need and availability of material. See Table M-1 for suggested materials and application rates.
- Apply mulch after soil amendments and planting is accomplished or simultaneously if hydro-seeding is used. See Table M-1 for installation guidelines.
- A crimper may be used to anchor mulch. A crimper should have approximately 6-inch cleats with perpendicular, dull, disc blades. If a crimper is unavailable the Contractor shall apply the mulch and anchor it to the soil using one of the methods described in Table M-

2. The mulch should be anchored the same day as the mulch application. Materials that are heavy enough to stay in place (for example, bark or wood chips on flat slopes) do not need anchoring. Mulches may or may not require a binder, netting, or tacking. Binders should be applied at rates recommended by the manufacturer.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. Areas should be identified where mulch has loosened or been removed. Such areas should re-dressed as necessary.

Removal

Mulch material may remain onsite to provide additional organic material for new vegetative growth.

9.5. Riprap

Description

Riprap is a permanent, erosion resistant layer made of angular and/or rounded rock. It is intended to stabilize areas subject to erosion and protect against scour of the soil caused by concentrated, high velocity flows.

Applicability

Riprap can be used for areas subject to erosion or weathering, particularly where conditions prohibit the establishment of re-vegetation or where flow velocities exceed 5 feet per second. Riprap can be used in the following applications:

- Cut and fill slopes.
- Channel side slopes and/or bottoms.
- Inlets and outlets to culverts, and sediment traps.
- Roadside ditches.

Limitations

Riprap is limited by slope grade, steep slopes have a greater potential for riprap loss due to erosion and sliding. Availability of material may also limit use.

Construction Considerations

A well-graded mixture of rock sizes should be used instead of one uniform size. Riprap must be durable so freeze/thaw cycles. They should be angular (dependent on material available) and not subject to breaking down when exposed to water or weathering. The sizes of stones used for riprap protection are determined by the purpose and specific site conditions:

- **Slope Stabilization.** Riprap stone for slope stabilization not subject to flowing water should be sized for the proposed grade. Angles of the repose of riprap stones may be estimated using the estimation figure provided in the SWMP. Slopes approaching 1.5:1 may require special stability analysis.
- **Stream Bank Protection.** If the shear stress is estimated, riprap stone for stream bank protection can be selected from the gradations in Table R-1, below. The shear stress can

be estimated from the depth of flow and the channel slope (see note for Table R-1). The riprap should extend 2 feet below the channel bottom and be keyed into the bank both at the upstream end and downstream end of the proposed work or reach.

Sub-grade Preparation

Prepare the sub-grade for riprap to the required lines and grades. Compact any fill required in the sub-grade to a density approximating that of the undisturbed material or overfill depressions with riprap. Remove brush, trees, stumps, and other objectionable material. Cut the sub-grade sufficiently deep so the finished grade of the riprap will be at the elevation of the surrounding area.

Stone placement

Place riprap so it forms a dense, well-graded mass of stone with a minimum of voids. The desired distribution of stones throughout the mass may be obtained by selective loading at the quarry and controlled dumping during the final placement.

The toe of the riprap should be a stable foundation at its base. The finished slope should be free of pockets of small stones or clusters of large stones. Hand placing may be necessary to achieve proper distribution of stone sizes to produce a relatively smooth, uniform surface.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. If riprap has been damaged or dislodged, repairs should be made to prevent a progressive failure. Channel obstructions such as trees and sediment bars can change flow patterns and cause erosive forces that may damage riprap. Control of weed and brush growth may be needed in some locations.

Removal

Riprap is generally not removed.

9.6. Seeding

Description

Seeding involves planting seed to establish a vegetative cover in disturbed areas. Establishing vegetation reduces erosion and sediment displacement by stabilizing disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant species. Seeding also:

Applicability

Seeding may be used as a permanent control or a temporary control in areas where exposed soil surfaces are not to be re-graded for an extended amount of time.

Limitations

The effectiveness of seeding can be limited by the following:

- High erosion potential during establishment.
- The need for stable soil temperature and soil moisture content during germination and early growth.

- The need to re-seed areas that fail to establish.
- Limited seeding times depending on the season.

Proper seedbed preparation and the use of quality seed are important in this practice. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.

Seeding does not immediately stabilize soils. Prior to seeding, install necessary erosion and sediment control practices until vegetation is established.

Construction Considerations

Successful plant establishment can be maximized with proper planning; consideration of soil characteristics; selection of plant materials that are suitable for the site; adequate seedbed preparation; timely planting; and regular maintenance.

Climate, soils, and topography are major factors that dictate the suitability of plants for a particular site. Although a native seed mix is best, some grasses have been used extensively worldwide because of their strong deep roots, adaptability, and noninvasive properties.

Seeding does not immediately stabilize soils. Temporary erosion and sediment control measures should be in place to prevent off-site transport of sediments from disturbed areas until vegetation is established.

If the area has been recently loosened or disturbed, further seedbed preparation may not be required. When the area is compacted, crusted, or hardened, the soil surface should be loosened by disking or other acceptable means to ensure good water infiltration and root penetration.

Soil amendments may be incorporated into the soil if necessary. The addition of soil amendments may modify the pH and supply additional nutrients to the plant.

The appropriate seed mix should be evenly applied with a broadcast seeder, drill, cultipacker or hydro-seeder. If necessary, apply mulch to facilitate moisture retention in the soil as well as to protect the seed.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. Vegetation is considered established when a density of at least 70% of pre-disturbance levels has been reached. Seeded areas should be inspected for growth and any re-application of seed should be made within the same season if possible.

9.7. Tracking Pad

Description

A tracking pad (stabilized construction access) is a pad of gravel where construction traffic leaves a site. As a vehicle drives over the gravel-tracking pad, mud and sediment are removed from the vehicle's wheels and off-site transport of soil is reduced. The gravel-tracking pad also reduces erosion and rutting in the soil beneath the stabilized structure. The filter fabric may be used to separate the gravel from the soil below, preventing the gravel from being ground into the soil. The fabric also reduces the amount of rutting caused by vehicle tires by spreading the vehicle's weight over a larger soil area than just the width of the tire.

Applicability

Typically, Tracking Pads are installed at locations where construction traffic leaves or enters an existing paved road.

Limitations

- Although stabilizing construction access is a good way to help reduce the amount of sediment leaving a site, some soil may still be deposited from vehicle tires onto paved surfaces. To further reduce the chance of these sediments polluting stormwater runoff, sweeping of the paved area adjacent to the stabilized site access is recommended.
- Installation of Tracking Pads may be limited by landowner request or site location. Site located near cropland should use caution as rocks may cause damage to farm equipment.

Construction Considerations

- If the pad is constructed on a crowned road, a roadside ditch with check dams or sediment traps may be located on both sides of the road to collect runoff from the pad. If the road slopes to only one side of the road then only one roadside ditch with sediment controls will be needed.
- Place a matrix of stone; if stone is not available an alternative matrix may be used.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. Stabilization of site accesses should be maintained until the remainder of the construction site has been fully stabilized. Stone and gravel might need to be periodically added to keep the access effective. Soil that is tracked off site should be swept up for proper disposal.

9.8. Wattles

Description

A wattle consists of straw, flax, or other similar synthetic materials bound into a tight tubular roll. Wattles intercept runoff, reduce flow velocity, release the runoff as sheet flow, and provide removal of sediment. By interrupting the length of a slope, wattles can also reduce erosion.

Applicability

Wattles may be suitable:

- Along the top, face, and at the grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow.
- At the end of a downward slope where it transitions to a steeper slope.
- Along the perimeter of a project.
- At the overflow location of sediment traps.
- As check dams in unlined ditches.
- Around temporary stockpiles.

Limitations

- Wattles are more effective when trenched.
- Difficult to move once saturated.
- If not properly staked, wattles could move in high flows.
- Wattles have a limited sediment capture zone.
- Wattles should not be used on slopes subject to creep, slumping, or landslide.
- Wattles should not be used where periodic road or surface maintenance activities are expected.

Construction Considerations

Wattles should be prefabricated rolls. If using erosion control blankets, roll the length of erosion control blanket into a tube with a minimum of 8 inches in diameter and bind the roll at each end and every 4 feet along the length of the roll with jute-type twine.

Locate wattles on level contours spaced as follows.

- Slope inclination of 4:1 or flatter: Fiber rolls should be placed at a maximum interval of 20 feet. Slope inclination between 4:1 and 2:1: Fiber rolls should be placed at a maximum of 15 feet. Slope inclination 2:1 or greater: Fiber rolls should be placed at a maximum interval of 10 feet.
- Turn the ends of the wattles upslope to prevent runoff from going around the roll.
- Drive stakes at the end of each wattle and space evenly along the length of the wattle to secure.
- If more than one wattle is placed in a row, the rolls should be overlapped, not abutted.

Maintenance Considerations

The frequency of inspections should be in accordance with the SWMP. Repair or replace split, torn, unraveling, or slumping rolls. If the wattle is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates must be periodically removed in order to maintain wattle effectiveness. Sediment should be removed when sediment accumulation reaches half the distance between the top of the wattle and the adjacent ground surface.

Removal

Wattles are typically left in place. If wattles are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions, or other ground disturbance.

Site-Specific Construction and Development BMPs

During interim reclamation the following BMPs will be implemented on Bigfoot 11:

- A Stormwater Detention Pond will be installed at the entrance to the well pad.
- Filter Logs will be installed on the entire western side, western-half of the northern side, and

along the entire southwest side of the well pad.

- Diversion Channels with rock check dams will be installed around the well pad directing water to the stormwater detention pond and/or away from the wellpad. Additional diversion channels will be placed above the cut slope along the eastern-half of the northern side and the southern-half of the eastern side.
- Rock Rip-Rap will be placed on both sides of the access road to the pad will slow/filter any stormwater runoff from the road itself. Rock rip-rap apron will also be installed on the eastern edge of the topsoil pile.
- During construction, and development topsoil should be piled no higher than 3 to 5 feet high and slopes of the stockpiles should not exceed 2:1 (horizontal:vertical) to minimize erosion potential and facilitate interim stabilization.
- The construction area is ± 17.67 acres. Topsoil material will be placed south of the cleared pad and will be approximately 11,322 CY.

Site-Specific Interim Reclamation BMPs

During interim reclamation the following BMPs will be implemented on Bigfoot 11:

- A Stormwater Detention Pond will remain at the entrance to the well pad.
- Filter Logs will be installed on the entire western side, western half of the northern side, and along the entire southwest side of the well pad.
- Diversion Channels with rock check dams will be installed around the well pad directing water to the stormwater detention pond and/or away from the wellpad. Additional diversion channels will be placed above the cut slope along the eastern-half of the northern side and the southern-half of the eastern side.
- Rock Rip-Rap will be placed on both sides of the access road to the pad will slow/filter any stormwater runoff from the road itself. Rock rip-rap apron will also be installed on the eastern edge of the topsoil pile.
- The location will be recontoured, topsoil reapplied, and the reduced area stabilized with seed, hydroseed, bonded fiber matrix, mulch, etc. as deemed appropriate for the site.
- The borrow ditches will be reseeded to promote topsoil stabilization and will reduce the area utilized by this location.
- If the reclaimed area is not put back into crop land, the seed mix planned to be utilized for the Bigfoot 11 location is Buffalo Brand Sandy Soil Mix.
- Topsoil will be segregated from cut areas for use in reclamation.
- Salvaging and spreading of topsoil will not be performed when the ground or topsoil is frozen or too wet to adequately support construction equipment. If such equipment creates ruts more than four inches deep, the soil will be deemed too wet

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Stormwater Management Plan, Wattenberg Development Area. Prepared for Confluence DJ, LLC.
Prepared by Olsson. Dated August 2019. Most recent update August 2019.

APPENDIX A

NRCS Soils Data



United States
Department of
Agriculture

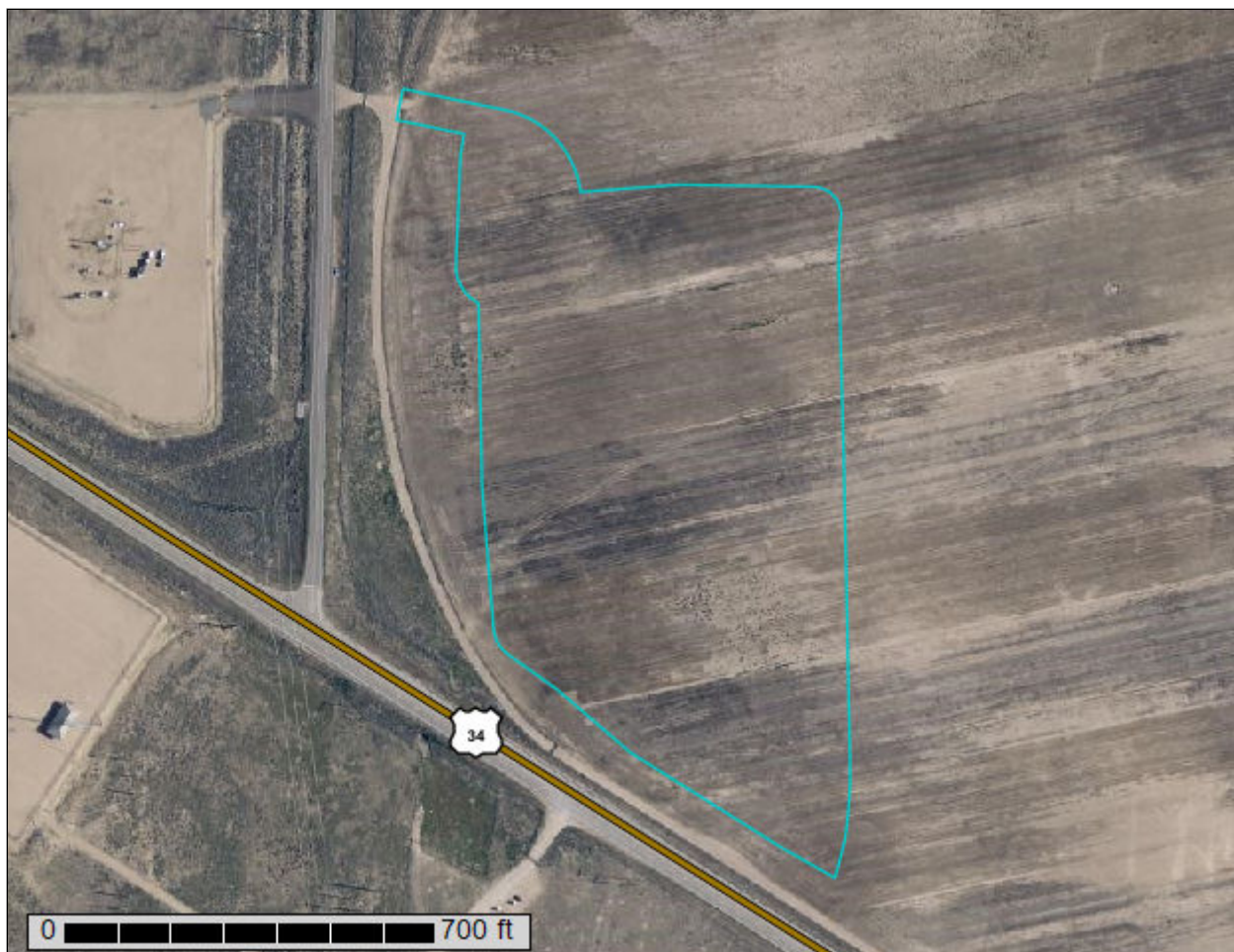
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Weld County, Colorado, Southern Part

Bigfoot 11



August 17, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map


The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 19, Jun 5, 2020

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

Date(s) aerial images were photographed: Jul 19, 2018—Aug 10, 2018

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
70	Valent sand, 3 to 9 percent slopes	18.1	100.0%
Totals for Area of Interest		18.1	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Weld County, Colorado, Southern Part

70—Valent sand, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2tczf
Elevation: 3,050 to 5,150 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Valent and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Valent

Setting

Landform: Hills, dunes
Landform position (two-dimensional): Backslope, shoulder, footslope, summit
Landform position (three-dimensional): Side slope, head slope, nose slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Noncalcareous eolian sands

Typical profile

A - 0 to 5 inches: sand
AC - 5 to 12 inches: sand
C1 - 12 to 30 inches: sand
C2 - 30 to 80 inches: sand

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 39.96 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R067BY015CO - Deep Sand, R072XY109KS - Rolling Sands
Hydric soil rating: No

Minor Components

Dailey

Percent of map unit: 10 percent

Landform: Interdunes

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R067BY015CO - Deep Sand, R072XA021KS - Sands (North) (PE 16-20)

Hydric soil rating: No

Vona

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Footslope, backslope, shoulder

Landform position (three-dimensional): Side slope, head slope, nose slope, base slope

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R067BY024CO - Sandy Plains, R072XA022KS - Sandy (North) Draft (April 2010) (PE 16-20)

Hydric soil rating: No

Haxtun

Percent of map unit: 5 percent

Landform: Interdunes

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R067BY024CO - Sandy Plains, R072XY111KS - Sandy Plains

Hydric soil rating: No

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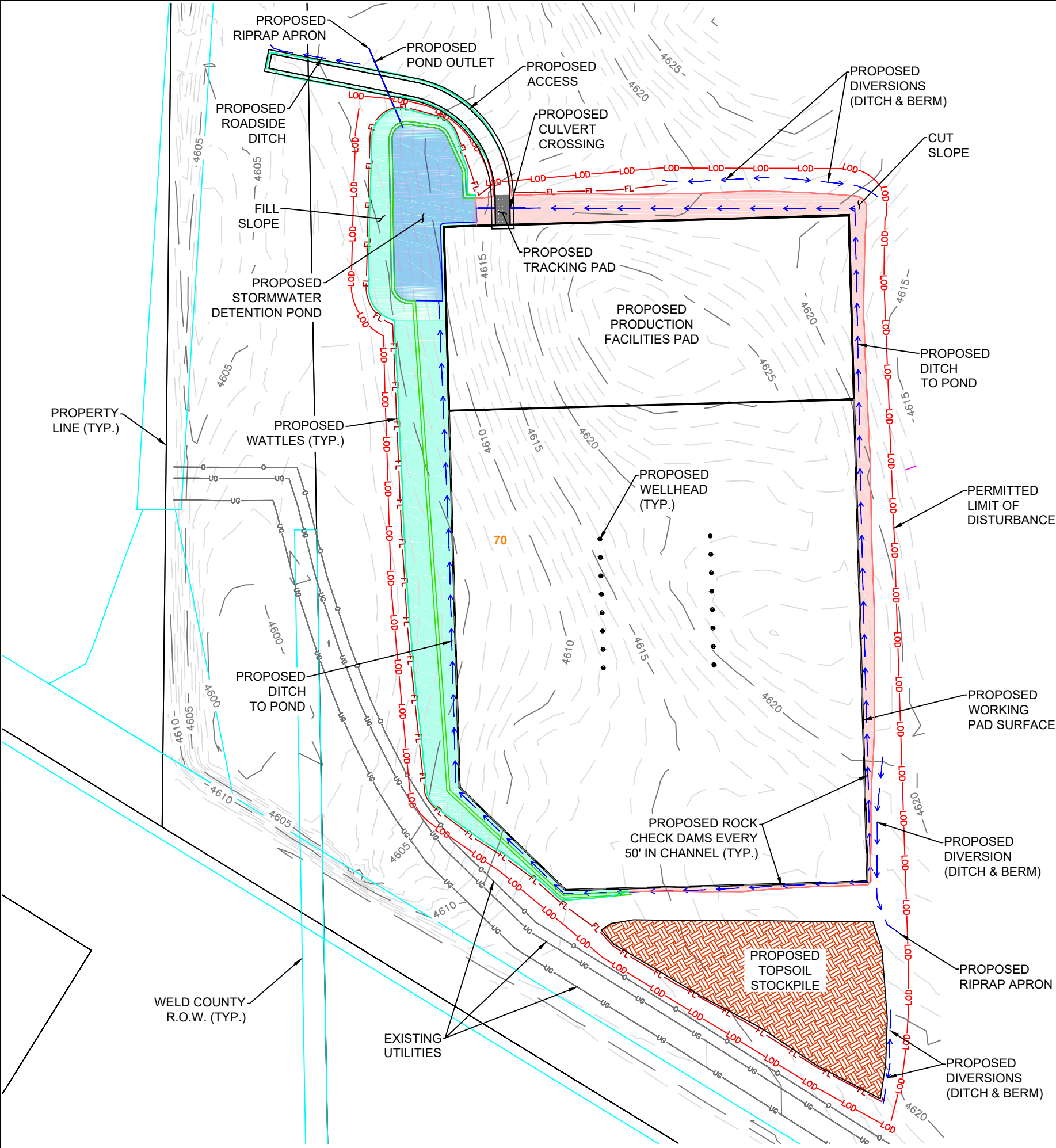
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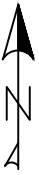
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APPENDIX B

Stormwater Management Plan Exhibit



Land Disturbance and Reclamation Data			
Well Pad			
Description	Value	Units	Notes
Limit of disturbance	769,727	SF	Permitted disturbed area
	17.67	AC	
Reclaimed	449,392	SF	Area to be reclaimed during interim phase
	10.32	AC	
Unreclaimed	320,335	SF	Area to remain unreclaimed
	7.35	AC	
Access Road			
Description	Value	Units	Notes
Disturbed area	20,168	SF	Estimated disturbed area for access road
	0.46	AC	
Reclaimed	11,336	SF	Area to be reclaimed during interim phase
	0.26	AC	
Unreclaimed	8,832	SF	Area to remain unreclaimed
	0.20	AC	



CONFLUENCE DJ, LLC

DATE PREPARED: OCTOBER 2021
DATE REVISED: DECEMBER 2021

BIGFOOT 11 WELL AND PRODUCTION PAD
SECTION 11, TOWNSHIP 4 NORTH,
RANGE 63 WEST OF THE 6TH P.M.

STORMWATER
MANAGEMENT PLAN EXHIBIT

1 OF 1

APPENDIX C

Seed Mix



Buffalo Brand Sandy Soil Mix

A mixture of warm season and cool season grasses for soils that are sandy to loamy and even clay based. Suited best for range conditions and pasture production in livestock operations. Range of adaptation is below 6500 ft. elevation.

20% Western Wheatgrass, Arriba
15% Thickspike Wheatgrass, Critana
15% Switchgrass, VNS
13% Annual Ryegrass, VNS
12% Sideoats Grama, Native
10% Sand Bluestem, Native
10% Blue Grama, Native
5% Sand Dropseed, VNS

Seeding Rate:

25-30 lbs. per acre

Broadcast Rate:

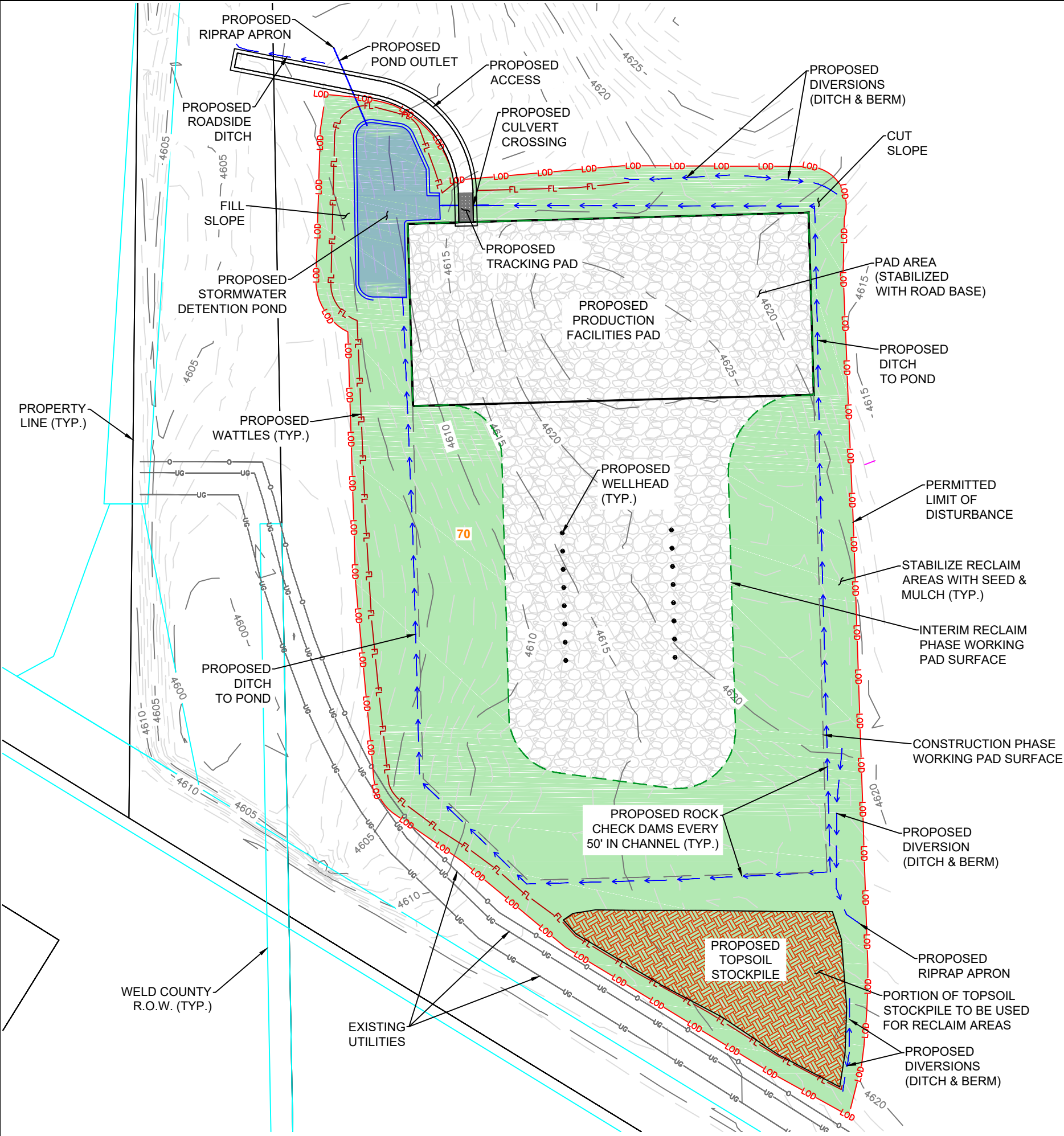
30-35 lbs. per acre

Available in 50 lb. and 25 lb. bags

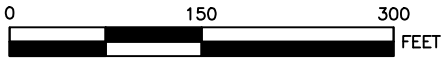
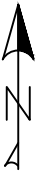
*Buffalo Brand Seed is an independently owned seed company specializing in alfalfas, native grasses, forage grasses, turf grasses, small grains and annual forages. Our long-term success has been built upon putting family first while maintaining our commitment to exceed our customer's expectations at every opportunity. **Buffalo Brand Seed** has been supplying customers with high quality seed since 1958.*

APPENDIX D

Interim Reclamation Exhibit



Land Disturbance and Reclamation Data			
Well Pad			
Description	Value	Units	Notes
Limit of disturbance	769,727	SF	Permitted disturbed area
	17.67	AC	
Reclaimed	449,392	SF	Area to be reclaimed during interim phase
	10.32	AC	
Unreclaimed	320,335	SF	Area to remain unreclaimed
	7.35	AC	
Access Road			
Description	Value	Units	Notes
Disturbed area	20,168	SF	Estimated disturbed area for access road
	0.46	AC	
Reclaimed	11,336	SF	Area to be reclaimed during interim phase
	0.26	AC	
Unreclaimed	8,832	SF	Area to remain unreclaimed
	0.20	AC	



CONFLUENCE DJ, LLC

DATE PREPARED: OCTOBER 2021
DATE REVISED: DECEMBER 2021

BIGFOOT 11 WELL AND PRODUCTION PAD
SECTION 11, TOWNSHIP 4 NORTH,
RANGE 63 WEST OF THE 6TH P.M.

INTERIM RECLAMATION PLAN1 OF 1