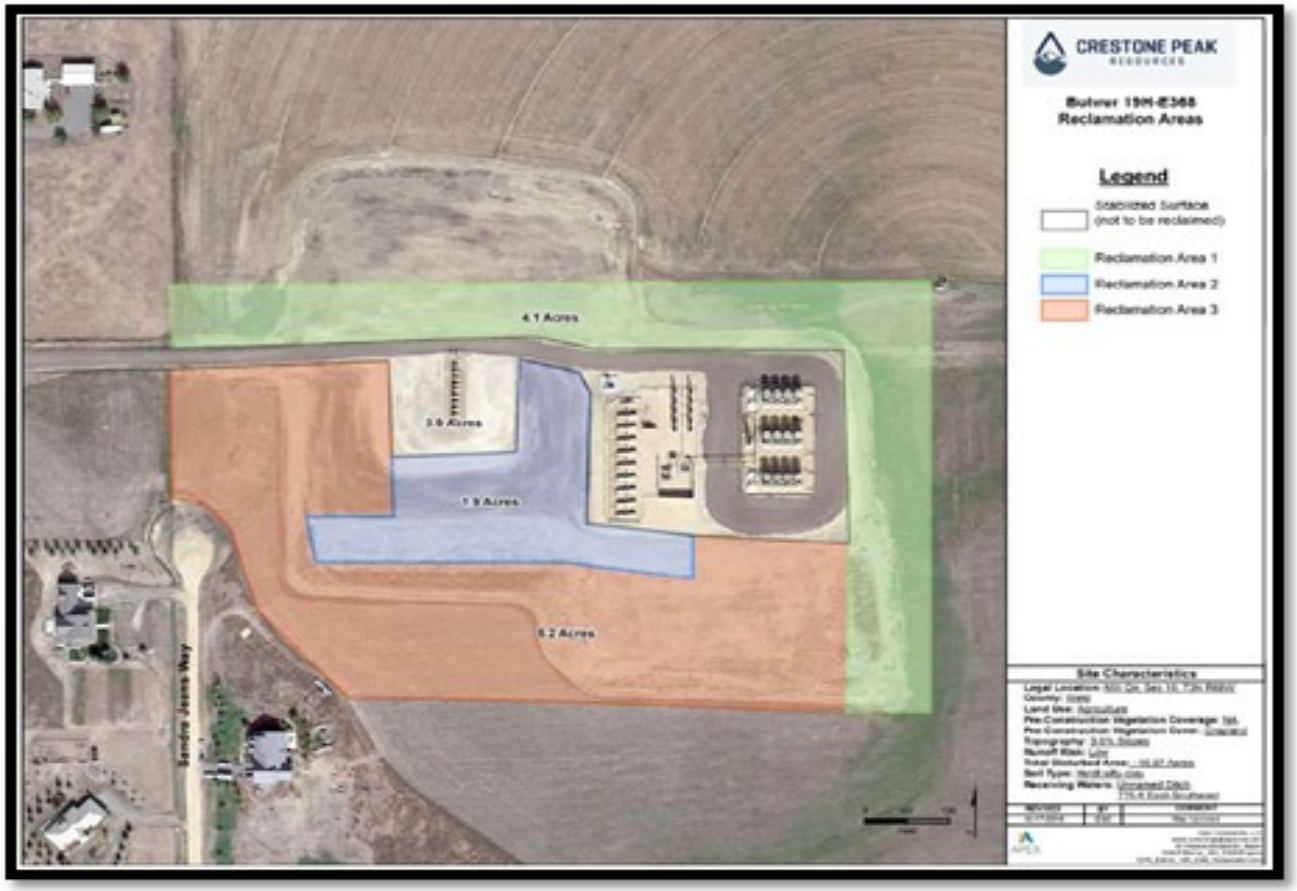
Bohrer 19H

History of Reclamation Activities and Reclamation Plan

10/14/2016

Visual inspection of the site revealed significant variation in the success of vegetative reclamation across the site resulting from the 2015 effort, with partial establishment of native and introduced pasture grasses in some areas, and only invasive/non-native species or relict wheat (*Triticum* spp.) in others. Visual inspection of the soil and seedbed, together with hand-excavation across the site to 16-18" confirm that the seedbed was sufficiently prepared in 2015; therefore, seedbed preparation in the form of rippling, disking, or tilling is not prescribed for any of the Reclamation Areas in the reclamation plan. Due to the variations in current vegetation across the site, as well as one non-vegetated area with added manure/compost, this reclamation plan recognizes 3 distinct Areas (Diagram 1) to be reclaimed at the site and prescribes separate treatments for each area.

Diagram 1



- **Area 1** should be drill-seeded to ¼' to ½' with (20-25 lbs. PLS/acre) in November to minimize the time between seeding and heavy frost and winter moisture, both of which will aid in securing the new seed. Concurrent with drill seeding, apply 50 lbs/acre of 18-46-0 (N+P205+K20) fertilizer, as bromes (*Bromus* spp.) will more aggressively compete with the small patches of native grasses at higher nitrogen levels. In May - June of 2017, monitor the area for weed growth. If there are signs of kochia regrowth (there will be), mow entire area to 4-6" to provide an early competitive advantage to the

smooth brome. Additional mowing in July - August to 6-8" will further suppress kochia and Russian thistle, and aid in prohibiting late-season flowering, which will also favor smooth brome establishment in 2018.

- **Area 2** has recently been covered with approximately 4-5" of manure, which is suppressing current growth, and will likely suppress effective establishment of smooth brome unless spread and thinned to a maximum depth of 2". Excess manure in Area 2 can be applied over areas 1 or 3, below, so long as it does not exceed 2" in depth. In November, after thinning the manure layer, and in areas where excess manure was applied, drill seed with 20-25 lbs./acre PLS to a depth of ¼" to ½" *below the manure layer*. No additional soil amendment is necessary in Area 2. Mowing in July - August to 6-8", as needed, will suppress kochia and Russian thistle, and aid in prohibiting late-season flowering, which will also favor smooth brome establishment in 2018.

- **Area 3** shows the most significant reclamation vegetation growth of the 3 areas with the establishment of. Blue grama, western wheatgrass, crested wheatgrass (*Agropyron cristatum*), and fescue (*Festuca* spp.). However, large portions of Area 3 also have significant encroachment of kochia, and Russian thistle, which are dominating available water uptake and rapidly decreasing the reclamation grasses toward the western portion (Photo 7). Because much of the grass in Area 3 is still green and in active photosynthesis, application of glyphosate ("Roundup") is recommended as soon as possible (October), before the grasses become dormant. Once dormant, the application or herbicide would not be physiologically effective until the following (warm-season) growing season, and the establishment of smooth brome may take significantly longer. In November, drill seed with 20-25 lbs./acre PLS to a depth of ¼" to ½", without removing remaining dead vegetation. Concurrent with drill seeding, apply 50 lbs/acre of 18-46-0 (N+P205+K20) fertilizer. In May - June of 2017, monitor the area for weed growth. If there are signs of kochia regrowth, especially on the west end of Area 3 (there will be), mow entire area to 4-6" to provide an early competitive advantage to the smooth brome. Additional mowing in July-August to 6" will further suppress kochia and Russian thistle, and aid in prohibiting late-season flowering, which will also favor smooth brome establishment in 2018.

A Reclamation Plan was prepared (Attachment A).

Scope of work performed:

- Apply Glyphosphate Area 3 (10/25/2016 - Invoice Attachment B).
- Drill and seed areas 1, 2 and 3. Fertilize Areas 1 and 3 (11/15/2016 – Invoice Attachment B).
- Spring mowing as needed Areas 1 and 3.
- Summer mowing as needed Areas 1 and 3.

05/11/2017

A site observation was performed, there were areas with extensive kochia germination (see Photos 1 and 2).

Photo 1

Photo 2

06/29/2017
Mowing (see Photos 3 and 4)

Photo 3

Photo 4

03/12/2018
Site observation shows kochia carcasses and perennial grass (see Photos 5 and 6).

Photo 5

Photo 6

05/11/2018
Site observation shows improvement though weed management is a concern (see Photos 7 and 8)

Photo 7

Photo 8

05/24/2018
The landowner has been consulted with the following weed management and revegetation plan.

Establish a weed free Smooth Brome (Bromus inermis) monoculture on the interim reclaim areas of the location.

- Smooth Brome is an excellent erosion control plant because of its large root system and its sod forming.
- I do not have any objections with this plant or the proposed monoculture with it.

Objectives:

- Weed Management: Before we can progress the weed issue must be dealt with.
    - Broadleaf Weeds:
        - We will be mowing the broadleaf weeds Friday, May 25th.
          Mowing will limit seed production to deplete seed bank.
        - We will be applying herbicides for the various broadleaf weeds five days later (May 30th) after the mowing weather permitting.
          Moisture and wind can delay the herbicide applications.
          The five day waiting period allows the plants to recover from the shock of mowing for optimal herbicide uptake.
        - Spring 2019 herbicide applications with Hired Gun.
        - Continued mowing/line trimming of seed heads prior to viability.
        - Maintain healthy cover of desirable vegetation of Smooth Brome competitive seeding.
    - Cheat Grass/Downy Brome (Bromus tectorum):
        - We will be mowing the broadleaf weeds Friday, May 25th.
          Mowing will limit seed production to deplete seed bank.
          Late spring Herbicide applications to be decided in consultation with Hired Gun.
        - Fall 2018 & Spring 2019 cheatgrass herbicide applications with Hired Gun.
        - Continued mowing/line trimming of seed heads prior to viability.
        - Maintain healthy cover of desirable vegetation of Smooth Brome competitive seeding.
        - Minimize nitrogen availability in soil in cheat grass areas.
          Add carbon sources to cheat grass areas.
          Carbon sources to be decided in consultation with hired gun, if necessary.
- Smooth Brome Competitive Seeding (Revegetation):
    - Fall 2018 seeding:
        - Bare areas: cultivation, soil amendments, Smooth Brome drill seeding + broadcast seeding and hydromulch.
          I'm recommending hydromulch because we already have a weed issue and do not want to introduce more with straw/native grass mulches.
        - Thin areas or areas with other desirable grasses that are not Smooth Brome: inter-seed/slit seed Smooth Brome.
    - Spring 2019 Seeding:
        - Inter-Seed/Slit Seeding Smooth Brome.
            - Smooth Brome prefers spring seeding (March/April).
            - Weather and soil conditions permitting.
            - Inter-Seed/Slit Seeding can be performed thru the hydromulch in the spring.
- Maintain Healthy Cover of Desirable Vegetation of Smooth Brome:
    - Fall 2018 Mowing:
        - Distribute Smooth Brome seeds.

        - Set location up for fall 2018 and spring 2019 cheatgrass herbicide application.
        - Vegetative debris is one source of carbon for cheatgrass control.
    - Spring 2019 fertilizer application:
        - In areas we are not still managing cheatgrass or annual weeds apply fertilizer.
        - Because Smooth Brome is sod forming it spreads when healthy and thriving. The more it spreads the smaller our management area becomes.
- Repeat Objectives as necessary:

Weed Management and revegetation is a multiyear process until a viable plant community is established throughout the location.

Attachment A

Attachment B

Attachment C