

Appendix 9: Closure Plan and Cost

A05 Pit Closure Cost

Closure Cost Estimate

01-Nov-14

Project Management / Reporting - Sampling

| | Qty | Unit | Unit Price | Description | Total |
|--------------------------|-----|------|------------|---|-----------------|
| Program Manager | 4 | hour | \$ 125 | Project staffing, data review | \$ 500 |
| Project Manager | 8 | hour | \$ 100 | Project coordination, report review | \$ 800 |
| Project Professional | 8 | hour | \$ 90 | Project supervision, report preparation | \$ 720 |
| Administrative Assistant | 2 | hour | \$ 45 | Billing | \$ 90 |
| <i>Sub-total</i> | | | | | \$ 2,110 |

Site Labor

| | Qty | Unit | Unit Price | Description | Total |
|-----------------------|-----|------|------------|-------------------------------|------------------|
| Project Professional | 8 | hour | \$ 90 | Sampling collection oversight | \$ 720 |
| Field Tech | 18 | hour | \$ 60 | Sample collection | \$ 1,080 |
| Construction Manager | 18 | day | \$ 500 | | \$ 9,000 |
| Filter Press Pit Crew | 4 | day | \$ 800 | One crew pressing 500 bbl/d | \$ 3,200 |
| Liner Removal Crews | 14 | day | \$ 1,600 | Two crews for two weeks | \$ 22,400 |
| <i>Sub-total</i> | | | | | \$ 36,400 |

Non-labor Items

| | Qty | Unit | Unit Price | Description | Total |
|----------------------------------|------|-------|------------|---|-------------------|
| ESC Soil Samples | 12 | each | \$ 150 | 12 BTEX/GRO/DRO samples | \$ 1,800 |
| Filter Press | 4 | day | \$ 5,000 | One press at 500 bbl/day | \$ 20,000 |
| Off-site disposal of sludge cake | 1000 | cy | \$ 83 | Disposal volume is 1/3 unpressed volume | \$ 83,333 |
| Transport of liner to NSF | 14 | day | \$ 570 | | \$ 7,980 |
| Liner bailing and disposal | 214 | bails | \$ 500 | | \$ 107,000 |
| <i>Sub-total</i> | | | | | \$ 220,113 |

| | | | | | |
|---------------------------------------|---|----|----------|--|----------|
| Mobilization / De-mobilization | 1 | LS | \$ 5,000 | | \$ 5,000 |
|---------------------------------------|---|----|----------|--|----------|

| | | | | | |
|---------------------------------|--|--|--|--|-------------------|
| <i>Project Sub-total</i> | | | | | \$ 263,623 |
|---------------------------------|--|--|--|--|-------------------|

| | | | | | |
|--------------------|---|----|-----------|--------------------------|-----------|
| Contingency | 1 | LS | \$ 39,500 | 15% of Project Sub-total | \$ 39,500 |
|--------------------|---|----|-----------|--------------------------|-----------|

| | | | | | |
|--------------|--|--|--|--|-------------------|
| TOTAL | | | | | \$ 303,123 |
|--------------|--|--|--|--|-------------------|

Assumptions

- 1) No below-liner impacts
- 2) Backfilling and earthwork required to return site to native grade are included in Garfield County revegetation bond
- 3) No removal of subsurface pipes
- 4) 1000 cy of sludge to be removed and pressed at closure

A05 Pit Closure & Reclamation Plan

Operating Life

The A05 pit is expected to operate for twenty (20) years or greater. However, the facility could be closed earlier due to the continuously changing natural gas market conditions.

At closure, the following tasks will be undertaken at the A05 pit:

- Removal of the following items:
 - Industrial waste and chemicals including bottom solids
 - Equipment including pipelines, etc.
 - Drainage controls
 - Other industrial components, as required by COGCC regulations at the time of closure
- Native soil sampling and analysis for Table 910-1 constituents
- Comparison of closure samples with baseline samples to determine if naturally occurring background concentrations have been exceeded.
- Completion of remediation activities required by soil sampling results
- Site restoration to pre-facility conditions, including recontouring and revegetating the site, redistribution of topsoil and reseeding.
- Site monitoring to verify that seventy (70) percent of the preexisting vegetation is achieved.
- Final reclamation in accordance with COGCC regulations at the time of closure.

Seedbed Preparation and Slope Reconstruction

Cut and fill slopes will be backfilled and recontoured to a slope of 3:1 – 2.5:1 or less in instances where necessary to match the existing natural contours. Following final contouring, all backfilled or ripped surfaces will be covered evenly with topsoil. Recontouring should form a complex slope with heavy pocking. In areas with slope greater than three (3) percent, imprinting of the seed bed is recommended. Final seedbed prep will consist of scarifying/imprinting the topsoil prior to seeding. Imprinting can be in the form of dozer tracks or furrows perpendicular to the direction of slope. When hydroseeding or mulching, imprinting should be done prior to seeding, unless the mulch is to be crimped into the soil surface. If broadcast seeding and harrowing, imprinting will be done as part of the harrowing. Furrowing can be done by several methods, the most simple of which is to drill seed perpendicular to the direction of slope in a prepared bed.

Other simple imprinting methods include deep hand raking and harrowing, always perpendicular to the direction of slope. All compacted areas will be ripped to depth of eighteen (18) inches with max furrow spacing of two (2) feet. Where practicable, ripping will be conducted in two passes at perpendicular direction.

Topsoil

Following final contouring, all backfilled or ripped surfaces will be covered evenly with topsoil. The topsoil in the cut slope on the back of the pad will be heavily pocked using the excavator bucket to form an uneven soil surface complex which will aid in revegetation and help with slope stabilization. The fill slope, and remaining disturbed, and reclaimed areas will be track walked to aid in revegetation and slope stabilization. In areas that may not have been disturbed during the reclamation process or areas of suspected compaction that will be reseeded, measures will be taken to loosen and spread the topsoil. These measures may include scarifying the soil by raking or harrowing the soil.

Seed Mix

Seed mix used for reclamation will be taken from the approved seed mixtures identified below:

Low-Elevation Salt-Desert Scrub/Basin Big Sagebrush

| Common Name | Scientific Names | Form | PLS lbs/acre |
|-----------------------|---|-------------|--------------|
| Fourwing Saltbush | <i>Atriplex canescens</i> | Shrub | 1.9 |
| Shadscale | <i>Atriplex confertifolia</i> | Shrub | 1.5 |
| Galleta | <i>Pleuraphis [Hilaria] jamesii</i> | Bunch | 2.5 |
| Alkali Sacaton | <i>Sporobolus airoides</i> | Bunch | 0.2 |
| Streambank Wheatgrass | <i>Elymus lanceolatus ssp. Psammophilus, Agropyron riparium</i> | Sod-forming | 2.5 |
| Slender Wheatgrass | <i>Elymus trachycaulus, Agropyron trachycaulum</i> | Bunch | 1.8 |
| Sandberg Bluegrass | <i>Poa sandbergii, Poa secunda</i> | Bunch | 0.3 |

¹ PLS lbs/acre based on 45 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (90 PLS per square foot) if broadcast or hydroseeded.

Spruce-Fir Forest, Including Mountain Meadows

| Common Name | Scientific Names | Form | PLS lbs/acre |
|-----------------------|--|-------------|--------------|
| Mountain Brome | <i>Bromopsis [Bromus] marginatus</i> | Bunch | 5.8 |
| Slender Wheatgrass | <i>Elymus trachycaulus, Agropyron trachycaulum</i> | Bunch | 3.3 |
| Letterman Needlegrass | <i>Achnatherum [Stipa] lettermanii</i> | Bunch | 3.5 |
| Blue Wildrye | <i>Elymus glaucus</i> | Bunch | 4.8 |
| Thickspike Wheatgrass | <i>Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum</i> | Sod-forming | 3.4 |
| Idaho Fescue | <i>Festuca, idahoensis</i> | Bunch | 1.2 |
| Wheeler Bluegrass | <i>Poa nervosa</i> | Sod-forming | 0.6 |

¹ PLS lbs/acre based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

Pinyon-Juniper Woodland, Mountain/Wyoming Big Sagebrush Shrubland

| Common Name | Scientific Name | Form | PLS lbs/acre |
|----------------------|--|-------|--------------|
| Indian Ricegrass | <i>Achnatherum [Oryzopsis] hymenoides</i> | Bunch | 1.9 |
| Galleta | <i>Pleuraphis [Hilaria] jamesii</i> | Bunch | 2.5 |
| Bluebunch Wheatgrass | <i>Pseudoroegneria spicata, Agropyron spicatum</i> | Bunch | 2.8 |
| Slender Wheatgrass | <i>Elymus trachycaulus, Agropyron trachycaulum</i> | Bunch | 3.3 |
| Mutton grass | <i>Poa fendleriana</i> | Bunch | 0.6 |
| Sandberg Bluegrass | <i>Poa sandbergii, Poa secunda</i> | Bunch | 0.6 |

¹ PLS lbs/acre based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

Mixed Mountain Shrubland, Including Oakbrush

| Common Name | Scientific Names | Form | PLS lbs/acre |
|--------------------------|--|-------------|--------------|
| Thickspike Wheatgrass | <i>Elymus lanceolatus ssp. lanceolatus, Agropyron dasystachyum</i> | Sod-forming | 3.4 |
| Bluebunch Wheatgrass | <i>Pseudoroegneria spicata, Agropyron spicatum</i> | Bunch | 3.7 |
| Bottlebrush Squirreltail | <i>Elymus elymoides, Sitanion hystrix</i> | Bunch | 2.7 |
| Slender Wheatgrass | <i>Elymus trachycaulus, Agropyron trachycaulum</i> | Bunch | 3.3 |
| Canby Bluegrass | <i>Poa canbyi, P. secunda</i> | Bunch | 0.6 |
| Mutton grass | <i>Poa fendleriana</i> | Bunch | 0.6 |
| Letterman Needlegrass | <i>Achnatherum [Stipa] lettermanii</i> | Bunch | 1.7 |
| Columbia Needlegrass | <i>Achnatherum [Stipa] nelsonii, Stipa columbiana</i> | Bunch | 1.7 |
| Indian Ricegrass | <i>Achnatherum [Oryzopsis] hymenoides</i> | Bunch | 1.9 |
| Junegrass | <i>Koeleria macrantha, K. cristata</i> | Bunch | 0.1 |

¹ PLS lbs/acre based on 60 pure live seeds (PLS) per square foot, drill-seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

Seeding Procedures

For best results and success, the recommended grass mixture reseeding should be done in late autumn in order to take advantage of natural precipitation for the region. The reseeding rate should be doubled for broadcast application. Preferred seeding method is multiple seed bin rangeland drill with no soil preparation other than simple grading to slope and imprinting and waterbars, where applicable.

Alternative seeding methods include, but are not limited to:

- Harrow with just enough soil moisture to create a rough surface, broadcast seed and reharrow, preferably at a 90 degree angle to the first harrow;
- Hydroseeding (most economical in terms of seed cost); and
- Hand raking and broadcast followed by reraking at a 90 degree angle to the first raking.

These are not the only means of replanting the site. However, these methods have been observed to be effective in similar landscapes.

The prepared soils will be seeded (weather permitting) no more than 24 hours following completion of final seedbed preparation. The seeding will be conducted by means of drilling the prescribed seed at prescribed seeding rate. The seed will be drilled with a common range drill at a depth of 0.25 – 0.5” beneath the soil surface. The seed will be drilled horizontally across the pad faces and perpendicular to the track walking when possible. Although it is not anticipated, if a slope gradient less than 2.5:1 exists and drilling is not possible from a mechanical and safety standpoint, the soils will be broadcast seeded at twice the prescribed amount. The reseeding will be monitored and reseeded as appropriate until the reclamation standards detailed above are met.

Mulch

Within 24 hours of reseeding (weather permitting) hydromulch will be applied to all reclaimed and reseeded surfaces.