

Section 3.1.1.3 – Reclamation Procedures and Schedule

Generally as part of a dragline mining operation, after coal removal, the overburden for the next pit is excavated by the dragline and placed into a previously mined out pit. Next, bulldozers are used to level spoil peaks, followed by tractor-scrappers or trucks and hydraulic excavator to construct the final graded post-mining topography.

Consideration has been given to developing the reclamation plan in a manner consistent with local physical, environmental, and climatological conditions, including the use made of hydrologic and geochemical information in addressing problems of subsurface drainage and stability. Examples of this consideration include a) not handling topsoil under wet or muddy conditions, nor stripping topsoil in winter, b) cleaning mud/snow/water from pits before spoiling into them, c) avoiding the burial of mud/snow in regrade fills, and d) regrading to approximate original contour with reestablishment of similar watersheds and drainage patterns. Other practices and procedures described in this permit further document this consideration.

Suitable plant growth material (SPGM) will be replaced after final grade approval has been acquired. Respread soil thickness will be determined as described in [Section 3.1.1.1](#). Farm-type equipment will be used to revegetate and maintain reclaimed areas. Final reclamation procedures and revegetation are covered in Section 4.2, Revegetation Procedures, Establishment, and Management.

Reclamation Procedures

Reclamation procedures will comply with all the applicable health and safety standards. Coyote Creek will maintain an employee health and safety policy, which will meet or exceed all state and federal regulations associated with mine health and safety.

All surface coal mining and reclamation operations will be conducted utilizing the best technology available to maximize coal recovery while minimizing the potential for re-affecting the land in the future.

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PROJECTED RECLAMATION TIME SCHEDULE¹

<u>Year Soil Stripped</u>	<u>Year Mined²</u>	<u>Year Rough Graded</u>	<u>Year Finish Graded</u>	<u>Year Respread</u>	<u>Year Revegetated³</u>
2015	2016 ⁴	2018	2019-2020	2020	2020
2016	2017 ⁴	2019	2020-2021	2021	2021
2015-2018	2018	2019	2020-2021	2021	2021
2017-2018	2018	2019	2020-2021	2021	2021
2018-2019	2019	2020	2021-2022	2022	2022
2019-2020	2020	2021	2022-2023	2023	2023
2020-2021	2021	2022	2023-2024	2024	2024
2021-2022	2022	2023	2024-2025	2025	2025
2022-2023	2023	2024	2025-2026	2026	2026
2023-2024	2024	2025	2026-2027	2027	2027
2024-2025	2025	2026	2027-2028	2028	2028
2025-2026	2026	2027	2028-2029	2029	2029
2026-2027	2027	2028	2029-2030	2030	2030
2027-2028	2028	2029	2030-2031	2031	2031
2028-2029	2029	2030	2031-2032	2032	2032
2029-2030	2030	2031	2032-2033	2033	2033

¹Three year reclamation variance requested as detailed below.

²See the Pit Layout and Facilities Map of [Section 3.1.3](#) for year mined.

³See [Section 4.3.1](#) for details. Year on table indicates year of revegetation for cropland. Year of revegetation for native grasslands and associated land uses such as woodlands will extend to 6 years from the year of coal removal to allow for processes to occur to eliminate introduced species from the seed bank because of the fragmented nature of the areas.

Soil striping generally occurs, at minimum, one year in advance of mining. Generally additional striping is required for a buffer for prebenching, chop cutting, highwalls, and dragline tail room clearance.

Rough grading will generally be complete within the year following mining, and finish grading is generally completed the year after that. Soil respread and seeding will occur in the same year, or within the year following finish grading. This procedure will: a) allow regraded spoils to settle and repairs to be made to any early settlement prior to soil respread, and b) provide for larger soil respread areas, which can be respread and seeded in large blocks, making for more efficient and cost effective operations. Wherever possible and practicable, this schedule will be accelerated. In accordance with NDCC 38-14.1-24(14), Coyote Creek will ensure that all reclamation efforts proceed in an environmentally sound manner, and as contemporaneously as practicable with the surface coal mining operations, provided that all reclamation through the initial planting on any land within the permit area shall be completed by Coyote Creek no later than three years from completion of surface coal mining operations on such lands, unless otherwise approved by the North Dakota Public Service Commission (NDPSC).

Leveling will take place approximately one to four spoil peaks behind coal removal operations. In some locations where spoil peaks are below final grade, they may not be leveled, but will be covered with pre-bench material. Grading will be at least one spoil peak behind the active pit to allow for safe reclamation conditions.

Coyote Creek will keep reclamation activities as contemporaneous as it can and the aforementioned schedule will be followed whenever possible. It is in Coyote Creek's own interest to keep the regrade as close to the pits as possible to minimize haul distance. However, there will be times when it will be difficult to complete revegetation within three years of coal removal. Coyote Creek will be a two pit, single dragline operation. The two pit mine plan is necessary to meet customer requirements for coal quality and to balance the strip ratio. When digging a small number of pits each year, sometimes three or less, pits will advance across the landscape slowly. Grading will be at least one spoil peak behind the active pit and even more distance and time will be required in areas of prebench. About half of the area will require prebench. Combining all of these factors, it will likely take more than three years to reclaim some areas. Although they will not be asked for at this time, in areas where only a few pits are mined each year, Coyote Creek will likely require seeding delays or variances in addition to those listed below.

Variance from Three Year Reclamation Requirement:

Coyote Creek requests several variance areas, which will be required for the first ten years of mining. Coyote Creek requests a variance from the three year reclamation requirement {NDCC 38-14.1-24(14)} for the box pit areas ~~in the E 1/2 Section 25, NE 1/4 Section 36, and SE 1/4 Section 24 for the period 2016-2025, as shown as Variance 1~~ on the Pit Layout and Facilities Map of Section 3.1.3. These box pits are dug with dragline, and spoil material will be placed on the highwall side in preparation of the dragline bench for the next several pits. The pit which it was removed from will need ~~to~~ ~~remain~~ ~~to~~ ~~remain~~ open for the next dragline pit spoils. Once the dragline moves through this area, ~~the spoils~~

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~~with the spoils will~~ be graded to the approved post mining topography. Implementing this style of digging, it ~~may~~ take an additional year one to two years to complete rough-finish grading. So for example, areas mined in 2016 will ~~be~~ rough graded in 2018 and finish graded in 2019-2020. ~~The worst case pit occurs in October 2019. For~~ variance #1 we have included reclamation costs for 25% of the final grading that would not have been done by October for 2016/2017 mining. We have also included reclamation costs for 25% of rough grading that would not have been done by October for 2017 mining. Coyote Creek will respread, seed, and stabilize as much area of the area as possible and practical prior to 2021, and will finish many of these areas before the delayed timetable.

Coyote Creek requests a second variance from the three year reclamation requirement {NDCC 38-14.1-24(14)} for the box pit area in Section 36 for the period 2016-2020, as shown on the Pit Layout and Facilities Map of Section 3.1.3. This box pit will be dug with a dragline, placing spoil on virgin ground. The pit which it was removed from will need to remain open for the next dragline pit spoil. Once the dragline moves through this area, box cut spoils will be used to create the post mining topography, however this may will take several years until the year 2021 to obtain adequate area for finish grading. - Coyote Creek will respread, seed, and stabilize as much area of the area as possible and practical prior to 2023 and continue to evaluate this as mining progresses into this area. ~~In variance area #2, we have included reclamation costs for 100% of final grading that would not have been done by October 2017 mining. We have also included reclamation costs for 25% of rough grading that would not have been done by October for 2017 mining.~~

Coyote Creek requests ~~a third~~ variances three, four and five from the three year reclamation requirement {NDCC 38-14.1-24(14)} for the pit end walls ~~in the N ½ of Section 1 for the period 2019-2030,~~ as shown on the Pit Layout and Facilities Map of Section 3.1.3. A variance is required as the pit

sequence for these areas progress at different rates. The variance areas will not be reclaimed until trailing pit is mined. At this point the variance areas will be included with the trailing pit reclamation to keep reclamation efforts as contemporaneous as possible. Coyote Creek will continue to evaluate this as mining progresses into this area.

Coyote Creek requests variance six from the three year reclamation requirement {NDCC 38-14.1-24(14)} for a small area located between two roads and a disturbed drain, as shown on the Pit Layout and Facilities Map of Section 3.1.3. A variance is required as this area is very small and isolated making it extremely difficult to maintain proper water management with the surrounding disturbance on all four sides. This area will be reclaimed with the surrounding lands.

~~Coyote Creek requests a fourth variance from the three year reclamation requirement {NDCC 38-14.1-24(14)} for the pit end walls in the S ½ of Section 25 for the period 2020-2030, as shown on the Pit Layout and Facilities Map of Section 3.1.3. A variance is required as the pit sequence for these areas progress at different rates. The variance area will not be reclaimed until the trailing pit is mined. At this point the variance area will be included with~~

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the trailing pit reclamation to keep reclamation efforts as contemporaneous as possible. Coyote Creek will continue to evaluate this as mining progresses into this area.

CCMC also requests a variance for a maximum of six years following coal removal activities on areas to be seeded to native grasslands or woodlands within the aforementioned variance areas 1-6 in Section 3.1.3 and adjacent associated disturbance. The aforementioned procedures and rationale coupled with delayed seeding dates for native grassland areas within these variance areas will also allow for the most successful opportunity for reclamation of native grassland tracts. Features such as ramps, haul roads, ponds, stockpiles and other similar long-term disturbances inhibit the ability to reclaim native grassland in larger tracts, fragmenting the landscape during periods of time and limiting native grassland management options. Larger areas of native grassland can be more effectively managed with grazing and these delays allow CCMC to eliminate the seed bank of introduced grass species in the soil from undisturbed lands during the first few years of soil respread prior to permanent seeding. This approach will allow for native stands to be sustainable, productive and diverse long-term and overcome the challenge of the often ineffective management option of having fragmented land by providing more opportunities to graze the larger tracts with healthier stands with cattle. These areas will be tracked on CCMC's Annual Map and analyzed frequently to ensure anticipated delays are minimized and deemed necessary to ultimately achieve reclamation success.

In the event that Coyote Creek will need additional variances from the 3-year contemporaneous reclamation requirement, Coyote Creek will submit a variance request for the Public Service Commission's approval with the necessary details and justification before a variance is needed.

Variance from 180 Day Rough Backfilling and Grading:

Coyote Creek requests a variance from the 180-day grading requirement {NDAC 69-05.2-21-01 (2)} for the period 2016-20~~4021~~ for the following reasons:

1. As stated previously, materials from the box cut spoils will need to be placed throughout the mined area. This will not be possible to accomplish with 180 days due to the lack of adequate spoil area to distribute the box cut spoils.
2. A large portion of the area to be mined in 2016-2040 involves prebenching, and requires prebench fill to meet post-mining topography. Prebenching is typically done in 300 to 600 foot wedges, and thus a minimum of two to four spoil peaks beyond the second spoil peak must be available for direct respread of prebenching material, and may take a full year to create this much spoil area. The 180-day requirement is impractical for areas requiring prebench fill. The boundary for these areas is best described as those areas requiring truck/hydraulic excavator prebenching (85' cover), as shown on the Pit Layout and Facilities Map of Section 3.1.3. For simplicity in describing these areas, this appears to be a logical boundary.
3. Coyote Creek has areas throughout mining progression in which only two to three pits are cycled per year. Since grading will be at least one spoil

peak behind the active pit, meeting the 180 day requirement would be impractical.

It is the policy of the company to not regrade up to the final active pit, as this would put mining operations located in the bottom of the pit and the spoil grading operations in jeopardy due to the potential of spoil instability. Previous experiences in the Beulah area have proven that regrading the second spoil peak into the first can exert enough pressure to cause the first peak to slide into the pit. Stability analyses have also been conducted that help explain this phenomenon. Therefore, to assure safe mining operations, spoil regrading generally will not be done closer to the pits than the third spoil peak.

Variance from Four Spoil Peak Rough Backfilling and Grading:

Coyote Creek requests a variance from the four spoil peak grading requirement {NDAC 69-05.2-21-01 (2)} for the period 2016-2040 for the following reasons and locations:

1. Spoil peaks will be graded within four spoil peaks of the active pit in accordance with NDAC 69-05.2-21-01(2), except in instances where prebench fill is required to meet post-mining topography. For those areas that require prebench fill, the spoil peaks will not be graded since they are below final post-mining grade, and they will be covered with prebench material. In no instance will more than six spoil peaks be left ungraded. The boundary for these areas is best described as those areas requiring truck/hydraulic excavator prebenching (85' cover), as shown on the Pit Layout and Facilities Map of Section 3.1.3. For simplicity in describing these areas, this appears to be a logical boundary.

If at a later date the NDPSC determines that Coyote Creek has abused these 180 day and four spoil peak variances, Coyote Creek agrees to reevaluate these requests.

Final grading will take place after rough grading to establish final post-mining topography and reestablish surface drainage patterns. Where reclamation scheduling permits, graded areas will be allowed to settle for approximately six to 12 months before respreading topsoil and subsoil material. Other site-specific protective measures may include creating diversion ditches, terracing, construction of sumps, and the use of straw bale dikes.

After completing rough grading of the area, final contouring and drainage will be established. Once approval of the grading is received, subsoil and topsoil will be respread in separate lifts using tractor-scrapers and/or trucks and hydraulic excavator. An adequate seedbed will then be prepared with conventional agricultural equipment. Various tillage methods may be used for site-specific requirements. Such methods may include, but are not limited to chisel-plowing, harrowing, rock picking, dragging, and the use of cover crops. Haulroads and access trail corridors will be ripped and scarified to alleviate compaction prior to SPGM respread per NDAC 69-05.2-15-04. Deep ripping may also be conducted following topsoil respread to reduce subsoil compaction. Ripping will be performed with a dozer, a subsoiler, or other deep ripping implement pulled with a tractor. After respreading SPGM, the area will be revegetated as explained in Section 4.2, Revegetation Procedures, Establishment, and Management.

Generally, regrading and reclamation of haulroads in the proposed permit area will be accomplished by removing aggregate from the road base and burying material in spoils or pond basins with the use of tractor-scrappers. Areas of significant cut will be hauled to fill areas along the road or to final pit/highwall locations. Road ditches, approaches, and culverts will be removed, and the area will be regraded to blend in with the adjacent topography. Subsoil and topsoil will be respread, in a manner similar to that for adjacent regraded spoils. Topsoil will then be revegetated as described in Section 4.2, Revegetation Procedures, Establishment, and Management.

County roads and section line roads will be constructed on reclaimed land. See Section 3.2.1 for details and specifications for reclaimed road construction.

Ponds that are excavated into overburden material will be backfilled with suitable overburden material and respread with SPGM. Berms and other associated structures will be graded to the appropriate topography and blend with the adjacent landscape. Pond dikes constructed of subsoil material will require respreading embankment material over the refilled pond, and replacing topsoil. SPGM will be replaced in accordance with reclamation procedures previously described in this section. Following topsoil respread, the area will be revegetated as described in Section 4.2, Revegetation Procedures, Establishment, and Management.

Ponds, diversions, roads, and stockpile areas will generally be reclaimed within two years of the end of the year they are no longer used to support mining facilities. Ponds and diversions will not be removed until the requirements of Public Service Commission Policy Memorandum #19 are addressed.

SPGM stockpiles will gradually be respread on reclaimed pit, pond, and haulroad areas, thus reducing and finally removing the stockpiles. Following removal of subsoil piles, topsoil will be respread, and the area will be revegetated as described in Section 4.2, Revegetation Procedures, Establishment, and Management.

Post-Mining Topography

Coyote Creek Mining Company is planning to apply for a minerals lease on all tracts containing federal coal in the future. Therefore, post-mining topography changes related to mining the federal coal were incorporated into the permit. If the federal leases and royalty reductions are not obtained, the post mining topography will be revised back to pre-mining topography on these federal tracts.

The post mining topography for the Coyote Creek Mine was developed in ~~three~~two separate parts. Part one was the northern pits where mining is oriented in a north south direction starting at the year 2016 and the area west. Part two was the pits oriented in a northwest to southeast mining sequence. Spoil from the 2016 box pit has been incorporated into part one of the post mining topography. The post mining topography was developed for each area using the following processes.

The post-mining topography is developed using Carlson Software with AutoCAD in accordance with the following procedures:

1. The pre-mining topographic and top and bottom of each coal surface are loaded into the computer.
2. Using the computer software, these surfaces are gridded (100' x 100' grid) encompassing the entire area for which the post-mining topography is to be developed.
3. Using the grid file utilities of the computer software:
 - Thickness Grids were created for the dragline 70 foot bench, 85 foot chop cut and prebench material greater than 85 feet.
 - Based on the cross-sections developed in Section 3.1.7, the various thickness grids were shifted perpendicular to pit advancement to reflect shifting of the dirt as a result of normal mining.
 - Each thickness grid was then swelled 10% and added together, creating a total thickness grid. This thickness grid was then added to the bottom of the coal grid surface of the Upper Beulah bed, creating a post-mining topographic grid surface.
 - The grid file was then contoured creating a draft post-mining topography.
4. The contours are adjusted to account for potential shifts in prebench material, watershed size, and drainage patterns.
5. The contours were then adjusted and smoothed as follows:
 - Contours were adjusted along the initial box pit areas and croplines, which may not support the grade changes associated with the shift in material.
 - Drainageways were revised and added as necessary.
 - Watersheds and probable hydrologic consequences were reviewed. Adjustments to the topography were made as necessary.
 - Topography was adjusted at the final highwall areas. Topography near final highwall areas is generally lowered to minimize stockpiling and work associated with reclaiming these areas. The areas adjacent to the final highwall were also adjusted to generate material to fill the highwalls.
 - Slope reports were developed for the draft topography, and the topography was adjusted as necessary to suit post-mining land use. Private ownership tracts were also reviewed, and the topography was adjusted if necessary.
 - A pre-mining versus post-mining material balance was conducted. The topography was again adjusted until a favorable balance was obtained
6. Final adjustments were made to contours to ensure a smooth transition between disturbed and undisturbed topography as well as proper drainage. The Post-Mining Area Slope Map is then computed off of the Post-Mining Topography Map information. The Post-Mining Topography Development Map of [Section 3.1.5](#) was developed to assist in analyzing the post-mining topography. The map shows cuts and fills of the post-mining topography at each 100 foot grid node, as compared to the pre-mining topography.

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The post-mining topography was updated and revised in Revision 9 to reflect actual mining conditions during the first permit term and looking forward to the next 5 year permit term. Areas revised and reasons for updating are as follows:

1. The post-mining topography was revised in the northern pit in SE1/4 Section 24, W2 Section 25, and NE1/4 Section 36 T143N, R89W to reflect actual mining disturbance and avoidance of woodlands at the north end of the pits. The mine was able to develop a mining sequence that allowed preservation of many of the woodlands in SE1/4 Section 24. CCMC

- disturbed approximately 30 acres less at the north end than previously approved. To preserve the woodlands, the pits were dug north to south, subsequently pulling the dirt to the south, resulting in changes to the post mining topography at the south end of these pits. The watersheds draining north to sedimentation pond P24-02 were also reduced to more closely match pre-mine conditions. While revising this area, additional drains were added to reduce some of the long slopes. The changes resulted in improved area slope as compared to the currently approved post-mining topography and pre-mining topography.
2. The post-mining topography was revised in the NW1/4 of Section 36 T143N, R89W to accommodate dragline box pit material. This box pit spoil will be cast to the east and the post-mining topography was revised to accommodate some of this box cut spoil material and the natural shift of overburden associated with a dragline box pit.
 3. The post-mining topography was revised in the northwest to southeast pits in Section 36, T143N, R89W and N1/2N1/2 Section 1 T142N, R89W to better reflect actual mining conditions, achieve a dirt balance for this area, reduce long slopes, and add additional drains. The current approved post-mining topography did not balance for this area which would have resulted in delayed reclamation for several years. The revised post-mining topography better reflects the natural shift of overburden associated with a dragline box pit. While revising the topography, additional drains were added, reducing most of the long slopes that were in the currently approved post-mining topography. The changes resulted in improved area slope as compared to the currently approved post-mining topography and pre-mining topography.
 4. The post-mining topography was revised in the NW1/4 of Section 6 T142N, R88W to accommodate dragline box pit material. This box pit spoil will be cast to the north and the post-mining topography was revised to accommodate some of this box cut spoil material and the natural shift of overburden associated with a dragline box pit.
 5. The post-mining topography was revised in the NE1/4 of Section 34 T143N, R89W to better reflect changes to the post mining topography at the final highwall and to achieve the material balance for the entire mine.
 - 4.6. The material balance was revised to reflect the above changes and new projected disturbance boundary.

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Summary of Rough Grading Conditions and Assumptions

1. The rough grading work will be done by bulldozer and/or trucks dumping prebench material.
2. Pit widths will vary from 120 to 160 feet.
3. Highwall is assumed to stand at 40 to 60 degrees, spoil at a 25 to 35 degree angle of repose, and swell is assumed to be approximately 10 percent.
4. Bulldozers and trucks will work one to four spoil piles from the active pit, except where prebench fill is required. Prebench material will be dumped over the top of spoil piles, and filled to the post-mining topography.
5. Final grading, the respreading of topsoil/subsoil, and initial seeding will generally commence one year after completion of rough grading, and be completed no later than three years following the mining of each strip. Due to differential settling of graded spoils, it may become necessary to wait longer than one year before respreading begins in some areas.

6. A table showing disturbance, regrade, and revegetation schedules and acreages can be found earlier in this section.

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Material Balance

Carlson Software was used to perform a material balance between the material available and the material required to achieve the proposed post-mining topography. Material balances were done for the entire permit area. Polygons for the pre-mining and post-mining material balance are shown on the Post-Mining Topography Development Map of Section 3.1.5.

Entire Permit Material Balance:

Material Available:

Total Available	=	496,809,302
<u>490,580,000</u> cy		
Minus Area Lowered <u>Raised</u> Outside Cropline	=	
580,503 <u>1,037,000</u> cy		
Plus 10% Swell	=	<u>49,680,930</u>
<u>49,058,000</u> cy		
TOTAL MATERIAL AVAILABLE	=	<u>547,070,735</u>
<u>538,601,000</u> cy		

Material Required:

TOTAL MATERIAL REQUIRED	=	545,832,554
<u>538,210,000</u> cy		

Material Long	=	<u>1,238,181</u>
<u>391,000</u> cy		
Percentage of Material Available	=	0. <u>0723</u> %

Reclamation Costs

Reclamation costs for Permit can be found in Section 3.1.1.8 Reclamation Costs

Area Slope Comparison Table

The Area Slope Comparison Table can be found on the Post-Mining Area Slope Map of [Section 3.1.6](#).