

Hamre, John G.

From: Emmer, Jonathan W.
Sent: Tuesday, November 8, 2022 8:52 AM
To: Hamre, John G.
Cc: Brinkman, Zanna A.
Subject: FW: [EXTERNAL MAIL] RE: Culvert design and pond appendices
Attachments: Response to Tech Rvw 4 Rev 8 10-27-22 Update 11-07-22 Surface Water Section.pdf

John,

Please attach this email to the attachment and then corelog and save in Mine Data.

[\\coal\Mine](#) Data\Center Mine\Permits\BNCR - 1101\Revisions & Renewals\No. 8\Rev8_technical4_Rsp_ltr_rvsd_11-7-22.pdf

Jonathan Emmer
Assistant Director

Reclamation Division
North Dakota Public Service Commission
600 E Boulevard Ave Dept 408
Bismarck, ND 58505

jemmer@nd.gov 701.328.4094

From: Jodey Houn (BNI Coal) <jhoun@bnicoal.com>
Sent: Monday, November 7, 2022 8:20 AM
To: Emmer, Jonathan W. <jemmer@nd.gov>; Chris Droste (BNI Coal) <cdroste@bnicoal.com>
Cc: Myran, Brandon S. <bmyran@nd.gov>
Subject: RE: [EXTERNAL MAIL] RE: Culvert design and pond appendices

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Jonathan,

Over the weekend, I went through the Surface Water section of Tech 4 to double check culvert and pond designs. I am attaching the response letter that outlines additional work that was done and changes that were made. The [appendix narrative](#) to the ponds that include a culvert either in front of the pond or behind the pond now address the culvert designs and modeling that was done. The culvert designs are attached to the associated pond designs.

The culvert information sheets were updated.

Plate 4.5-1 Transportation map was updated to be consistent with the any culvert changes.

Culverts 30, 31, 33, 34, 35, 36 have all been checked and corrected to be accurate and modeled to the current county road profile.

The appendices associated of the following ponds have all been corrected to reflect any changes, checked for accuracy, and layout of modeling documents was made consistent.

- Pond 11-1
- Pond 12-3
- Pond 13-8
- Pond 13-9
- Pond 13-10
- Pond 14-1

Thank you for your consideration and allowing us to correct these. Please disregard the previous versions of these items.

Jodey

Jodey Houn, PE
Manager of Engineering



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From: Emmer, Jonathan W. <jemmer@nd.gov>
Sent: Thursday, November 3, 2022 3:33 PM
To: Chris Droste (BNI Coal) <cdroste@bnicoal.com>
Cc: Jodey Houn (BNI Coal) <jhoun@bnicoal.com>; Myran, Brandon S. <bmyran@nd.gov>
Subject: [EXTERNAL MAIL] RE: Culvert design and pond appendices

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Thank you. I will review the culvert designs. Once the culverts are properly designed, it appears that they will need to be factored into the HydroCAD routing calculations for the sediment pond and its emergency spillway designs.

Jonathan Emmer
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From: Chris Droste (BNI Coal) <cdroste@bnicoal.com>
Sent: Thursday, November 3, 2022 1:29 PM
To: Emmer, Jonathan W. <jemmer@nd.gov>
Cc: Jodey Houn (BNI Coal) <jhoun@bnicoal.com>
Subject: Culvert design and pond appendices

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Jonathan,

See attached for the pond appendices and culvert design/information sheets we talked about yesterday. Went back through and updated the culverts, previously I was using the slope of the longest flow line rather than average area slope which increases the flow to the culvert. Some of the flows to the culverts are less than the flows to the pond but the culverts are collecting water from a smaller area than the ponds as well.

If there are any questions let me or Jodey know

Thanks,
Chris



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October 27, 2022

Ms. Zanna Brinkman, Director
Reclamation Division, NDPSC
Department 408
600 East Boulevard Avenue
Bismarck, ND 58505-0480

Dear Ms. Brinkman,

This submittal contains a response to your Technical Review 4 letter to us dated October 4, 2022. In this letter you listed technical deficiencies that must be addressed before the Revision 8 application to BNCR-1101 can be approved. Below is a listing of the deficiency followed by our response:

General

1. Please incorporate the changes from Revision No. 10 into Revision No. 8. (JWE)

Updates approved in Revision 10 to BNCR-1101 have been incorporated into this submittal.

Section 3.3 – Ground Water

2. Please review the narrative in Section 3.3. It appears that multiple wells will be mined through. Please revise the new narrative on page 10 and in other sections as necessary to thoroughly discuss all groundwater wells that will be destroyed by mining and how they will be replaced. (NDAC 69-05.2-16-17) (PJR)

The section was updated to address the potential replacement of two wells which could need replacement (M. Dresser #2 and J. Lackman #1).

Section 3.4 – Surface Water

3. The narrative for Watershed HC-2 specifies that this watershed will experience an increase in peak runoff due to a slight decrease in the time of concentration, which results from an increase in average land slope. However, both design event tables (10 year and 25 year) in Section 3.4, Surface Water - Pre-mine/Post-Mine Watershed Comparisons, specify a decrease in peak runoff and runoff volume. Please review and revise accordingly. (JAR)

The paragraph pertaining to HC-2 has been changed to accurately reflect the change in watershed and that there will not be any adverse effects from the change.

4. The 10 year – 24-hour design event in the Pre-Mine/Post-Mine Watershed Comparison table specifies that peak runoff for watershed HC-14 increases by 129.83 cfs (58.93% change) from the pre-mine conditions. However, there is no Probable Hydrologic Consequences determination made for this increase to peak runoff for watershed HC-14. Please review the calculations for watershed HC-14 and provide a determination, if necessary, addressing potential adverse effects for this increase in peak runoff for watershed HC-14. (JAR)

HC-14 watersheds have been subdivided into 3 watersheds as suggested in No. 6 below. The results are discussed in the narrative on page 15 of Section 3.4.

5. The narrative at the top of page 6 of Section 3.4, Surface Water, states that the location of all developed water resources and wetlands can be seen in Plate 3.4-5, but a livestock water tank in the northeast corner of Section 14 is not depicted on this map. Likewise, the narrative at the bottom of Page 7 of Section 3.4 states that all developed water resources are characterized in Table 3.4-1 but the livestock water tank in the northeast corner of Section 14 is not listed in this table. Also, the narrative on page 34 of Appendix 4.12-2 mentions pipelines and tanks that are not accounted for in Section 3.4. Please include livestock pipeline water delivery systems and tanks in Plate 3.4-5, Table 3.4-1, and revise the narrative at the top of page 6 of Section 3.4 to clarify where livestock pipeline water delivery systems and tanks are discussed in the Probable Hydrologic Consequences (PHC) section of the permit. Please also clarify compliance with NDCC 38-14.1-14(2)(i)(3) which requires BNI to provide surface owners an alternative source of water in instances where protection of quantity cannot be assured during mining and reclamation activities. (GAW)

Updated Plate 3.4-5 to depict stock tanks and associated piping. Updated Table 3.4-1 to include Section 14 watering system. Updated narrative discussing where water for Section 14 system is coming from and what parts of the system BNI plans to return in the postmine setting.

6. The Probable Hydrologic Consequences (PHC) for the Revision 8 addition area includes watersheds that have more than one discharge/control point at the disturbance boundary. This would include Watersheds HC-14 and HC-10. Please update the PHC to provide justification why it is appropriate to analyze watersheds that have sub-watershed discharge/control points or revise the PHC to provide a pre- and post-mining analysis of each sub-watershed in the Revision 8 addition area. For example, three sediment ponds are needed to control runoff from sub-watersheds within Watershed HC-14 and three sub-watersheds are depicted on the Post-Mine Watershed Map, Plate 3.4-3. Thus, the PHC should include a pre- and post-mining analysis for each of the three sub-watersheds in Watershed HC-14. Likewise, several sediment ponds are needed in Watershed HC-10, and each will have its own discharge/control point or outfall so the probable hydrologic consequences of each of these sub-watersheds should be provided in the PHC as required by NDAC 69-05.2-09-12(2) which states that the determination required by subdivision o of subsection 1 of NDCC 38-14.1-14 must include a hydrologic reclamation plan that specifically addresses any potential adverse impacts identified in the PHC determination and contains preventive and remedial measures for those impacts. (GAW/JAR)

Watersheds HC-10 and HC-14 have been broken up into 3 sub areas for each of the control points at the disturbance boundaries. The post mine topo was modified slightly to divide the sub areas into similar areas as the pre mine conditions. As a result of the slight changes, Plate 4.10 and Plate 4.11 have been modified to reflect the changes. The changes were so

minimal that it did not change the post mine slope table by more than an acre. The narrative of the two watersheds HC-10 and HC-14 has been updated on Page 15. The results of any one sub basin and the basins combined are minimal and reflected in the tables and narrative. The total areas of the three sub basins with HC-10 and HC-14 changed by -3% and 1.9% respectively.

7. The Pre-Mine and Post-Mine Watershed Comparison table on page 14 of Section 3.4 indicates that significant hydraulic impacts are anticipated for watershed HC-19. Please provide an analysis of the expected on- and off-site impacts and provide remedial measures to reduce those impacts, if necessary. NDAC 69-05.2-09-12(2). (GAW)

The negligible impacts have been addressed on Page 15 of Section 3.4. No remedial measures are not necessary as the result of 0.2 acre feet of additional water or 3 cfs of additional flow resulting from the increase in water shed size.

8. The post-mining watershed size for the 10-year and 25-year events (4.6 cfs and 6 cfs, respectively) are different for watershed HC-19 on the comparison tables on pages 13 and 14 in Section 3.4 - Surface Water. Please review and revise accordingly. (JAR)

The correction has been made so they are consistent.

9. The watershed identification labels are difficult to interpret on the Post Mine Watershed Map, Plate 3.4-3, as they are placed under the contour lines and elevation labels. Please revise to improve watershed identification legibility. (GAW)

The labels were brought to the front and the number of elevation labels were reduced in an effort to make the drawing more legible.

Section 3.5 – Pre-Mine Land Use

10. The Revision 8 pre-mining land uses are depicted using line colors other than those indicated in the legend of the Pre-Mine Land Use Map, Plate 3.5-1. Please update the map so that the land use line colors are consistent with the legend and the balance of the land in Permit BNCR-1101. (GAW)

Updated map to make lines clearer

11. Please update the Pre-Mine Land Use Map, Plate 3.5-1, by providing a label for each tree planting in the Revision 8 addition area as has been done in the existing permit area. (GAW)

Added labels for shelterbelts in the Rev. 8 area

12. Please update the Pre-Mine Land Use Map, Plate 3.5-1, by providing a label and properly depicting areas classified as pre-mining woodland acreage in the Revision 8 addition area. The land use label and line color should be consistent with the legend and labels/line color used for other land in Permit BNCR-1101. (GAW)

Updated woodland coloring and drawing order to make them clearer

Section 3.10 – Baseline Fish and Wildlife Resources

13. The first page of Appendix 3.10-8, Baseline Fish and Wildlife Inventory Plan – Revision 8, includes a letter dated September 10, 2010 that does not pertain to the Revision 8 addition area. Please remove this letter from Appendix 3.10-8. (GAW)

The letter has been removed as requested.

14. Page 12 of Appendix 3.10-8 includes correspondence regarding acquiring baseline wetland inventory information for the Revision 8 addition area. It seems this information should be in the pre-mine wetland section or elsewhere in the permit rather than in the Fish and Wildlife section. Please review and update as necessary to provide clarity. (GAW)

Moved this page to P2 in Appendix 3.6-5

Section 4.5 - Transportation Plan

15. Please revise Plate 4.5-1 (Transportation Plan) to depict all the culverts that will either be installed or replaced under 37th Avenue SW based on the comments in Section 4.6 below. (JWE/BSM)

Updated plate depicting all the culverts that will be replaced underneath 37th Ave SW.

Section 4.6 - Surface Water Management Plan

16. It appears that diversions will be needed around the north and west sides of the subsoil stockpile in the NE1/4 of Section 11 to direct surface water runoff to sediment pond P-12-03. Please update the Surface Water Management Map, Plate 4.6-1, to show field engineered diversions around this pile or update the Surface Water Management Plan to clarify how runoff will be managed around this pile. (GAW)

Updated Pit Layout facilities and surface water management plate with Field Engineered diversion

17. Follow-up to Item No. 10: According to Plate 4.6-42A in Appendix 4.6-42 (Design Details – Sediment Pond P-13-8), it appears that a culvert will be placed underneath 37th Avenue SW to direct water to P-13-8, but no culvert designs are included. Please revise Appendix 4.6-42 to include design details and narrative to include the culvert; and update Plate 4.5-1 (Transportation Plan Map) and Appendix 4.5-2 (Culvert Information Sheets). (JWE/BSM)

Updated appendix 4.6-42 to include culvert information sheet and design narrative for culvert under 37th avenue SW, updated Culvert information sheet and Transportation plan map. The pond design and watershed was unchanged. Culvert 34 was modeled to pass the 15yr-24 hr event through the current county road profile. The Appendix description explains the modeling as well.

18. Follow-up to Item No. 10: According to Plate 4.6-43A in Appendix 4.6-43 (Design Details – Sediment Pond P-13-9), it appears that a culvert will need to be placed underneath 37th Avenue SW to direct water to P-13-9, but no culvert designs are included. Please revise Appendix 4.6-42 to include design details and narrative to include the culvert; and update

Plate 4.5-1 (Transportation Plan Map) and Appendix 4.5-2 (Culvert Information Sheets). (JWE/BSM)

Updated appendix 4.6-43 to include culvert information sheet and design narrative for culvert under 37th avenue SW, updated Culvert information sheet and Transportation plan map. Pond 13-9 HydroCAD output sheets were updated to correct titles. The pond information sheets were corrected to accurately reflect the output model. Culvert 35 was modeled using the current county road profile and the head elevation is correct at 2045. The ditch grade to the north is the governing elevation not the road top itself.

19. Follow-up to Item No. 10: According to Plate 4.6-44A in Appendix 4.6-44 (Design Details – Sediment Pond P-13-10), it appears that a culvert is needed underneath 37th Avenue SW to direct water to P-13-10, but no culvert designs are included. Please revise Appendix 4.6-44 to include design details and narrative to include the culvert; and update Plate 4.5-1 (Transportation Plan Map) and Appendix 4.5-2 (Culvert Information Sheets). (JWE/BSM)

Updated appendix 4.6-44 to include culvert information sheet and design narrative for culvert under 37th avenue SW, updated Culvert information sheet and Transportation plan map. Culvert 36 was modeled to accommodate a 15yr-24hr event. The ditch grade to the south is the governing elevation at 2045 ft not the road top itself.

20. Follow-up to Item No. 10: The HydroCAD calculations were not updated to include the average watershed slope of 8.21% as stated in pond design information sheet in Appendix 4.6-44 (Design Details – Sediment Pond P-13-10). The HydroCAD calculations used an average watershed slope of 4.41%. (JWE/BSM)

Updated 4.6-44 design details and Hydrocad calculations using water shed slope of 8.21 %.

21. Follow-up to Item No. 10: According to Plate 4.6-44A in Appendix 4.6-44 (Design Details – Sediment Pond P-13-10), the construction date is listed as 2024. The construction date is listed as 2025 in Table 4.6-1 in Section 4.6 (Surface Water Management Plan) and 2025 in Plate 4.6-1 (Surface Water Management Plan). Please revise Plate 4.6-44A, Table 4.6-1, and/or Plate 4.6-1 to list the correct construction date for sediment pond P-13-10. (JWE/BSM)

Updated table the needed plates and tables to the 2024 construction date

22. Follow-up to Item No. 10: As discussed with Ms. Kolden on July 28, 2022, it appears that runoff will bypass sediment pond P-11-1 southeast of the pond and flow into an intermittent stream. Please revise the pond design in Appendix 4.6-41 so all runoff from the watershed flows into the pond. (JWE/BSM)

Water shed boundary was updated to only include areas within the mining disturbance boundary. Runoff will be controlled and directed into pond 11-1 with a SS edge.

23. Follow-up to Item No. 10: The narrative in Appendix 4.6-41 (Design Details – Sediment Pond P-11-1) states that the existing 24-inch culvert will be replaced with a 36 in culvert, but the culvert information sheet in Appendix 4.6-41 and Appendix 4.5-2 (Culvert Information Sheets) states that a 40-inch culvert is required. Please update the narrative in Appendix 4.6-41 once the design of sediment pond P-11-1 is finalized and the correct culvert size is determined. (JWE/BSM)

Updated appendix 4.6-41 to include culvert information sheet and design narrative for culvert under 37th avenue SW, updated Culvert information sheet and Transportation plan map. Culvert 30 was modeled to pass a 15 yr -24 hr event without Pond 11-1 in place but with the CN of the area being disturbed. This simplifies the modeling process to have one storm event. The resulting flows mandates a 48" CMP be installed. The appendix description explains how the culvert was modeled and the result.

Additionally, the pond emergency spillway design was modified to pass a 25yr 6 hour event instead of the previously modeled 50yr 6 hour event. The spillway was not changed. The spillway will pass both events and the result of the smaller storm took the flow depth from 1.28 ft to 1.04 ft. As a result the top of dam was dropped 1 foot resulting in a freeboard of 1.96 ft. The previous freeboard was 2.72 ft.

24. Follow-up to Item No. 10: Please revise the culvert information sheet for Culvert ID 30 in Appendix 4.6-41 (Design Details – Sediment Pond P-11-1) and update Appendix 4.5-2 (Culvert Information Sheets) accordingly. According to the culvert information sheet in Appendix 4.6-41, item number 4 lists the peak runoff for P-11-1's emergency spillway as 80.2 cfs and 2.42 inches of rainfall for a 50 year – 6-hour event. Please revise the peak runoff to 81.56 cfs for a 3.62 inch rainfall event as stated previously in Appendix 4.6-41 and revise the calculations for the culvert. (JWE/BSM)

Updated runoff through spill way to 81.5cfs—See above number 23. Culvert was designed to pass 15 yr 24hr event from its entire watershed with mining disturbance in place resulting in a flow of 146 cfs and a 48" culvert.

25. Follow-up to Item No. 10: Appendix 4.6-43 (Design Details - Sediment Pond P-13-9) was not updated to include the average watershed slope in the HydroCAD calculations. An average watershed slope of 4.46% was used instead of 8.8%. Please revise Appendix 4.6-43 to include the updated HydroCAD calculations. (JWE/BSM)

Updated average watershed slope to 8.74% and HydroCAD title errors were corrected.

26. Follow-up to Item No. 10: On pages 15 and 25 in Appendix 4.6-45 (Design Details - Sediment Pond P-14-1), the storage description is listed as P-13-10 Stage-Storage instead of P-14-1 Stage-Storage. Please correct this typographical error and ensure that the correct stage-storage information is listed for sediment Pond P-14-1. (JWE/BSM)

Updated design details incorrectly named pond name to pond to 14-1. The HydroCad sheets are updated and the Appendix includes the all pertinent information.

27. Follow-up to Item No. 10: According to Plate 4.6-45A in Appendix 4.6-45 (Design Details – Sediment Pond P-14-1), the construction date is listed as 2025. The construction date is listed as 2026 in Table 4.6-1 in Section 4.6 (Surface Water Management Plan) and 2026 in Plate 4.6-1 (Surface Water Management Plan). Please revise Plate 4.6-45A, Table 4.6-1, and/or Plate 4.6-1 to list the correct construction date for sediment pond P-14-1. (JWE/BSM)

Updated Plates and table to correct construction date of 2025

28. Follow-up to Item No. 10: According to Plate 4.6-50A in Appendix 4.6-50 (Design Details – Sediment Pond P-12-3), it appears that a culvert will be placed underneath 37th Avenue SW to direct water to P-12-3, but no culvert designs are included. Please revise Appendix 4.6-50 to include design details and narrative to include the culvert; and update Plate 4.5-1 (Transportation Plan Map) and Appendix 4.5-2 (Culvert Information Sheets). (JWE/BSM)

Updated appendix 4.6-50 to include culvert information sheet and design narrative for culvert under 37th avenue SW, updated Culvert information sheet and Transportation plan map. The culvert was modeling using the outflow from a 50yr-6hr storm event through the emergency spillway and from the resulting flow from the watershed between the pond and the county road. The model for this culvert, number 31 was modeled using HydroCAD in order to account for the 5 acre feet of storage behind the culvert. The inflow into the culvert area is 158 cfs while the outflow required to slow through the culvert is 97.5 cfs. The modeling is described in Appendix 4.6-45.

29. Follow-up to Item No. 10: According to Plate 4.6-50A in Appendix 4.6-50 (Design Details – Sediment Pond P-12-3), the construction date is listed as 2024. The construction date is listed as 2025 in Table 4.6-1 in Section 4.6 (Surface Water Management Plan) and 2026 in Plate 4.6-1 (Surface Water Management Plan). Please revise Plate 4.6-50A, Table 4.6-1, and/or Plate 4.6-1 to list the correct construction date for sediment pond P-12-3. (JWE/BSM)

Updated the plates and tables to the correct construction date year 2026.

30. Follow-up to Item No. 10: The pond design information sheet in Appendix 4.6-50 (Design Details – Sediment Pond P-12-3) lists the average watershed slope as 5.1%, but a slope of 4.29% is used in the hydroCAD calculations. Please revise the pond design information sheet or the hydroCAD calculations to include the correct watershed slope. (JWE/BSM)

Updated plates and calculations to use the 5.1% watershed slope. Pond information sheet and HydroCAD reports reflect the watershed at 5.1%

Section 4.12 – Revegetation, Post Mining Land Use and Reclamation Success Narrative

31. Please include section line boundaries on lands surrounding the Revision 8 addition area on Plate 4.12-1, Post Mining Land Use, as has been done on lands surrounding the existing permit area. (GAW)

Added section lines to map.

32. Please apply the post mine land use color codes on areas disturbed by sediment ponds P-12-03, P-13-08, P-13-09, and P-13-10 on the Post Mining Land Use Map, Plate 4.12-1. (GAW)

Added color to all affected post mine land uses.

33. Wetland 16-1 is depicted and labeled on the Post Mining Land Use Map, Plate 4.12-1, in T141N, R84W, but the design for this wetland is listed as Wetland 16-3 in Plate 4.10-20 in Section 4.10, Regrading Plan. Please review and revise so that a distinction is made between wetlands in Sections 16 of Range 84 West and Range 83 West. (GAW)

Updated to Wetland 16-3. No Wetland 16-3 located in R83W and if more are added in either Section of the range BNI will keep counting up sequentially.

34. The Post Mining Land Use map, Plate 4.12-1, is showing cropland being converted to native grassland in the S1/2 of Section 11, but the surface owner did not request this land use conversion. It appears the reclaimed wetland, wetland 11-1, should be placed near the disturbance boundary to minimize impacts to cropland, and perhaps a buffer zone around the wetland should be classified as hayland as is being done in Section 15. Please review and revise as necessary to comply with the surface owner's request. (GAW)

Native grassland acres not changed but shape of Native grassland. Converted 6.22 acres of cropland to cropland (hayland) surrounding wetland 11-1

35. A very small triangle shaped tract of native grassland is depicted in the northeast corner of the SE1/4 of Section 11. Reclaiming this small tract of native grassland seems impractical. Please review and revise as appropriate. (GAW)

Converted the 0.78 acre tract of Native grassland into the adjoining cropland tract. In the S1/2 of Section 11 with the changes to 34&35 native grassland and cropland acres then remained unchanged (less than 1 acre) from pre mine to post mine. Updated 4.12 narrative, Appendix 4.12-2 and 4.12-6 to reflect changes. Changes made in BLUE

36. Jesse Lackman's landowner preference statement is not included in Appendix 4.12-1, Landowner Preference Statements but the narrative on page 35 of Appendix 4.12-2 references a post mining preference statement. Please include a copy of Mr. Lackman's landowner preference statement in Appendix 4.12-1 to provide clarity as to why native grassland is being reclaimed as hayland. (GAW)

Included preference statement asking for small native grassland change to hayland.

37. The post mining land use acreages for Jesse Lackman's property in Section 14 are not the same in the table in Appendix 4.12-6 and the table at the bottom of page 35 of Appendix 4.12-2. The table at the bottom of page 35 of Appendix 4.12-2 indicates an increase of woodland acreage not listed in Appendix 4.12-6 or depicted on the Post Mine Land Use Map, Plate 4.12-1. Please review and update as appropriate. (GAW)

Appendix 4.12-2 was incorrect and was corrected.

Section 3.2 Geology plates and appendices have been updated with this submittal to include the latest drill hole data.

Thank you for your consideration of this matter. If you have any questions regarding this submittal, please contact me at the Center office.

Sincerely,

Karene M. Hall
Permit Coordinator