



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

August 30, 2011

Ron Waterland
Environmental Manager
Wharf Resources (USA), Inc.
10928 Wharf Road
Lead, SD 57754

Re: Wharf Resources Large Scale Mine Permit Application

Dear Mr. Waterland:

Staff review continues on Wharf Resources' permit application for the Wharf Expansion Project which was submitted February 18, 2011 and supplemental information submitted July 5, 6, 7, and 14, 2011. Based on this review, the department has generated the following technical comments:

June 2011 Application Revision 1.0

1. Table 3-1, page 22 and Table 3-2B, page 27 – Some of the ore and waste rock estimates listed in Table 3-2B do not match the totals listed in Table 3-1 on page 22 of the application. The following are the discrepancies we noted between the two tables:

Golden Reward Pits: The 19,000 tons of barren Phonolite Porphyry rock shown in Table 3-1 is not shown in Table 3-2B.

Wharf Pits: In Table 3-1, the total Deadwood Upper Contact barren rock is 21,400,000 tons while in Table 3-2B, the total between the three Wharf pits is 21,850,000 tons. Which is correct? Also, in Table 3-1 the total Deadwood Intermediate Sediments barren rock is 48,000,000 tons while in Table 3-2B, the total between the three Wharf pits is 47,999,930 tons. Which is correct? Finally, in Table 3-1 the total Phonolite Porphyry barren rock is 9,600,000 tons while in Table 3-2B, the total between the three Wharf pits is 9,200,000 tons. Which is correct?

The column headings “Discard (Tons)” and “Ore (Tons)” under “Percentage Totals” in Table 3-1 need to be reversed.

2. Section 3.1.3.1.7, page 29 - In this section, Wharf discusses ARD potential at Harmony Hill, the saddle between Green Mountain and Bald Mountain (east end of Green Mountain Pit), and the Flossie area. Wharf needs to clarify ABA sampling results by providing a relatively large-scale map of each of these three areas. The maps must show

precise test hole locations (i.e., use a labeled point to depict hole sites, not just the hole ID#), and delineate any Special Handling Material (SHM) identified at each of the three sites.

Also, Wharf states, “The SHM #2 is located in the Harmony Highwall and is comprised of four samples that indicate potential for ARD. SHM #2 has a projected size of less than 10,000 tons and consists of four samples that are surrounded by adjacent material so that it can be mined and blended to ensure a 3:1 NP:AP ratio and 20 NNP value.” In addition to the four potentially acid generating samples Wharf classified as “SHM #2”, there appears to be a second cluster of low NNP-value samples approximately 200 feet southwest of SHM#2 (see enclosed *Figure 1 Monzonite ABA Sample Sites Harmony Hill*). This potentially acid generating area needs to be addressed in the application narrative. Also, Wharf needs to address whether this second cluster represents a discrete pod of acid generating rock, or if the two clusters comprise a larger area of potentially acid generating monzonite at Harmony Hill.

3. Section 3.1.3.1.7, page 30 – Regarding the Flossie area, what is the status of the additional humidity cell testing for this area? If the humidity cell testing has not been started or is not yet complete, a condition will need to be placed on the permit requiring humidity cell testing or other appropriate testing be done for the Flossie area.

Also, Wharf states “The Green Mountain area overall has a very large NNP and NP:AP ratio within all rock types to be mined, with a low nonsulfate sulfur content indicating low ARD potential. There are random hits within the pit boundary that indicate a potential for ARD under the California criteria, but these samples are isolated and not clustered together. The Green Mountain Pit took into consideration the ARD potential of the Deadwood lower contact when the pit was designed so as not to include any clusters of ARD potential material. Much of the ARD material was located on the eastern edge of the pit along Bald Mountain where the Deadwood lower contact comes in contact with the Precambrian rocks; in this area the pit was finalized above these areas so as not to mine any ARD potential material.” This assessment appears to be inconsistent with the ABA data and maps submitted with the revised application (June, 2011). There appears to be a significant cluster of acid generating samples associated with both the intermediate Deadwood and the monzonite sill underlying the western slope of Bald Mountain (see *Figure 2 Monzonite ABA Sample Sites Green Mountain and Bald Mountain* and *Figure 3 Intermediate Deadwood ABA Sample Sites Green Mountain and Bald Mountain*). Most of these acid generating samples were classified as “in pit”. Wharf needs to either address why Deadwood sediments and the monzonite underlying the saddle between Green Mountain and Bald Mountain were not identified as Special Handling Material (SHM), or designate material in this area as SHM. Wharf also needs to identify how much acid generating material they plan to remove from this area.

In addition, Wharf states, “The Green Mountain Pit took into consideration the ARD potential of the Deadwood lower contact when the pit was designed so as not to include any clusters of ARD potential material. Much of the ARD material was located on the eastern edge of the pit along Bald Mountain where the Deadwood lower contact comes in

contact with the Precambrian rocks; in this area the pit was finalized above these areas so as not to mine any ARD potential material.” Exhibit #6 (Current Green Mountain Geologic Cross Sections—4-18-2011), cross section I – I’ appears to be inconsistent with this plan to finalize the pit bottom above lowest horizon of the lower Deadwood.

Finally, Cross Section I – I’ appears to transect a cluster of potentially acid generating lower Deadwood sample sites along the western flank of Bald Mountain. The ABA data tables submitted in June, 2011 classify most of these potentially acid generating sample sites as “below pit”, which is consistent with the plan to finalize the pit above the lowest horizon of the lower Deadwood. However, Cross Section I-I’ indicates that the pit floor will be mined down to the Precambrian contact across most of the western flank of Bald Mountain. The apparent discrepancy between Exhibit 6, Cross Section I – I’ and this narrative needs to be reconciled.

4. Section 3.1.3.6, page 37 – In the last paragraph of this section, Wharf states the Liberty Pit was one of the pits in the 28 years of mining that had no ARD problems. This is not a correct statement as acid drainage was noted in the pit during mining. Wharf needs to acknowledge the pit did have acid drainage during past mining. The company also needs to address how acid drainage will be monitored, prevented and /or mitigated during mining of the Golden Reward Pit.

Also, in the same paragraph, Wharf states the Flossie area will be discussed in the upcoming section. However, there is nothing mentioned of the Flossie area in the remaining sections of 3.1.3.6.

5. Section 3.1.3.7 – Section 3.1.3.7 does not exist in the June 2011 revised application. However, it is still referred to in sections 3.1.3.1.6, 3.1.3.3, 3.1.3.5, and 3.3.2.1, and on Table 1-2 of the revised application. It appears that subsections in Section 3.1.3.6 replaced the old Section 3.1.3.7.
6. Section 3.3.2.2, pages 45 to 47 – Please give an update on the latest status of nitrate mitigation in groundwater in the process area. This should include recent improvements and planned/scheduled improvements regarding nitrate treatment for the remainder of 2011. This would include any relining projects, an additional Blue Water Plant, and changes to denitrification processes (i.e., pump and treat, in situ methods, etc.).
7. Section 3.3.4, page 49 and Section 3.4.3, page 52 – In these sections, Wharf mentions the spent ore and waste rock study conducted by ERM. Wharf states the study shows there will be no adverse impacts to surface and ground water. Wharf should also explain the modeling results for arsenic and nitrates in the study.
8. Section 3.4, pages 49 and 50 – In the second paragraph on page 49, please clarify the tributaries that have proposed surface disturbance within their drainage basins. For example, in Section 3.4.2 on page 51, Wharf states it does not plan on disturbing any land in the Long Valley drainage.

Also, please list the tributaries that have current surface disturbance within their drainage basins.

On page 50, Wharf needs to acknowledge that Upper Fantail Creek where mining will take place is a channel reconstructed during final reclamation of the Golden Reward Mine. Even though there is no flow now, there may be flow in the channel in the future as the fines plug off voids in the waste rock backfill on which the channel was constructed.

Also, Wharf needs to discuss the extent of the actual Nevada Gulch Creek drainage in this section.

9. Section 3.5.3, pages 53 and 54 – Due to concerns with air quality impacts to residences in the Lost Camp area and the new residential areas near Golden Reward, we discussed Wharf’s current air monitoring program with the Air Quality Program. The department will require through permit conditions that in addition to the current EPA Method 9 visible emissions monitoring program, Wharf will also conducted PM-10 monitoring with one up-gradient and two down-gradient monitoring sites.
10. Section 5.2, page 94 – In the paragraph at the top of page 94, Wharf states the Green Mountain and Bald Mountain highwalls will be backfilled within 60 to 80 feet of the top which implies a portion of the highwalls will remain. However, in the last paragraph on page 100, it states all of the Green Mountain and Bald Mountain highwalls will be backfilled. Which statement is correct?
11. Section 5.3.3, page 97 – Regarding the reclamation of the Bald Mountain Tailings mentioned in the fourth paragraph, Wharf needs to acknowledge that the upper two-thirds portion of the tailings was covered with waste rock from the Trojan Pit and covered with topsoil as part of the Large Scale Mine Permit No. 464. Wharf also needs to acknowledge even though there was very little subsoil in the rock borrow areas, there were sufficient fines in the rock material to support vegetation.
12. Section 5.3.5, page 101 – In the first paragraph, Wharf states there are no intermittent or perennial streams in Upper Fantail Gulch. During the mine permit audit, we agreed that the reconstructed portion of the Upper Fantail Gulch Creek is still considered an intermittent drainage that is not carrying flow at this time. Please modify this section to state that there is an intermittent stream in upper Fantail Gulch.
13. Section 6.2.1, page 112 – In the second paragraph, Wharf states the department has approved the reclamation of significant acreages at Wharf and Golden Reward. This statement needs to be revised to acknowledge that the department has determined that approximately 270 reclaimed acres at the Wharf Mine meet the post mine land use and about 403 reclaimed acres have been released at the Golden Reward Mine.
14. Section 6.5.2, pages 122 and 123 – The second paragraph on page 122 of this section is repeated on page 123.

15. Section 6.7.1, page 126 – Since the Portland Ridgeline Pit will be the only pit with remaining highwalls, the discussion of pit highwall bench reclamation and talus slope construction should be limited to just the Portland Ridgeline Pit.
16. Section 6.7.2, page 127 – The reclamation of the haul road between the Golden Reward and Wharf Mines should also be mentioned in this section.
17. Section 6.10, pages 129 to 133 – The current postclosure bond in the amount of \$8,154,500 for the Wharf Mine covers a postclosure period of 50 years. However, Wharf's estimate in the mine permit application only covers a postclosure period of 30 years. Please explain why Wharf reduced the postclosure bond period from 50 years to 30 years.

Also, please provide updated costs for pad neutralization and the water treatment process. Please provide separate detailed monthly costs for pad neutralization and water treatment for the following items:

- a. Electrical costs to run pumps and other items to neutralize the pads;
- b. Electrical costs for heat, light and other items in the process plant;
- c. Electrical costs to operate pumps and other items in entire water treatment process;
- d. Electrical costs for heat, light and other items in the water treatment process;
- e. Cost of reagents to neutralize and denitrify the leach pads;
- f. Cost of reagents used in water treatment process;
- g. Labor costs, including number of workers;
- h. Potable water system operating costs;
- i. Phone and radios;
- j. Trash pickup and disposal;
- k. Computer and internet;
- l. Truck lease;
- m. Gasoline and diesel; and
- n. Miscellaneous office supplies

It would be help to provide a list of pumps with hours operated each month, the horse power of each pump, the electrical usage in kilowatt-hours, and the current electrical rates at the mine per kilowatt- hour.

18. Table 6-5, page 130 and Table 6-5A, page 134 –Tables 6-5 and 6-5A do not appear to show costs or quantities for off-loading of the final heap leach pads to backfill pits (Portland Ridgeline Pit). Section 5.4 states that the final heap leach pads will be off-loaded (10 million tons) to the Portland Ridgeline Pit. Also, in Section 6.10.2.5 it states that final heap leach pads are anticipated to be unloaded.

In addition, Tables 6-5 and 6-5A do not appear to show costs or quantities for regrading and reclaiming the haul road between Golden Reward and Wharf.

Finally, Table 6-5A was located in Section 6.10.2.1, Introduction to the Postclosure Plan, which was confusing. It should have immediately followed Table 6-5.

19. Exhibits 6 and 25 - According to ABA data and maps included in the revised application, Precambrian material underlying the eastern edge of the Green Mountain Pit consists of strongly acid generating rock. Cross Section I – I' indicates a portion of the eastern Green Mountain Pit floor will be excavated down to this strongly acid generating rock. This proposed area of Precambrian pit floor is located immediately upgradient of the Nevada Gulch drainage, and is characterized by a relatively steep slope. Please clarify whether or not Wharf intends to mine portions of the eastern Green Mountain Pit down to the Precambrian contact.

Also, If the pit floor in Exhibit #6, Cross Section I – I' is revised, then Cross Section I – I' also needs to be adjusted in Exhibit #25.

20. Exhibit 7 – Cross section K-K' still shows a small portion of the Precambrian formation being mined. Is this cross-section correct?
21. Exhibit 21 – A small portion of the fence line around the haul road is outside the proposed expansion permit boundary (see attached map). Wharf may want to consider moving the permit boundary as shown on the attached map so that the fencing disturbance is inside the permit boundary and Wharf has some room to move the haul road if necessary.
22. Exhibit 23.1 – Please show the outline of the remaining portion of the haul road to be used by the Black Hills Chairlift Association. Also, please show the upper Nevada Gulch drainage in the haul road area.
23. Exhibits 29 and 29.1 – During the June 29 and 39 permit audit, we determined Nevada Gulch Creek extends farther to the north and west of the location shown in Exhibit 29. In fact, we found a flowing stream channel to the south of the current access road in the gulch that flows under the blue chair parking lot and exits at the point shown on the exhibit where Wharf claimed the stream started. Please show the entire Nevada Gulch Creek drainage on the plan view drawing of the haul road in Exhibits 29 and 29.1, including the flow route under the parking lot.
24. Appendix 17 – Technical Revisions – Regarding Technical Revision Categories under ARSD 74:29:03:16, Wharf could add the following categories:
 - a. A technical revision category for changing aspects of the recreational, homesite, industrial (commercial) landuses that do not conflict with statutes or regulations. At this point, there are only conceptual plans for these landuses, and having technical revision authority would allow some flexibility in future planning and submittal of final drawings;

- b. In the Clinton technical revision list, no. 35 states “Build a permanent heap leach pad to improve leaching, recovery, or environmental aspects”. Although this would include lined impoundments for denitrification purposes, it may be better to have a separate category for lined impoundments used for environmental purposes;
 - c. Regarding the adding contiguous, affected land technical revision category, Section 2.0 of the June 2011 Application Revision 1.0, listed 298 acres will be affected. This figure should not include any redisturbed acreage, unless that acreage was released of reclamation liability by the Board of Minerals and Environment (i.e., the acres released at Golden Reward Permit No. 450, since January 2009). Twenty per cent of 298 acres would be 59.6 acres; and
 - d. A new technical revision category regarding stabilizing highwalls. This would include the highwalls to the west and south of the Terry Cemetery.
25. The mine expansion permit application calls for the mining of 25,580,000 tons of ore. However, the American Eagle Ground Water Discharge permit application mentions 30,000,000 tons of spent ore will be disposed. Please explain the apparent discrepancy.

Appendix 6 Groundwater

1. Section 3.5.3 – It is noted in this section that several parameters exceed the South Dakota ground water standards. This section then goes on to explain the parameters that exceed drinking water standards and uses drinking water standards in Table 3-6. Please note that the listed South Dakota groundwater standards are equivalent to drinking water standards, however, the drinking water standards have a larger parameter list than the South Dakota ground water standards. For instance, South Dakota ground water standards do not have limits for aluminum, iron, or manganese. These are strictly secondary drinking water standards and are not enforceable in this state. It has not been indicated that any of these wells, with the exception of PW-2, are to be used as a drinking water source and are strictly for monitoring purposes. As such, the South Dakota ground water standards are more appropriate for use to determine an exceedence for constituents of concern. These standards are listed in Tables 1 and 2 of ARSD 74:54:01:04.
2. Section 3.5.3 – There are several instances in this section of arsenic values exceeding the standard. Please provide a discussion of ambient arsenic conditions in various areas of the mine to show whether any of these exceedences are normal for the given area or if the exceedences may be due to other causes.
3. Appendix E – While reviewing the data it was noted that Field Depth was reported to the nearest 0.1 ft while the provided sampling procedure in Appendix D indicates that Field Depth should be reported to the nearest 0.01ft. A second initial review of the lab data sheets indicate the values provided in Appendix E were rounded. Please report these values as they are recorded from the field.
4. Lab Data Sheets – Data sheets not officially approved by the lab were not provided for the following:

- a. Horseshoe Well for sample dates 9/24/2010 and 11/24/2010;
- b. Nevada Gulch Well – 10/29/10;
- c. Terry Peak Well – 11/24/10; and
- d. Railroad MW – 8/28/10, 9/24/10, and 11/24/10.

Please provide a copy of the lab approved data sheets for each of the above samples.

- 5. Lab Data Sheets – Several lab data sheets indicate that the sample was received out of holding time for turbidity which is 48 hours. Please ensure that samples are provided to the lab in time to perform the necessary analyses. This should be addressed in the sampling procedures.
- 6. Appendix E – There are several incorrect data points on the tables in this Appendix. This data may be incorrect through improper rounding or by not accurately reporting the lab analyzed value. Please verify and if necessary, correct the following data:
 - a. Horseshoe Well – Field depth (all);
 - b. Nevada Gulch Well – Anion-Cation Bal: 7/28/2010; Boron (total): 5/19/2010; Cobalt (diss): 1/21/2010, 2/24/2010, 3/17/2010; Molybdenum (diss): 5/19/2010; Nickel (diss): 1/21/2010, 4/27/2010, 11/24/2010 and; Zinc (diss): 1/21/2010, 2/24/2010, 3/17/2010, 7/28/2010; Gross Beta: 4/21/2011;
 - c. Foley Shaft – Boron (total): 8/31/2010; Field Depth: 1/18/2010, 4/12/2010, 6/17/2010, 8/31/2010, 9/24/2010, and 10/28/2010; Radon 222: 11/5/2009;
 - d. Terry Peak Well – Arsenic (tot. rec.): 1/26/2011; boron (total): 9/30/2010; manganese (diss): 5/25/2010;
 - e. Railroad MW – Boron (total): 2/23/2010, 6/25/2010, 8/26/2010, 9/24/2010; cadmium (diss): 1/21/2010; Field depth: 1/21/2010, 3/24/2010, 4/27/2010, 6/25/2010, 7/28/2010, 8/26/2010, 10/28/2010, 11/24/2010;
 - f. MW-19 – No field data entered for 2006, 11/19/2008, and 1/13/2009; copper (diss): 5/20/2008; field depth: 4/29/2009, 5/14/2009, 1/26/2010, 4/5/2010, 5/4/2010, 8/5/2010, 1/21/2010; lead (diss): 5/20/2008; zinc (diss): 5/20/2008;
 - g. MW-33 – Anion-Cation bal: 8/8/2006; No field data entered for 2006, 11/18/2008, 1/13/2009; field cond.: 5/4/2010; field depth: 5/14/2009, 8/12/2009, 1/26/2010, 5/4/2010, 8/5/2010;
 - h. MW-40 – No field data entered for 11/3/2005, all of 2006, 11/5/2008, and 1/21/2009; field depth: 1/10/2008, 6/12/2008, 4/16/2009, 5/27/2009, 6/10/2009, 8/11/2009, 4/7/2010, 5/18/2010, 8/26/2010, 1/21/2010; zinc (diss): 11/5/2008;
 - i. SM01A – No field data entered for 2006, 1/22/2009, and 8/12/2010; Field cond: 8/15/2007, 1/30/2008, 4/24/2008, 6/18/2008, 4/22/2009, and 5/20/2009;
 - j. SM02A – Copper (diss): 6/24/2008, no field data entered for 2006 and 8/12/2010; field depth: 8/16/2007; fluoride: 8/12/2010; zinc (diss): 6/24/2008, 4/22/2010, 1/7/2011;
 - k. SM03A – Barium (diss): 8/28/2008, 1/26/2009; No field data entered for 2006, 1/26/2009 and 8/12/2010; field depth: 4/26/2010, 5/26/2010, 1/7/2011;

- l. MM04A – No field data entered for 2006, 1/26/2009, and 8/12/2010; field depth: 1/4/2007, 1/19/2010, 4/22/2010, 5/26/2010;
- m. SM06 – Chloride: 5/26/2007; No field data entered for 2006, 1/27/2009; field depth: 1/4/2007, 1/19/2010, 4/26/2010;
- n. SM09 – No field data entered for 2006 and 8/12/2010; field depth: 9/26/2007;
- o. SM10 – Arsenic (diss): 6/17/2009; barium (diss): 8/14/2007, 6/17/2009; bicarbonate: 8/14/2007, 6/17/2009; carbonate: 6/17/2009; chloride: 6/30/2010; conductivity: 8/14/2007, 6/17/2009; no field data entered for 2006 and 1/26/2009; field depth: 1/3/2007, 1/26/2011; fluoride: 8/14/2007, 6/17/2009; gold (diss): 8/14/2007; iron (diss): 8/14/2007, 6/17/2009; lead (diss): 8/14/2007; nitrate: 8/14/2007, 6/30/2010; pH: 8/14/2007, 6/17/2009; sodium: 8/14/2007, 6/17/2009, 6/30/2010; sulfate: 8/14/2007, 6/17/2009, 6/30/2010; TDS: 8/14/2007, 6/17/2009, 6/30/2010;
- p. OM05 – No field data entered for 2006 and 1/26/2009; field depth: 1/19/2010;
- q. PW-2 – 4/7/2011: only field data entered please fill in the remainder of the values; field depth: 10/6/2010;
- r. Beaver Springs – Arsenic (diss): 5/13/2008, 1/13/2009; no field data entered for 2006, 1/13/2009; field flow: 1/25/2008, 4/8/2008; selenium (diss): 5/3/2010; zinc (diss): 5/13/2008; and
- s. Ross Springs – Anion-cation bal: 5/7/2008, 1/7/2009; no field data entered for 2006, 6/10/2008, 9/18/2008, 10/30/2008, 11/13/2008, 12/12/2008, and 1/7/2009; field flow: 2/22/2008, 3/19/2008, 4/2/2008, 7/10/2008, 8/13/2008, 2/5/2009, 3/5/2009, 10/14/2009; field cond: 8/3/2010; field ORP: 4/8/2009; selenium (diss): 6/10/2008, 9/1/2009; silver (diss): 8/13/2008; zinc (diss): 3/5/2009.

Field data should be verified using field notes as there were several inconsistencies within annual reports between what was provided to the lab and placed on lab sheets and information provided in the data summary sheet for each site. Also, some of the inconsistencies above may be due to averaging samples taken by both DENR and Wharf on the same day. If this is the case, please separate the two data sets and report them individually on the tables. All DENR data should be noted on the table as being from DENR.

- 7. Appendix E – Please provide lab sheets for the following ground water sites and dates:
 - a. Horseshoe Well – 12/17/2009;
 - b. Nevada Gulch Well – 8/29/2007, 11/10/2009, and 12/17/2009;
 - c. Foley Shaft – 11/5/2009 and 12/17/2009;
 - d. Terry Peak Well – 11/2/2006, 11/16/2006, 11/26/2006, 1/1/2007, 11/10/2007, and 12/7/2009;
 - e. MW-19 – 6/18/2009*;
 - f. MW-33 – 6/18/2009*;
 - g. SM01A – 9/26/2007, 10/8/2008, 6/17/2009*, and 6/30/2009*;
 - h. SM02A – 10/15/2008;
 - i. SM03A – 6/17/2009* and 6/29/10*;
 - j. SM06 – 9/26/2007 and 6/17/2009*;

- k. SM09 – 9/26/2007 and 10/15/2008;
- l. SM10 – 6/21/2006*, 6/18/2008*, 10/15/2008, and 10/20/2008;
- m. Beaver Springs – 2/13/2008, 6/18/2009*, and 10/7/2009;
- n. Ross Springs – 3/6/2006, 4/17/2006, 5/15/2006, 5/30/2006, 6/26/2006, 7/12/2006, 7/24/2006, 8/23/2006, 9/6/2006, 9/19/2006, 10/4/2006, 10/18/2006, 12/13/2006, 6/18/2009*, 9/17/2009, 9/21/2009, 9/22/2009, 9/23/2009, 9/25/2009, 10/5/2009, 10/6/2009, and 10/7/2009; and
- o. Radiological data lab sheets for Nevada Gulch Well 11/10/2009, and Terry Peak 11/10/2009.

Some lab sheets, those marked with an ‘*’, may be missing because they are reported from DENR samples. Please make note on the tables which samples are from the DENR. Lab sheets do not need to be provided for DENR samples.

Appendix 7 Surface Water

1. Section 3.2 Results – This section indicates that Table 3-2 provides statistics which were done for all sites by parameter. This is not a proper way to analyze these streams as some streams may have previous impacts from mining or other activities and different geology from the source which may cause differences in the quality of water between drainages. For instance, Annie Creek drainage has impacts from the Reliance Waste Rock Depository while Lost Camp has no previous known impacts. Likewise, in False Bottom Creek, a difference in geology between two forks of the stream has caused a difference in pH because one fork of the creek flows over exposed Precambrian rock, dropping the pH, while the other fork of the creek does not. Therefore, any analysis performed on surface water should segregate the drainages to be analyzed individually rather than combined and should identify and note major differences in the water quality within an individual drainage and provide an explanation or discuss the difference.
2. Section 3.3.1 and 3.3.2 – These sections provide a brief overview of all sample events that exceeded DENR criteria for the beneficial uses for the creeks. Please explain whether these occurrences happened during low flow or high flow events or after a meteorological event.
3. Appendix C – Please ensure that the department has been provided with the most recently updated version of the sampling protocol.
4. Appendix D – Please provide all lab data sheets not previously provided in annual reports. Also, please ensure that any data from DENR samples are noted in the tables. If a sample was taken in conjunction with DENR then please ensure that both samples are presented within the tables and not averaged.
5. Appendix D – Please review the data of these tables and verify that all data was recorded the same as was reported in the lab data sheets and that all field data is present.

As required in ARSD 74:29:01:11, please submit proof that a copy of the information requested in this letter has been sent by certified mail to the applicable review agencies and a copy has been filed with the Lawrence County Register of Deeds office.

Also, be aware that our technical review of the application continues and additional comments may be developed and forwarded to you.

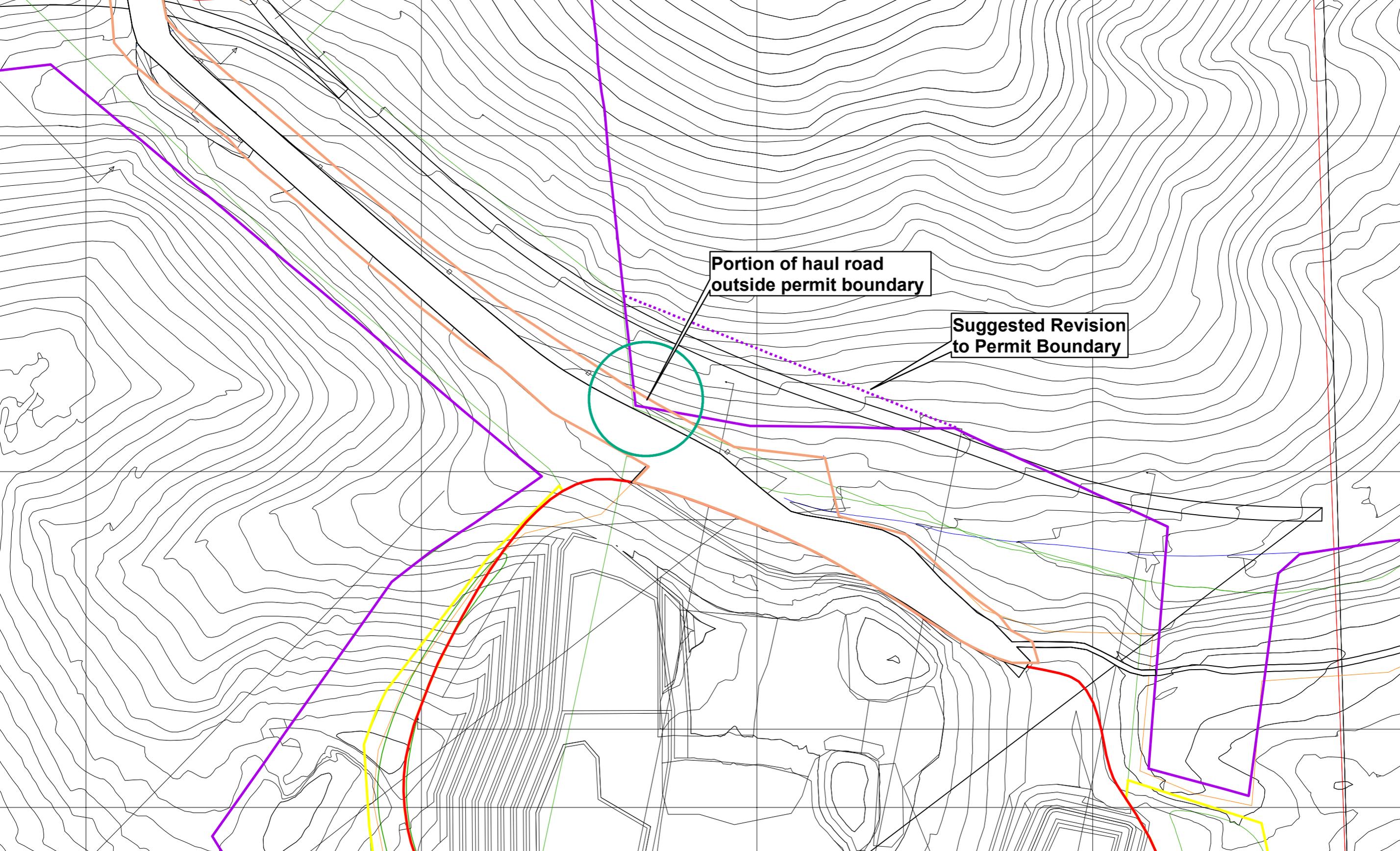
If you have any questions, please feel free to contact me.

Sincerely,

\S/

Michael D. Cepak, P.E.
Engineering Manager I
Minerals and Mining Program
Telephone: (605) 773-4201

Attachments: Suggested Permit Boundary Change (Map)
Figure 1 Monzonite ABA Sample Sites Harmony Hill
Figure 2 Monzonite ABA Sample Sites Green Mtn & Bald Mtn
Figure 3 Intermediate Deadwood ABA Sample Sites Green Mtn & Bald Mtn

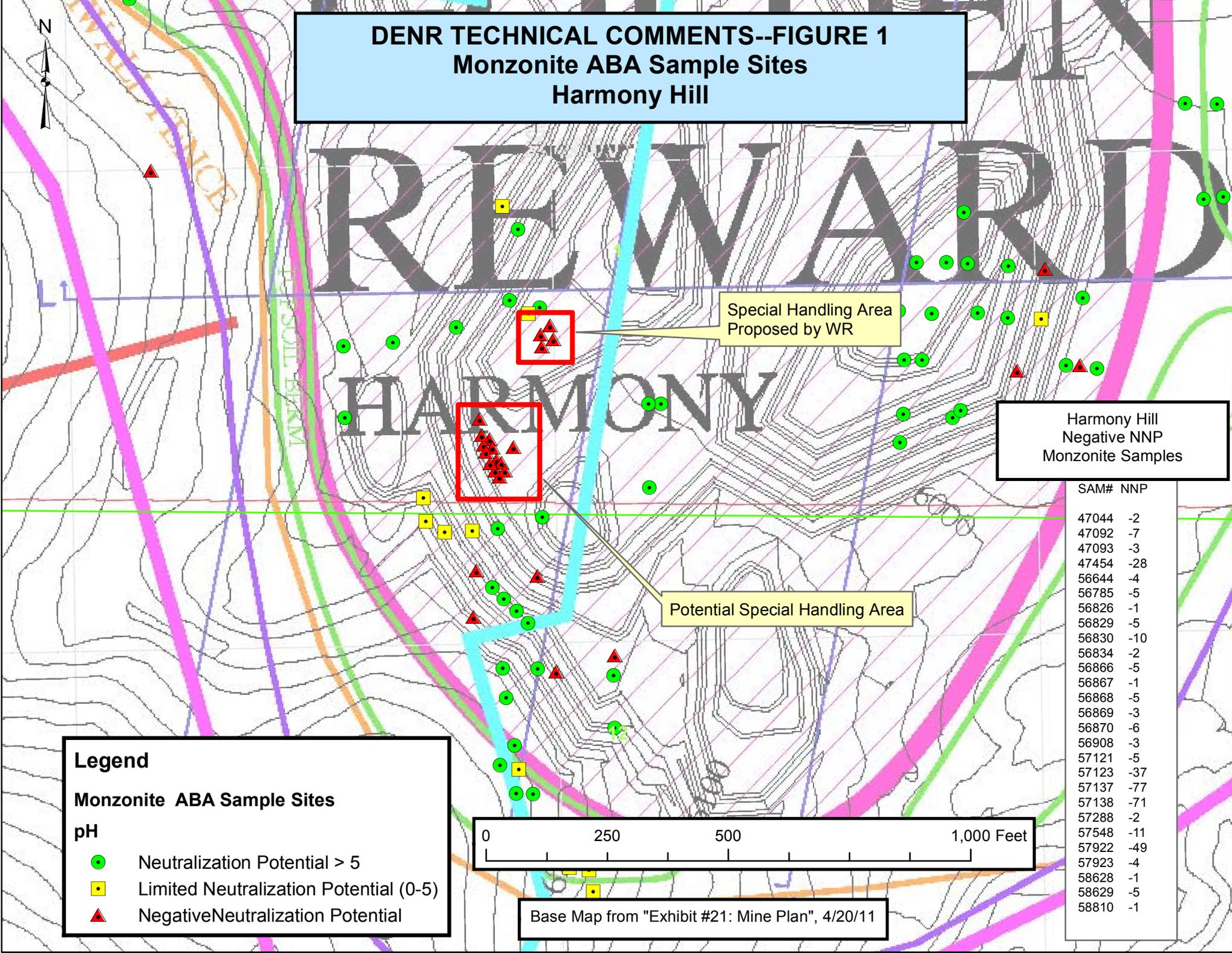


**Portion of haul road
outside permit boundary**

**Suggested Revision
to Permit Boundary**

DNR TECHNICAL COMMENTS--FIGURE 1

Monzonite ABA Sample Sites Harmony Hill



Legend

Monzonite ABA Sample Sites

pH

- Neutralization Potential > 5
- Limited Neutralization Potential (0-5)
- ▲ Negative Neutralization Potential

Special Handling Area
Proposed by WR

Potential Special Handling Area

Harmony Hill
Negative NNP
Monzonite Samples



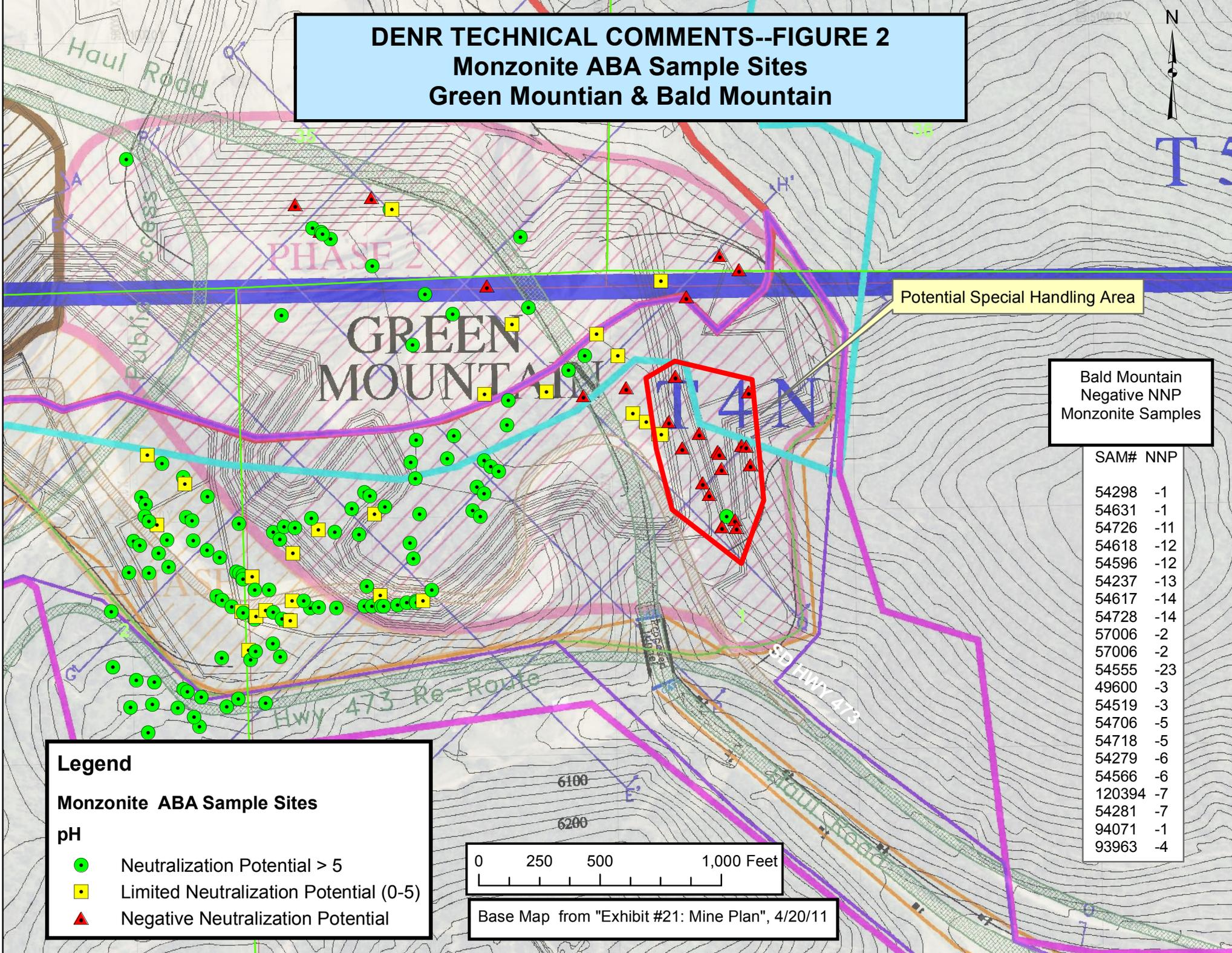
Base Map from "Exhibit #21: Mine Plan", 4/20/11

SAM#	NNP
47044	-2
47092	-7
47093	-3
47454	-28
56644	-4
56785	-5
56826	-1
56829	-5
56830	-10
56834	-2
56866	-5
56867	-1
56868	-5
56869	-3
56870	-6
56908	-3
57121	-5
57123	-37
57137	-77
57138	-71
57288	-2
57548	-11
57922	-49
57923	-4
58628	-1
58629	-5
58810	-1

DENR TECHNICAL COMMENTS--FIGURE 2

Monzonite ABA Sample Sites

Green Mountain & Bald Mountain



Potential Special Handling Area

Bald Mountain
Negative NNP
Monzonite Samples

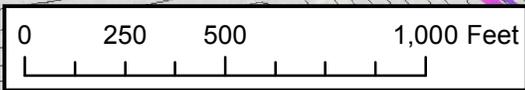
SAM#	NNP
54298	-1
54631	-1
54726	-11
54618	-12
54596	-12
54237	-13
54617	-14
54728	-14
57006	-2
57006	-2
54555	-23
49600	-3
54519	-3
54706	-5
54718	-5
54279	-6
54566	-6
120394	-7
54281	-7
94071	-1
93963	-4

Legend

Monzonite ABA Sample Sites

pH

- Neutralization Potential > 5
- Limited Neutralization Potential (0-5)
- ▲ Negative Neutralization Potential



Base Map from "Exhibit #21: Mine Plan", 4/20/11

**DENR TECHNICAL COMMENTS--FIGURE 3
Intermediate Deadwood ABA Sample Sites
Green Mountain & Bald Mountain**

**Bald Mountain
Negative NNP
Intermediate Dw Samples**

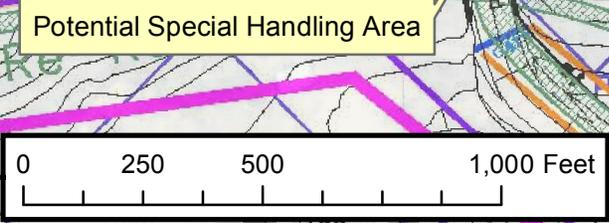
SAM#	NNP
54238	-31
54262	-14
54263	-59
54271	-8
54272	-6
54273	-19
54274	-24
54277	-12
54283	-107
54291	-17
54293	-6
54506	-3
54508	-3
54531	-1
54562	-5
54568	-32
54569	-36
54578	-17
54579	-12
54580	-7
54598	-10
54619	-9
54621	-29
54623	-6
54625	-6
54627	-1
54675	-22
54696	-8
54707	-18
54708	-20
54709	-9
54712	-5
54714	-9
54716	-4
54720	-20
54729	-19
54736	-63
93983	-5

Legend

Intermediate Deadwood ABA Sample Sites

pH

- Neutralization Potential > 5
- Limited Neutralization Potential (0-5)
- ▲ Negative Neutralization Potential



Base Map from "Exhibit #21: Mine Plan", 4/20/11

