

**RESULTS OF ARCHAEOLOGICAL MONITORING AT THE PANHANDLE
SMELTING AND REFINING COMPANY SITE (10BR539), FOR THE PEND OREILLE
BAY TRAIL PROJECT, NEAR PONDERAY, IDAHO**

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Introduction

The proposed Pend Oreille Bay Trail (POBT) is located on the northern shore of Lake Pend Oreille between Sandpoint and Ponderay in Bonner County, Idaho (Figures 1-3). Terragraphics Environmental Engineering, Inc. (TG) is working with the Idaho Department of Environmental Quality (IDEQ) to develop the POBT. A portion of the POBT will be located in proximity to the lake in the vicinity of the former Panhandle Smelting and Refining Company (PSRC) site, the historic Northern Pacific (more recently BNSF) railroad, and other historic and modern developments. Prior to development of the trail, TG and IDEQ are planning to conduct a series of mechanical and hand-dug test units to examine the soils in Zone 4. Preliminary research indicates that there are dozens of historic and prehistoric sites in the general area. The potential for encountering cultural resources in the Area of Potential Effects (APE) is therefore extremely high. After reviewing a description of the planned undertaking, the Idaho State Historic Preservation Office (SHPO) recommended that an archaeologist monitor all ground-disturbing excavation associated with soil testing in the vicinity of the PSRC site. The results of this monitoring are reported in the next section of this report.

The PSRC site is an inactive facility located on private land approximately (ca.) 400 feet south of the community of Ponderay. The PSRC site consists of original smelter ruins, a small pile of unprocessed ore, several building depressions, and a slag dump. The PSRC site is also known locally as Black Rock. The slag dump, or Black Rock, appears to be weathering onto the beach.

The PSRC site was recorded as archaeological site 10BR539 in 1985 (Miss and Hudson 1986). Prior to a modification of a railroad grade, the U. S. Army Corps of Engineers, Seattle District (COE), requested an evaluation of the site to determine its eligibility for nomination to the National Register of Historic Places (Renk 2001). That report provides an excellent history of the smelter and the author concluded that 10BR589 was eligible for the National Register under criteria A and D (Renk 2001).

Access to the PSRC site is by undeveloped trails but the recent bank stabilization by the COE has increased pedestrian and vehicle traffic and the area has become a popular swimming and recreation location during the summer. There are elevated levels of lead, zinc, and other

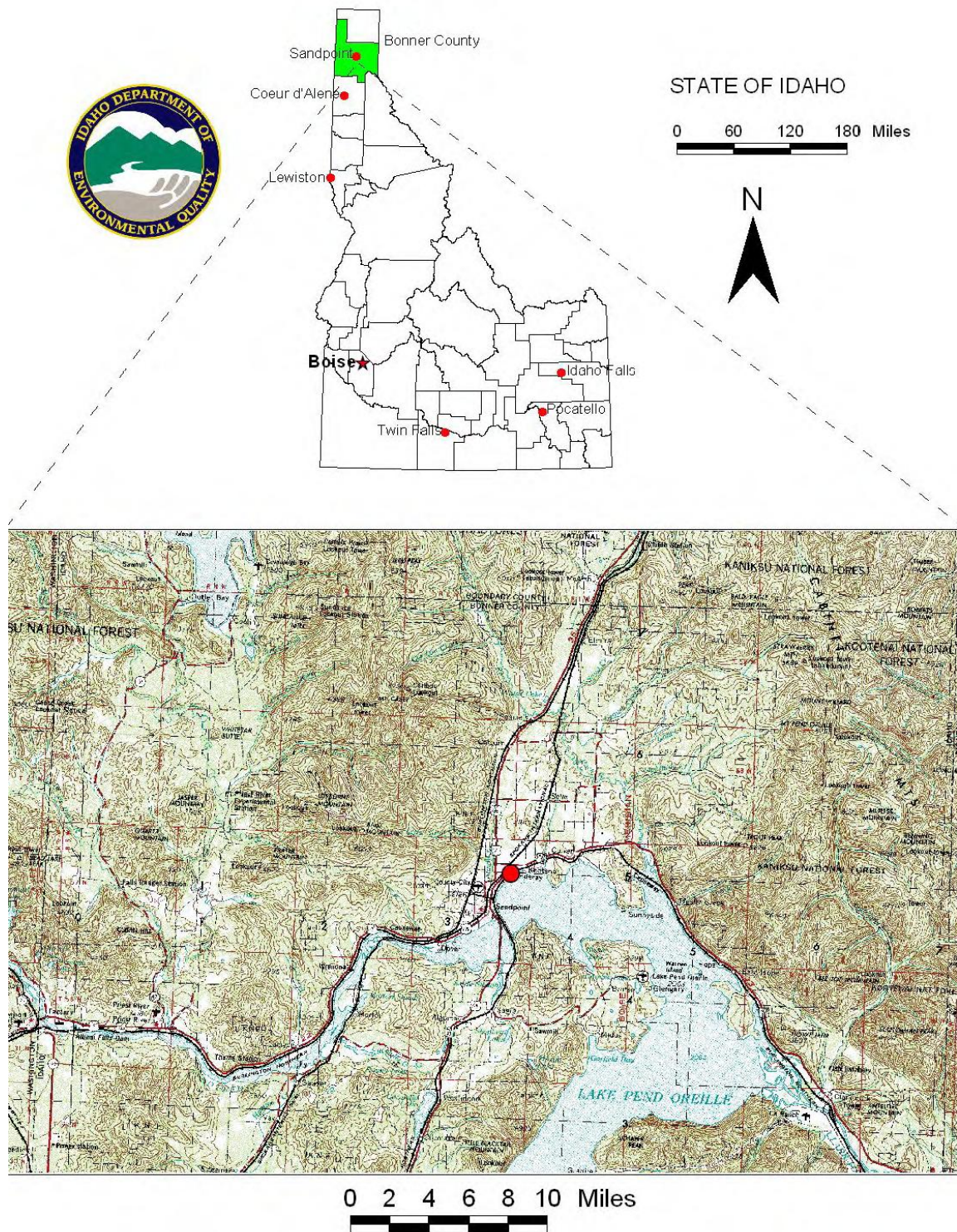


Figure 1. Map of the Pend Oreille Bay Trail area. The location of the Panhandle Smelting and Refinery Company site is indicated by the red circle (adapted from IDEQ 2006: Figure 2-1).



Figure 2. Aerial photo map of the POBT project area (provided by TerraGraphics).

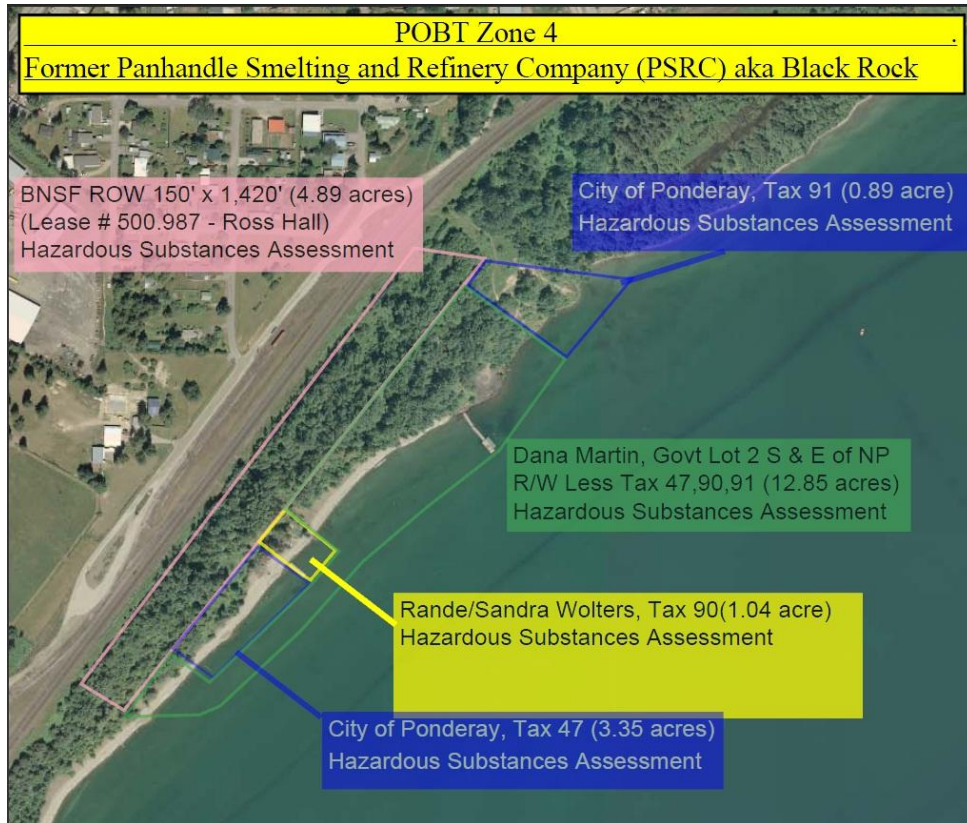


Figure 3. Aerial photograph map of POBT Zone 4 (provided by TerraGraphics).

metals in the slag dump and nearby soil. The topography is mostly glacial terrace with some localized flood plain and the soils are predominantly sand overlying silt and clay (IDEQ 2006:4).

The history of the PSRC site is one of contentious management, accusations, and lawsuits rather than a record of actual smelting. Planning for the smelter began in 1902 and the townsite of Panhandle (the name was changed to Ponderay by early 1905) began to grow up adjacent to the smelter at that time. Construction of the smelter began in 1904; the first lead bars were poured in 1907 and it ran sporadically through March 1909. Following foreclosures and various sales, salvage crews dismantled the plant by December 1922 (IDEQ 2006:4). Since that time there has been little activity in the area with the exception of recent recreational use.

The POBT project area is located well within the territory of the Kalispel Indians (Lahren 1998: Figure 1). Like other Plateau tribes, the Kalispel followed a seasonal round with subsistence based on a combination of wild foods including fish, game, and plant. Settlement centered on winter camps that were situated along the major drainages such as the Pend Oreille River while other seasonal camps were at locations where camas, berries, game, and other resources could be gathered and hunted. There are numerous prehistoric sites around Lake Pend Oreille but none appear to be in the vicinity of the APE.

Discussion

The second author met with TG and IDEQ personnel at the PSRC site on 17 November 2011 and she monitored the excavation of eight soil test units that day (Figure 4). All units were located in the POBT Zone 4 and within the boundaries of 10BR539. The units were numbered sequentially for convenience from 1 through 8 and these numbers were matched with the more specific TG designations (Figure 4). All units were excavated by a hand-operated shovel to the intended depth of ca. 24 inches (in.) (60 cm) below surface (BS), with one exception of the first unit (Z4-FU01-PS01) which ended at 18 in. (45 cm) BS due to the concentration of slag. All units were ca. approximately 8 in. (20 cm) in diameter. Samples of excavated soil from each unit were dry screened through 1/8 in. mesh hardware cloth. Changes in soil composition, texture, and color were recorded as depth increased and all artifacts encountered and the depths in which they occurred were documented. After the excavation was completed all units were backfilled. Notes and photos were taken of area landmarks and existing features, unit locations, the excavation process, and artifacts. No artifacts or samples were collected by the archaeological monitor.

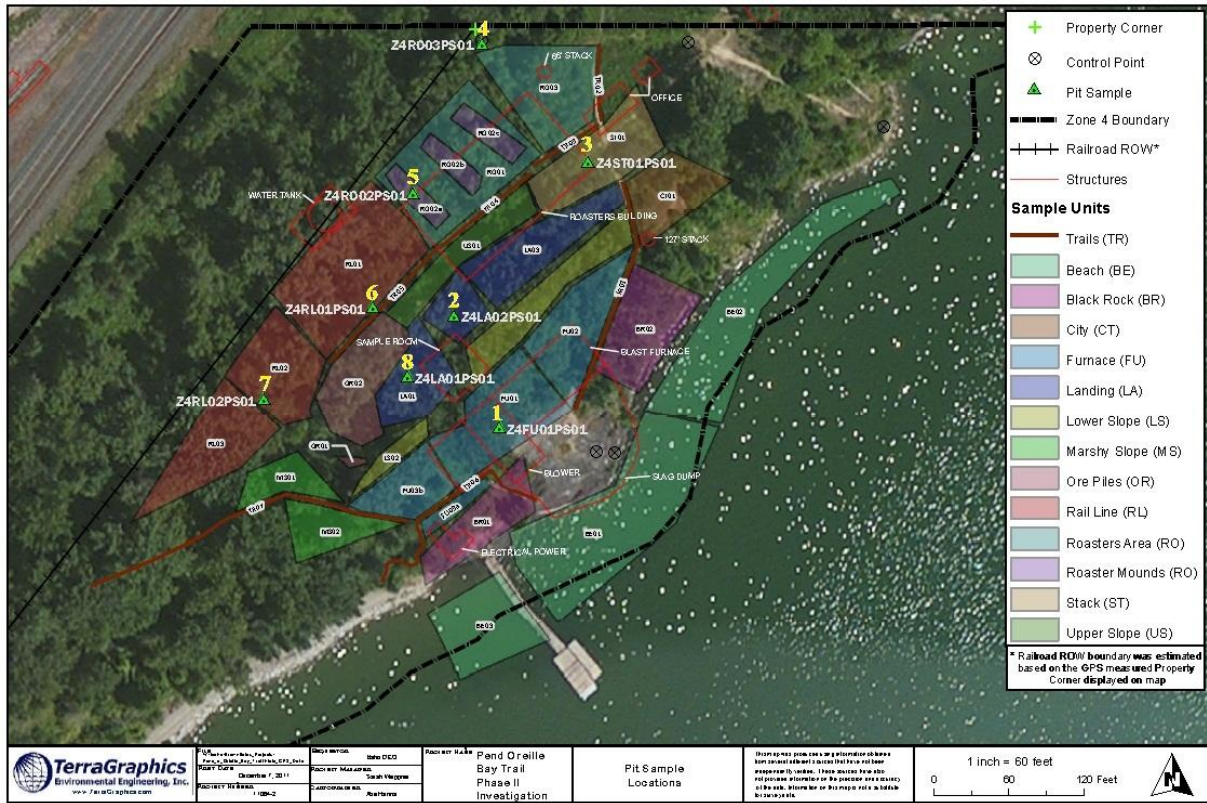


Figure 4. Aerial photograph map of the PSRC site. The location of the eight soil test units are indicated by the green triangles. The Arabic numbers (in yellow) indicate the order of excavation (adapted from a map provided by Sarah Weppner, TerraGraphics).

Z4-FU01-PS01

The first unit was excavated in the furnace area (Figure 4). This unit was located northwest of the blower and existing slag dump (“Black Rock”) and approximately 30 feet south of a portion of the remains of the smelter wall (Figure 5). The smelter wall runs in a north-east/south west direction. This unit was also located at a lower elevation than all other units. Excavation ended early at 18 in. (45 cm) BS due to a thick slag layer at that depth. Observed artifacts consisted of a round ceramic device (possibly an electrical conductor) and a brick fragment at 4 in. (10 cm) BS, and a large oval-shaped, metal ring at 12 in. (30 cm) BS (Figure 6). The first slag fragments were encountered at 18 in. (45 cm) BS and the thick slag layer prevented further excavation (Figure 7). The uppermost soil was a moist, dark brown loam that extended to 12 inches (30 cm) BS; the next stratum was a dry, light brown silt which continued until the slag layer at 18 inches (45 cm) BS. Due to the concentration of slag a second attempt for this unit was chosen that was situated ten feet northeast of the first location but this unit only reached 7 in. (18 cm) BS due to the predominance of large roots. No artifacts were encountered in the second location.



Figure 5. Photograph showing the location of Unit 1 (Z4-FU01-PS01, in the foreground) during excavation. Note the limestone smelter wall in the background. The view is to the northwest.



Figure 6. Photograph of the large, oval-shaped, metal ring found at 12 inches (30 cm) BS in Unit 1. Note that the scale is 20 cm (8. in) long and is the same in all photographs.



Figure 7. Close-up photograph showing a fragment of the slag encountered at 18 in. (45 cm) BS in Unit 1.

Z4-LA02-PS01

The second unit was located approximately 120 feet north and slightly west from the first unit in the landing area of the smelter facility and on a flat terrace elevated about 10 feet above the smelter wall (Figure 4). A modern campfire feature was also located here along with a horizontally raised wooden post which is likely used as a bench. The fire pit was covered with snow (Figure 8). This unit was excavated to 24 in. (60 cm) BS. Artifacts encountered in this unit were limited to the top 12 in. (30 cm) and consisted of limestone fragments, a round metal can fragment measuring 3 cm in diameter, a railroad spike measuring 15 cm in length, one colorless vessel glass fragment, one brown vessel glass fragment, and one nail measuring 2 in. (5 cm) in length. The same top soil layer of moist, dark brown loam encountered in Unit 1 was also present in the upper part of this unit but it was quickly replaced by yellow and reddish discolored soil (Figure 9) at 4 in. (10 cm) BS. The discolored soil extended to a depth of 16 in. (40 cm) BS where it was replaced by a light gray silty clay that continued to the bottom of the unit.



Figure 8. Photograph showing the location of Unit 2 (Z4-LA02-PS01, at left center). A soil sample is being taken from the bottom of the unit. The modern wooden post can be seen at the right. The view is to the southeast.



Figure 9. Photograph showing the discolored soil in the screen from the top 12 in. (30 cm) of Unit 2; note the railroad spike (center) and limestone fragment (center right).

Z4-ST01-PS01

The third unit was located approximately 190 feet northeast of the previous unit in the stack area of the smelter facility on an elevated slope approximately 10 feet above the modern campfire. Artifacts were limited to the upper 18 in. (45 cm) and included only one modern green glass Rolling Rock beer bottle at 2 in. (5 cm) BS and slag fragments at 18 in. (45 cm) BS. The slag material was similar in composition to that encountered in Unit 1 and it occurred at the same depth. The top layer of soil consisted of moist, dark brown loam that extended to 18 in. (45 cm) BS. Dry, light brown silt occurred with the slag fragments at 18 in. (45 cm) BS and this layer was replaced by the light gray silty clay which continued to the completion of the unit at 24 in. (61 cm) BS.



Figure 10. Photograph showing the location of Unit 3 (Z4-ST01-PS01). The modern rail line terrace can be seen at the top left behind the trees. The modern Rolling Rock beer bottle from 2 in. (5 cm) BS is adjacent to the unit which has been backfilled. The view is to the north.



Figure 11. Photograph of Unit 3 (Z4-ST01-PS01). Excavation has been completed at 24 in. (60 cm) BS.

Z4-RO03-PS01

The fourth unit was located approximately 130 feet north, and slightly west of, the previous unit and north of the boundary of the roasters area of the smelter facility. This unit was also located a few feet away from a U. S. Army Corps of Engineers survey marker (Figure 9). The three roaster mounds could be seen from this location (Figure 9). No artifacts were encountered in this unit. Moist, dark brown loam was present in the top 12 in. (30 cm); at that point it was replaced by a reddish brown soil that continued until 18 in. (45 cm) BS where a light gray silt clay was encountered; the light gray silt clay continued to the completion of the unit at 24 in. (60 cm) BS.



Figure 12. Photograph of Unit 4 (Z4-RO03-PS01) at the beginning of excavation. The person is loosening the soil with a stake in preparation to excavate with the shovel. Lake Pend Oreille can be seen distantly in the top left behind the trees. The view is to the southeast.



Figure 13. Looking southwest from Unit 4 (Z4-RO03-PS01). Note the snow-covered roaster mounds between the trees.

Z4-RO02-PS01

The fifth unit was located within the roaster area ca. 140 feet southeast of the previous unit and on top of the westernmost roaster mound (Figure 14). These roasters were used to heat the raw ore brought to the site and the sediment and materials which they contained were thought to be extremely contaminated. They have caved in and been covered with a thin layer of topsoil. Burned bricks, both fragmented and intact, were the only type of artifact encountered in this unit and these occurred simultaneously with thick ash deposits. Brick size and frequency, as well as ash concentrations, increased in volume as the depth increased. The topsoil, consisting of moist, dark brown loam occurred only in the top 2 in. (5 cm) BS; it was replaced by a loam mixed with thick gray ash deposits to a depth of 6 in. (15 cm) BS (Figure 15). From 6 to 20 in. (15-50 cm) BS there was little to no soil and the gray ash occurred uniformly (Figure 16). The remaining stratum contained the highest amount of intact large bricks and it consisted predominantly of ash and rust-colored deposits with very little to no soil (Figure 17). This stratum continued to the completion of the unit at 24 in. (61 cm) BS.



Figure 14. Photograph showing the location of Unit 5 (Z4-RO02-PS01) which is indicated by the pink flag. Lake Pend Oreille can be seen beyond the trees. The view is to the southeast.



Figure 15. Photograph showing sediment from the top 6 in. (15 cm) in Unit 5. The dark topsoil can be seen below the burned brick fragments.



Figure 16. Photograph showing sediment from the top 8 in. (20 cm) in Unit 5. The ash and dark loam mixture can be seen below the first occurrence of the thick ash. Note that intact and larger bricks are beginning to occur.



Figure 17. Photograph showing sediment from the bottom layer in Unit 5. Note that the ash in the screen from a depth of 20 in. (50 cm) also contains oxidized sediment and larger bricks.

Z4-RL01-PS01

The sixth unit was located approximately 90 feet southwest of the previous unit, and approximately 75 feet southeast of a rail line used for transporting ore within the area of the smelter facility (Figure 18). Slag fragments occurred between 8 and 20 in. (20 and 50 cm) BS and this was the only cultural material observed. The slag fragments from this unit were larger, denser, and more coarsely-grained than the material observed in the first and third units (Figure 19). This may represent different ore processing methods and the transportation of such ore by the nearby rail line. The moist, dark brown loam was present in the top 8 in. (20 cm) of this unit. A yellow-brown discoloration occurred with the appearance of the slag fragments from 8 to 20 in. (20-50 cm) BS; at that depth it was replaced by the light gray silt clay which continued to the completion of the unit at 24 in. (60 cm) BS.



Figure 18. Photograph showing the location of Unit 6 (Z4-RL01-PS01). The person is clearing the surface in preparation for excavation. The view is to the south.



Figure 19. Photograph of sediment from Unit 6. The first slag fragments in the screen were associated with the yellow-brown discolored soil from 8 in. (20 cm) BS.



Figure 20. Photograph showing sediment from Unit 6 during excavation. Note the gray silt clay on top of the screen which is beginning to appear at 20 in. (50 cm) BS.

Z4-RL02-PS01

The seventh unit was located approximately 120 feet southwest of the previous unit and approximately 40 feet southeast of the rail line. No artifacts were encountered in this unit and it was completed at 24 in. (61 cm) BS. The moist, dark brown loam was present in the top 12 in. (30 cm); it was replaced by a dry, light brown silt which extended to 18 in. (45 cm) BS where the light gray silt clay was encountered and continued to the completion of the unit. The stratigraphy of this unit and the absence of artifacts is similar to Unit 4 (Z4-RO03-PS01), with the exception that no discoloration of the soil was observed here. No useful photos of this unit are available.

Z4-LA01-PS01

The eighth and final unit was located approximately 120 feet west of the previous unit in the southern landing area of the smelter facility (Figure 21). The only cultural material encountered in this unit was one fragment of limestone, similar to the fragments in Unit 2 (Z4-LA02-PS01), and it occurred at 8 in. (20 cm) BS. Moist, dark brown loam was present in the top 8 in. (20 cm) and it was replaced with the light gray silt clay which continued to the completion of the unit at 24 in. (61 cm) BS. The silt clay occurred earlier in this unit than in any others.



Figure 21. Photograph showing the location of Unit 8 (Z4-LA01-PS01). The person is beginning to remove the top of the soil. The view is toward the southeast.



Figure 22. Photograph of Unit 8 nearing completion at 24 in. (61 cm) BS; the stratum of gray clay can be seen clearly as it begins to appear at 20 cm BS.

Summary and Management Recommendations

Archaeological monitoring was conducted at the Panhandle Smelting and Refining Company site during soil testing on 17 November 2011. Eight test units were excavated and historic cultural materials were encountered in six of them. Historic materials were limited to the upper 20 in. (50 cm) in all units except for the roaster mound unit (Unit 5 or Z4-R002-PS01) where bricks continued into the floor and on to an unknown depth. The most common cultural materials were slag, bricks, and limestone; slag was the most widespread, occurring in three units. These materials are clearly associated with historic site 10BR589. Units 1 and 3 contained slag that was similar in consistency while Unit 6 had coarser slag that may be related to different means of processing the ore. Unit 2 (Z4-LA02-PS01) contained nails, glass, and can fragments, which may reflect the modern use of that location for camping-related activities. The two units (Unit 4 and Unit 7) that did not contain cultural materials were located along the western edge of the site.

One unit ended at a slag concentration at 18 in. (45 cm) but the others were all excavated to 24 in. (60 cm) BS as planned. In terms of sediment, a layer of topsoil consisting of a moist, dark brown loam was present in the upper part of all units to varying depths. Dry, light brown silt was present in most units but it was not observed in those units that displayed soil discoloration. Most of the cultural materials were observed in the dry light brown silt. Unit 8 (Z4-LA01-PS01), is an exception where the light gray silt clay occurred at a higher depth than in other units. No artifacts were observed in the light gray silt clay in any unit and this clay was considered by the soil testing crew to represent the “native” soil. There was no evidence of lithic material, fire-modified rocks, or any indication of a prehistoric occupation in any of the test units.

The PSRC site was considered eligible for nomination to National Register of Historic Places in 2001 under criteria A and D. Although the structures are gone and surface indications are minimal there is clear subsurface evidence of the site. Cultural material was present to ca. 20 in. (50 cm) BS in six of the eight units which suggests that the site is fairly extensive. We therefore recommend that any future ground-disturbing activities at the site be monitored by a qualified archaeologist.

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Appendix C

Site Photographs

Photo 1: Beach area in front of slag pile: mix of sand, rock, and slag.



Photo 2: Beach area northeast of slag pile: mix of sand and rock.



Photo 3: Beach area southwest of dock: sand.



Photo 4: “Black Rock” west of slag pile: contains cement foundation of former power plant.



Photo 5: “Black Rock” area east of slag pile.



Photo 6: East of TR1: vegetated, and may contain fill material.



Photo 7: Former blast furnace area: cement floor below soil in some parts.



Photo 8: Former blast furnace area.



Photo 9: Former blast furnace area.



Photo 10: Flat area; possibly previously part of sample room.



Photo 11: Flat area; possibly previously part of open ore bin. Contains a fire pit and wood bench.



Photo 12: Flat vegetated area; possibly previously part of ore and coke bins.



Photo 13:
Vegetated slope
between landing
and furnace.



Photo 14: Vegetated
slope above FU3.



Photo 15: Slope densely vegetated with reeds.



Photo 16: Slope densely vegetated with reeds.



Photo 17: Pile (likely ore) covered by soil and leaf litter.



Photo 18: Pile (likely ore) covered by soil and leaf litter.



Photo 19: Flat area; may have previously contained railroad tracks leading to smelter.



Photo 20: Flat area; may have previously contained railroad tracks leading to smelter and been used for ore storage.



Photo 21: Flat portion of former roasters area.



Photo 22: Three mounds in former roasters area.



Photo 23: Northeast of former roasters area.



Photo 24: Soil mound near where a smoke stack may have previously been.



Photo 25: Trail leading from slag pile to on top of ST1.

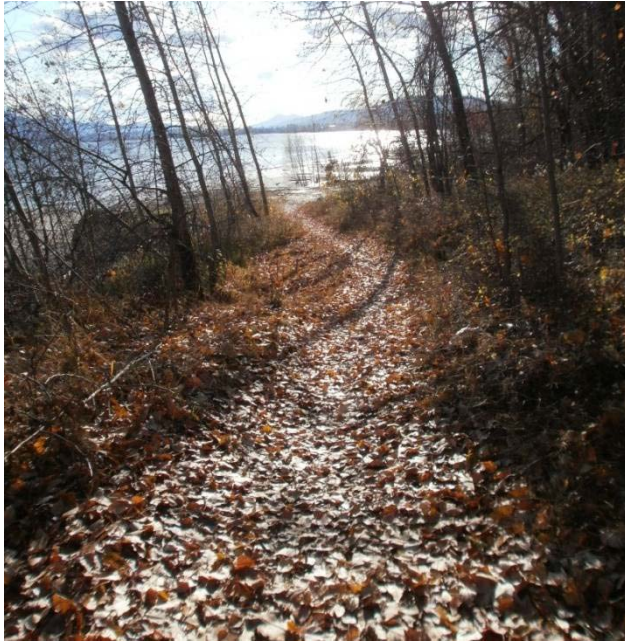


Photo 26: Trail leading from slag pile to on top of ST1.

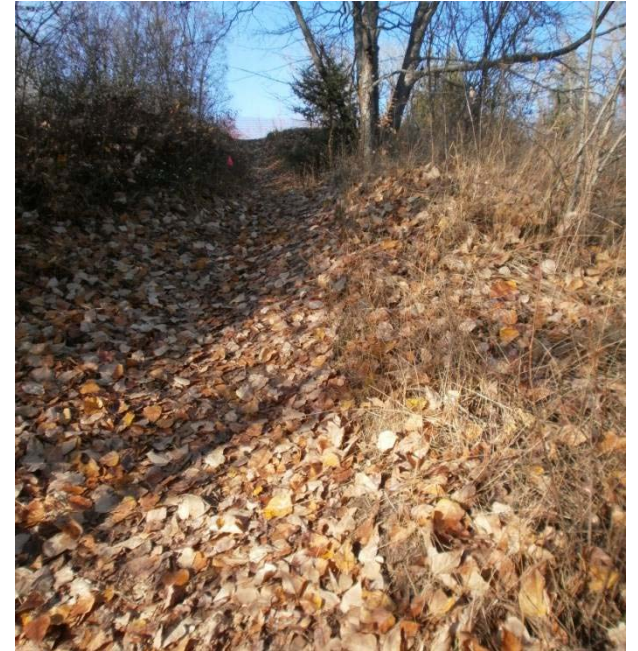


Photo 27: Trail from ST1 to north property boundary.



Photo 28: Trail between stack and RO1.



Photo 29: Trail in front of former roasters area.



Photo 30: Trail in front of RL1.

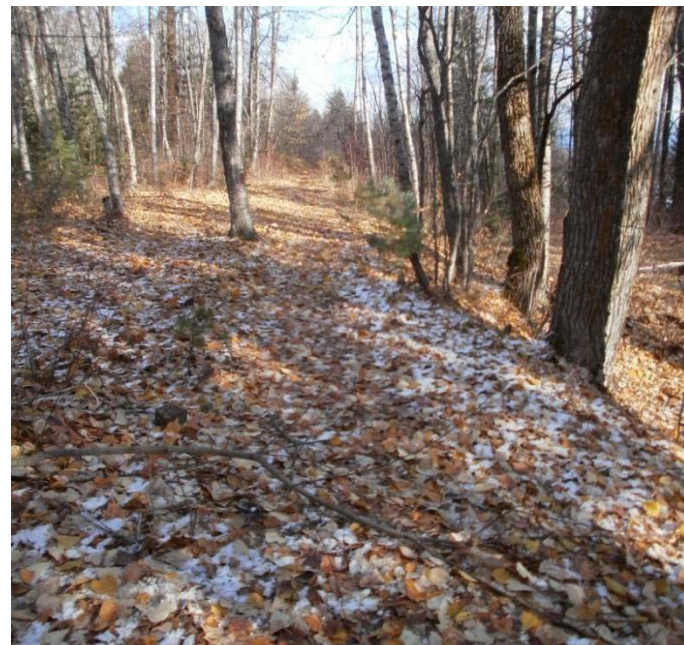


Photo 31: Trail between gravel road leading to site and slag pile.



Photo 32: Trail between gravel road leading to site and slag pile.

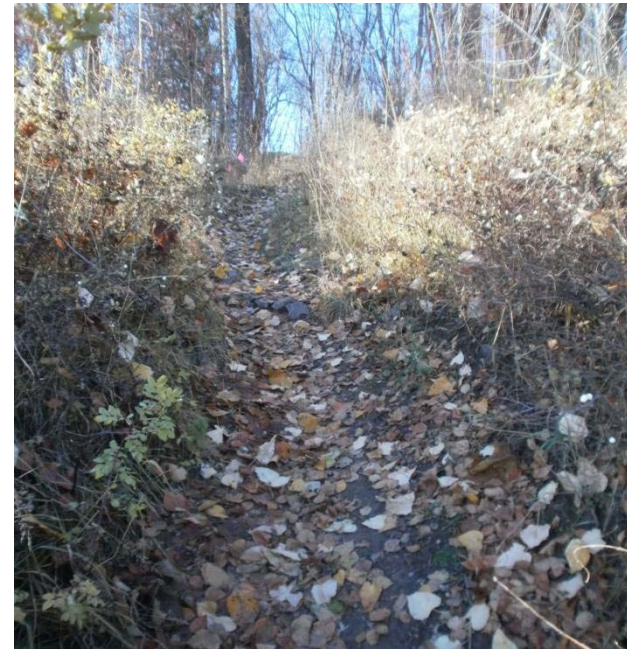


Photo 33: Trail between gravel road leading to site and slag pile.



Photo 34: Trail between gravel road leading to site and slag pile.

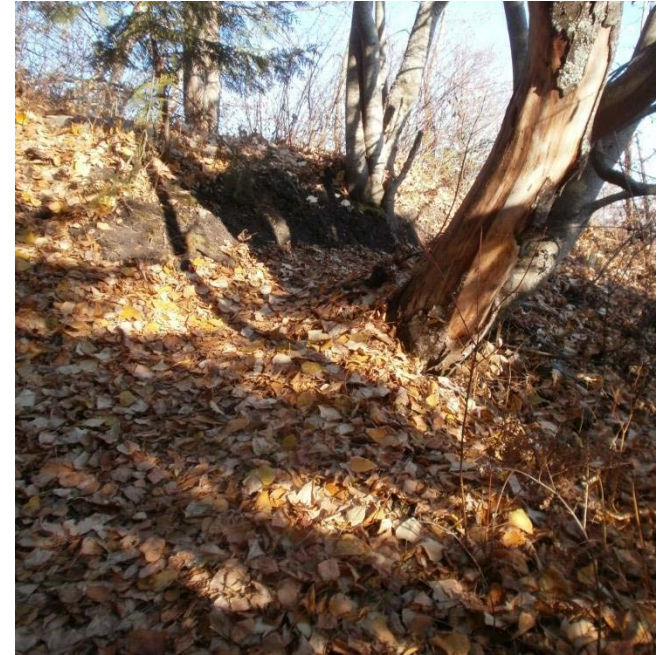


Photo 35: Trail on west portion of the site.

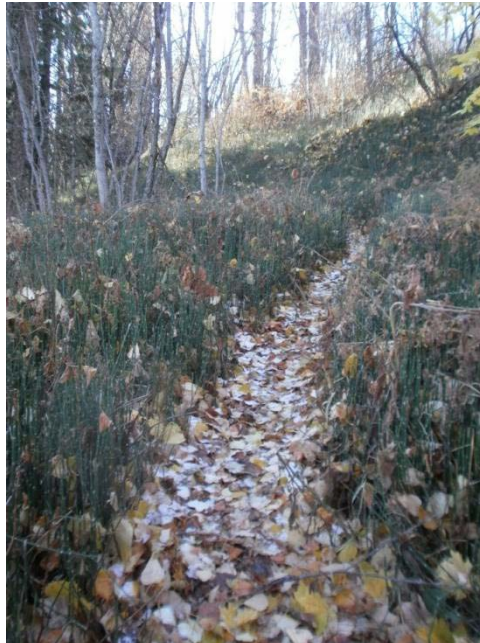


Photo 36: Trail on west portion of the site.

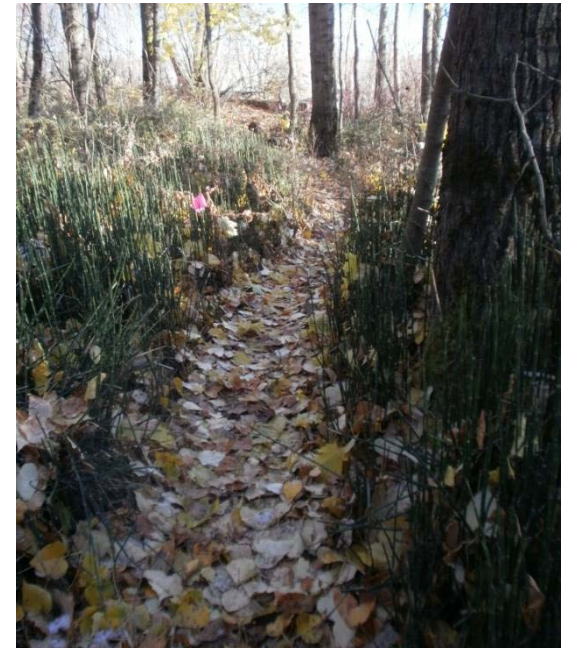


Photo 37: Slope between RL1, RO1, and landing areas (LA2, LA3).



Photo 38: Slag pile outcrop showing the approximate height above the beach.



Photo 39: Air Rotary drill mounted to a track-operated skid steer .

