

SOIL SAMPLE LOCATIONS AND RATIONALE

The rationale for soil sample locations from the initial site investigation is presented below by sub-area. The sample locations are shown on the attached figures.

Area 1 – Administration and Maintenance Support Buildings

Administration Building (A)

One boring (PA-A1) was drilled to a depth of 10 feet bgs in front of the garage area. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Change House (D)

Two borings were drilled: PA-D1 by the man door near the southern corner of the building, and PA-D2 near a drain pipe exiting the western corner of the building. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

School House (E)

Two borings were drilled: PA-E1 located between the School House and the Change House and PA-E2 in front of the roll-up service door. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Warehouse and Assay Laboratory (F)

Five borings (PA-F1 through PA-F5) were drilled around all sides of the building, targeting specifically docks, loading ramps, and exterior piping. A total of 15 primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Large Warehouse Annex (G)

Three borings were drilled around the building: PA-G1 and PA-G3 in front of the large service doors; and PA-G2 located in front of a small collection bin near the south corner of the building that appeared to contain glassy slag material. A total of nine primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Small Warehouse Annex (H)

Two borings were drilled: PA-H1 was located on the southwest side where heavy equipment or trucks likely parked, and PA-H2 was located in front of the service door. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-

10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Grease Shop #1 (J)

One boring (PA-J1) was drilled in front of the service door. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Quonset Hut (Q)

Four borings were drilled in the Quonset Hut area: PA-Q1 in front of the door, PA-Q2 and PA-Q4 on both the northwestern and southeastern sides where equipment had been stored, and PA-Q3 near the large mobile electrical structure. A total of 12 primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Plumber's Shop (T)

No investigation or sampling activities were completed around this building because it was determined there was little likelihood of chemicals being present.

Filling Station #1 (U)

Two borings were drilled: PA-U1 located just off the apron, and PA-U2 directly in front of the filling and discharge line for the diesel AST.

A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Grease Shop #2 (V)

One boring (PA-V1) was drilled in front of the door. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Filling Station #2 (W)

One boring (PA-W1) was drilled near the shed. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. TPH-diesel was detected in all samples above the screening level criteria at concentrations ranging from 410 to 19,000 mg/kg. TPH-motor oil was detected in one sample (PA-W1-1 at 0.5-2.5 ft bgs) above the screening level criteria at a concentration of 3,000 mg/kg.

Filling Station #3 (X)

One boring (PA-X1) was drilled near the shed. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals,

acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. None of the samples had results above the screening level criteria.

Filling Station #4 (Z)

One boring (PA-Z1) was drilled near the northern corner of the pad. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. TPH-diesel was detected in one sample (PA-Z1-1 at 0.5-2.5 ft bgs) above the screening level criteria at a concentration of 240 mg/kg.

Area 2 – Truck Shop, Crusher and Miscellaneous

Equipment Wash Building (C)

Two borings were drilled next to the small shed: PA-C1 off the northeast end just off the concrete wash pad adjacent to the small sump, and PA-C2 which was drilled through the concrete in front of the doors to the shed. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs. An excavation of the small stained area near the sump was planned during the 2004-2005 investigation, but not completed.

Fire Engine Storage / Tire Shop (I)

Two borings were drilled: PA-I1 near the southeast corner in front of the door (drilled through concrete), and PA-I2 in an outdoor storage area off the northwest end of the building just off the edge of the concrete. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs and analyzed for metals, acid-base potential, VOCs, SVOCs, TPH, pesticides, herbicides, and PCBs. Only one sample (PA-I1-1 at 0.5-2.5 ft bgs) had results above the screening level criteria with a TPH-diesel concentration of 810 mg/kg.

Truck Shop (K)

Nine boreholes were drilled around the exterior perimeter of the Truck Shop. A request was made by the EPA to modify the Work Plan to include drilling inside the Truck Shop (K) at locations where it appeared that floor drains had been filled with concrete and plugged. The drill that was used for the main area investigation was not suited for working inside a building, where the drill mast would potentially be too close to overhead obstructions, therefore a decision was made to not complete this work for safety reasons. PA-K1 was located as close as possible to a sump area in the concrete apron on the northeast (front) side of the truck shop. The apron collected rain and runoff, and directed it to the sump. PA-K2 through PA-K4 were located in front of large service doors adjacent to the concrete. PA-K5 was located in front of a service door on the northwest end of the building, near the oil tanks. PA-K6 through PA-K9 were located on the backside of the building targeting doors, piping, and secondary containments. A total of 27 primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Equipment Garage (L)

Four borings were drilled around the building: PA-L1 in front of the electrical transformer compound; PA-L2 and PA-L3 in front of service doors on the east corner and

the southwest side; and PA-L4 next to a small storm drain sump located at the south end of the concrete apron in the front of the building. A total of 12 primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Truck Wash and Paint Shop (M)

Three borings were drilled in this area: PA-M1 in front of the northeast service door; PA-M3 drilled through the concrete pad in front of the main service door on the southwest side; and PA-M2 located off the north corner near a storage shed. A total of nine primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Carpenter Shop (N)

One boring (PA-N1) was drilled directly in front of the main service door on the south end of the building. A total of three primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Lead Shop (O)

Three borings were drilled around the building: PA-01 by the eastern corner, PA-02 by the southern corner, and PA-03 northern corner. A total of nine primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Emergency Shed (R)

Two borings were drilled: PA-R1 in front of the roll-up service door on the southeast end and PA-R2 near a pipe that protrudes out of the ground near the north corner (a possible indication of a UST). A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Sheet Metal Shop (S)

Two locations (PA-S1 and PA-S2) were drilled near the service doors. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Primary Crusher (CC)

Underground concrete structures limited sampling locations. Two borings were drilled: PA-CC1 along the southeast side of the main crushing unit and PA-CC2 on the northwest side. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Stacker Area (NN)

Two borings (PA-NN1 and PA-NN2) were drilled on opposite ends of the service building that provided support and storage for the stacker and crusher area. A total of six primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Secondary Crusher (OO)

Four borings were drilled around the Secondary Crusher area. Borings PA-OO1 and PA-OO2 were located along the borders of the concrete foundations where the crushers discharged to an underground conveyor. PA-OO4 was located near the southwest corner of the building that may have housed electrical support for the crusher (adjacent to

possible outdoor transformers) was also investigated. PA-OO3 was located adjacent to an active pump containment used in the re-circulation of leach pad solutions from the Arimetco heap leach circuit. A total of 12 primary soil samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Coarse Ore Storage (III)

No previous investigation was conducted in this area as the area had not been identified as an area of potential concern.

Area 3 – Leach Vats

Leach Vats (P)

An angle boring was drilled under each vat for a total of eight borings (PA-P12 through PA-P19). Each angle boring was drilled to a total depth of 25 feet bgs at a 45 degree angle. Because of obstructions at the base of the vats, the drill rig was not able to set up any closer than 14-20 feet from the vat wall. This allowed at least the bottom two samples to be collected from under the foot print of the vat. An additional six borings (PA-P1 through PA-P6) were collected at the gaps or corners between vats to target potential releases from piping between the vats. One deep boring (PA-P10) was drilled at the southeast end of the row of vats. Boreholes were drilled only on the northeast side of the vats because an embankment and overhead crane track on the southwest side prevented access. A total of 57 primary soil samples were collected at depths down to 25 ft bgs.

Sulfide Ore Stockpile Area and Underground Conveyors (YY)

Two borings (PA-YY1 and PA-YY2) were drilled in this area, both of which required drilling through remnants of crushed ore before encountering native soil; 8.5 feet of crushed ore was drilled through at location YY1 and 12.0 feet was drilled through at YY2.. Samples were not collected until native soil was encountered. A total of six primary soil samples were collected at 12.5-14.5 ft bgs, 15.5-17.0 ft bgs, and 20.5- 22.0 ft bgs.

Area 4 – Solution Tanks

Solution Tanks (DD)

Soil samples were collected at the surface and from borings in and around the tanks. Eight surface grab samples (PA-DD4 through PA-DD11) were collected from each corner of the tanks at a depth interval of 0.5-1.0 ft bgs. Two deep borings (PA-DD12 and PA-DD13) were drilled on either end of the tank group. A total of 10 primary soil samples were collected at 0.5-2.5 ft bgs, 4.0-5.0 ft bgs, 9.0-10 ft bgs, 14-15 ft bgs, and 19-20 ft bgs. Three borings were drilled through the concrete floors of the tanks: PA-DD1 and PA-DD3 in the center of each end tank and PA-DD2 near the inside wall of the southeastern tank, targeting the middle tank which was not accessible to the drill rig. A total of nine primary soil samples were collected at 2.0-4.0 ft bgs, 5.5-6.5 ft bgs, and 10.5-11.5 ft bgs.

Solution Tanks, Electrical Building and Basement (FF)

Four borings were drilled in this area: PA-FF1 and PA-FF2 near the electrical building; and PA-FF3 and PA-FF4 near the open basement. A total of 16 primary soil samples were collected at 0.5-2.5 ft bgs, 4.0-5.0 ft bgs, 9.0-10 ft bgs, 14-15 ft bgs, and 19-20 ft bgs.

Area 5 –Precipitation Plant

Precipitation Plant (EE)

Soil samples were collected at the surface and from borings drilled around the perimeter of the plant. On the northeast side of the tanks, five surface grab samples (PA-EE1 through PA-EE5) were collected at a depth interval of 0.0-0.5 ft bgs, just off the concrete pad approximately 30 to 40 feet from the tanks. Drilling rig access on this side of the plant was obstructed by the concrete trench, but two vertical borings (PA-EE12 and PA-EE13) were successfully drilled near the middle of the plant approximately 60 feet from the tanks. A total of 10 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, and 18.5-20 ft bgs. On the southwest side of the tanks, five additional surface grab samples (PA-EE6 through PA-EE10) were collected at a depth interval of 0.5-1.5 ft bgs. Drilling rig access on this side of the plant was obstructed by the crane, but six angle borings (PA-EE15 through PA-EE20) were successfully drilled. Each angle boring was drilled to a total depth of 30.5 ft bgs at a 45 degree angle. Because of the obstructions, the drill rig was not able to set up any closer than 18-30 feet from the base of the launders. This allowed at least the bottom two samples to be collected from under the foot print of the launders. A total of 30 primary soil samples were collected at depths down to 30.5 ft bgs.

Area 6 – Sulfide Plant

Sulfide Plant Office (GG)

One (PA-GG1) boring was drilled near the front access door to the building. A total of three primary samples were collected.

Sulfide Plant (HH)

Thirteen borings were drilled in the Sulfide Plant area. Six borings (PA-HH1 through PA-HH6) were drilled through the concrete floor of what remains of the Sulfide Plant targeting areas near sumps and trenches where possible. Sample locations were restricted by drill accessibility. Sample location PA-HH1 encountered thick steel plate under the concrete and was abandoned without sampling. Six borings (PA-HH7 through PA-HH12) targeted all large and small storage, processing, and thickener tanks associated with the Sulfide Plant. The five largest tanks were sampled by drilling an angle boring underneath the tank as it was not possible to set up on and drill through the tank base because of accessibility and other physical constraints. One boring (PA-HH13) was drilled to sample the soil in the low area just north of the largest thickener. The soil showed surface discoloration indicating the potential for copper and acid solution collection in the area. A total of 50 primary samples were collected.

Area 7 – Calcine Ditch

Calcine Ditch (WW)

Nine borings (PA-WW1 through PA-WW9) were drilled along a 2,500-foot section of the Calcine Ditch. A total of 40 primary samples were collected at depths to 20 foot bgs. The locations were spaced approximately 200 feet apart and targeted the estimated bottom of the old ditch. A ditch is still in place in this location and marks the boundary between the Process Areas and vat leach tailings (VLT), but the location of the original Calcine Ditch has been obscured or partially filled in by movement of the VLT material.

Area 8 – Overflow Solution Ditch

Overflow Solution Ditch (FFF)

Eighteen borings (PA-FFF1 through PA-FFF18) were drilled along a 1,000 foot section of the Overflow Solution Ditch which carried waste solutions from the Overflow Sump to the Sulfide Tailings Pond. Sample locations were spaced at a distance of every 200 feet along the exposed portion of the ditch and at each location a borehole was drilled in the center of the ditch and 20 feet each side of the ditch center. A total of 104 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

Area 9 – East Stormwater Ditch

East Stormwater Ditch (EEE)

Twenty one boreholes (PA-EEE1 through PA-EEE21) were drilled along a 1,500 foot section of visible ditch draining from the lower Truck Sludge Pond (CCC) towards the northwest at the foot of the Sulfide Tailings impoundment. A series of 3 borings were drilled at 200 foot intervals along the ditch with a boring in the center of the ditch and one located 20 feet each side of the center. A total of 125 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

Low Area #1 (JJ)

Samples were collected in this area as part of the East Stormwater Ditch.

Tar Drum Storage (LL)

Initially, this area was targeted for soil sampling. Subsequently, the East Stormwater Ditch feature was identified and samples from the ditch feature coincided with the planned samples for the Tar Drum Storage, so separate samples were not collected.

Area 10 – North Low Area

North Low Area (HHH 1-16)

Sixteen borings (PA-HHH1 through PA-HHH16) were drilled in this area over an evenly spaced grid pattern of approximately 150 by 150 feet to a depth of 25 feet bgs. Specific target features were not identified but the areas was used for general equipment storage. Surface piping containing the Dump Leach Solution also traveled through this area. A total of 96 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

Concrete Ramps (II)

One borehole location was drilled at the front entrance to one of the ramps (PA-II1) while the other was drilled next to the back, or deep end, where blue-green water was observed standing in the ramp (PA-II2) these ramps were used for final draining and drying of copper concentrates before shipment to Wabuska. A total of 6 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, and 8.5-10 ft bgs.

Surge Pond (KK)

Three borings (PA-KK1 through PA-KK3) were drilled in the bottom of the Surge Pond to a total depth of 20 ft bgs. The Surge Pond was used as a temporary holding pond for Dump Leach solutions prior to precipitation in the Precipitation Plant/Iron Launderers and appears to have been unlined. A total of 15 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, and 18.5-20 ft bgs.

Area 11 – South Low Area

Tire Pile (B)

Initially for the 2004-2005 investigation, it was suggested that no samples be collected in this area, but two grid samples (PA-HHH33 and PA-HHH-36) were collected within 50 feet of the Tire Pile as part of the grid sampling in the BLM Low Area. These grid samples were collected to a total depth of 25 ft bgs at intervals of 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

South Low Area (HHH 17-38)

Twenty two borings (PA-HHH17 through PA-HHH38) were drilled as a continuation of the 150 by 150 foot grid sample plan established in Area 10 North Low Area. Four closely spaced boreholes, one at each corner, were positioned around the used oil tank, which is an above-ground 2,000 gallon tank positioned in the bed of a haul truck as secondary containment. A total of 132 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

Upper Truck Sludge Pond (BBB)

Sampling was accomplished by drilling three angle boreholes underneath the pit area to a depth of 20 feet bgs. The soil in the pond area was too unstable to allow the drill rig to set up and drill vertically. The pond appears to be an informal, unlined collection area for drainage from the vehicle wash pad sump and is visibly impacted with hydrocarbons. A total of 15 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, and 18.5-20 ft bgs.

Lower Truck Sludge Pond (CCC)

The Lower Truck Sludge Pond is a pond area that appears to have received overflow from the Upper Truck Sludge Pond and also outflow from the Truck Shop drain which are both likely contributors of hydrocarbons. The material was not firm enough to support the weight of the drill rig, so samples were collected by drilling two angle boreholes underneath the pond (PA-CCC2 and PA-CCC4) and two vertical holes adjacent to the pond on the south side (PA-CCC1 and PA-CCC3). Each Borehole was

drilled to a depth of 25 ft bgs and 24 samples collected at the following intervals: 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, and 18.5-20 ft bgs.

Ditch between Upper and Lower Truck Sludge Ponds (DDD)

Three vertical borings (PA-DDD1 through PA-DDD3) were drilled to a depth of 25 ft bgs along the alignment between the Upper and Lower Truck Sludge Ponds assuming that the overflow from the Upper Pond followed this path. A total of 18 primary samples were collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, 18.5-20 ft bgs and 23.5-25.0 ft bgs.

Drain Outlet (MM)

An 8 inch drain outlet exists at this location and is likely to have been the drain line from the Secondary Crusher dust control system, based on the historic Site map. Grid sample locations HHH-19 and HHH-25 were collected within 50 feet of this location and a surface grab sample PA-UT59 was collected at the exit point of this drain pipe.

Area 12 – Peripheral Process Components

Core Building (AA)

No information exists on the previous use of the Core Building. Samples were collected because of the lack of knowledge. Two locations were drilled, one near each large service door at opposite ends of the building (PA-AA1 and PA-AA2).

Arimetco Acid Tanks (PP)

The tanks in this area were owned and operated by Arimetco and contained sulfuric acid for the heap leaching process. The tanks are situated on top of the VLT pile and no native soil exists in the area but the VLT material may have been impacted by acid spills. Sample collection from this area was not feasible with the core drill rig, so the work plan was modified to allow collection of samples at just the surface and five feet below surface by excavation with a backhoe. Four locations were excavated and sampled (PA-PP1 through PA-PP4).

Arimetco Crusher/Hopper (QQ)

No chemicals were used in the Crusher Area but the soils may have been impacted by the crushed ore. Two locations were drilled in this area (PA-QQ1 and PA-QQ2) to a depth of 10 ft bgs with samples collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs.

Arimetco Stacker Area (RR)

No chemicals were used in the Stacker Area but the soils may have been impacted by the crushed ore. Two locations were drilled in the Stacker Area (PA-RR1 and PA-RR2) to a depth of 10 ft bgs with samples collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs.

Motor Cargo Building (TT)

Three drill locations were planned around the Motor Cargo Building, an ancillary support building located southwest of the Process Areas off the mine property on private property. Because the building is currently in use, situated on private property, and not likely to have been used for chemical processing or storage, no samples were collected

around this building.

Old Crusher Site (UU)

Two borings were drilled, one near the foundation of what appears to be a crusher unit (PA-UU1), though no documentation has been found that confirms this, and one near the yellow stained area (PA-UU2). The boreholes were drilled to a total depth of 10 ft bgs with samples collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs.

Tailings Pump Houses (VV)

Two borings were drilled and one surface grab sample was collected; one borehole was located next to each pump house building. The boreholes (PA-VV1 and PA-VV2) were drilled to a total depth of 20 ft bgs with samples collected at 0.5-2.5 ft bgs, 3.5-5.0 ft bgs, 8.5-10 ft bgs, 13.5-15 ft bgs, and 18.5-20 ft bgs.

Surface Pumps Foundation (ZZ)

One location was drilled next to the overflow grating on the north side of the concrete structure. The purpose of this concrete structure is uncertain. The borehole (PA-ZZ1) was drilled to a depth of 10 ft bgs.

Concrete Pump Tank (AAA)

One location was drilled next to the smaller box with the manhole based on the assumption that this was likely a valve controlling the flow of the pipe and would have been a more likely source of leakage.

Process and Utility Pipelines, Drains and Ditches

Underground and aboveground piping and ditches in the Process Areas may have carried solutions with potential COCs such as metals, solvents and fuels. Because of the age of the facility, it is possible that pipelines have been broken or connections have leaked. The purpose of utility pipeline sampling was to locate as many underground lines as possible and sample each line at several points. Historical maps of the Process Areas provided locations of originally installed sewer lines, drain lines and water and gas lines. Because the facility has undergone changes over the years, the accuracy of the map was questionable (e.g., utility pipelines may no longer exist and the maps may not include all pipelines in the Process Areas). Targeted sample points included pipe terminus into sumps or manholes, intermediate joints, and locations where the pipe makes a turn.

In the 2004-2005 site characterization program, a private utility locating service was engaged to try to locate, by surface survey, as many pipelines as possible. It was soon apparent that a majority of the lines were constructed of non-conducting materials that were not picked up by the survey equipment. A field determination was made that the most feasible method for locating the pipes was to use a backhoe to excavate areas where pipelines were shown on the historical maps or areas where manholes could be opened and pipes observed. A backhoe was used to excavate down to suspected pipe locations, ranging in depth from 1 foot to 12 feet bgs. When a pipe was located, the excavation

would continue along the pipe until a connecting joint was located, at which point a sample was collected from 6 to 12 inches directly beneath the bottom of the piping at the closest pipe junction or connection. In locations where two or more pipes occurred in the same corridor, samples were collected under each pipe separately at each pipe's joint or connection. A total of 60 locations (PA-UT1 through PA-UT60) were excavated that encountered underground, or in some cases surface, piping, and one sample was collected from each location from the soil within approximately 12 inches to the side or below the pipeline.

Leach Vat Pregnant Solution (UT-A)

No samples were collected along the Leach Vat Pregnant Solution Line because it is contained inside a concrete trench box and tunnel and not in contact with the soil.

Dump Leach Pregnant Solution (UT-B)

Four samples were collected along or in the vicinity of the Dump Leach Pregnant Solution Line. PA-UT58 and 60 were collected near surface where the pipeline lies on the land surface and PA-UT14 and 43 where the pipeline is buried approximately 8 ft bgs between the Dump Leach Surge Pond and the Precipitation Plant.

Sulfide Concentrate Slurry (UT-C)

No samples were collected on these pipelines because the Sulfide Plant has been dismantled and the pipes have either been removed or are not accessible.

Precipitation Plant Spent Solution to Pond (UT-D)

Ten samples were collected along or in the vicinity of the Spent Solution line. Samples PA-UT14, 15, 16, 27, 43, 54 and 55 were collected along the buried portion of the line (approximately 8 ft bgs) as it discharges from the Precipitation Plant recirculation sump. Samples PA-UT28 and 29 were collected from each end of the open ditch that the Spent Solution traveled through. Sample PA-UT30 was collected further downstream from a shallowly buried (1.5 ft bgs) portion of the pipeline.

Precipitation Plant Spent Solution to Acid Plant (UT-E)

No samples were collected along this Spent Solution Line because it is contained inside a concrete trench box and tunnel and not in contact with the soil.

Sulfide Tails Slurry (UT-F)

Nine samples were collected at various discharge points along the Sulfide Tails Slurry pipeline (PA-UT10, 11, 12, 13, 32, 33, 34, 41, and 57), primarily from buried portions of the line close to the plant. The pipeline comes to the surface at the location of PA-UT57 and discharges to the Sulfide Tailings Pond.

Calcine Ditch (WW)

Ten samples were collected along the Calcine Ditch and are described above under Area 7.

Strong Sulfuric Acid to Vat Leach (UT-G)

No samples were collected along the sulfuric acid pipeline because it is contained inside a concrete trench box and tunnel and not in contact with the soil. Approximately 500 feet of the acid line is buried under the Phase IV Heap Leach Pad and was likely removed before the leach pad was constructed and is therefore not accessible for sampling.

Weak Sulfuric Acid to Dump Leach (UT-H)

Four samples (PA-UT 26, 49, 50 and 53) were collected along the buried portion of the Weak Acid Line and none were collected along the portion exposed on the surface. The pipeline is buried at a depth of approximately 4 ft bgs.

Acid Line (UT-I)

One sample (PA-UT31) was collected as a surface grab sample at a reducing joint where the pipe was reduced from 4 inches to 2 inches and exposed at ground surface.

Fuel Distribution Pipeline (UT-J)

Three samples (PA-UT23, 24 and 25) were collected along the buried fuel distribution lines, one at each end and one in the middle. A group of 2 inch iron pipes exist in this area and sample locations were selected to be near the terminus joints and connecting joints.

Truck Wash Sump Drain (UT-K)

One sample (PA-C1) was collected adjacent to the Truck Wash Sump as part of the Area 2 investigation. The sample was collected at the point where the drain line exits the sump box.

Grease Pit Drain (UT-L)

One sample (PA-UT04) was collected at the point where the drain line exits the truck shop at a "T-joint". The terminal extent of the drain line was searched for by a deep excavation northeast of the Paint Shop (M) but not found, therefore no sample was collected.

Fuel Tank Sump Drain (UT-M)

The fuel tanks, concrete pad and sump have all been removed and are no longer identifiable, therefore no sample was collected.

Assay Lab Drain (UT-N)

One sample was collected from under a group of 3 six inch clay pipes at a depth of 5 ft bgs. The sample was collected near the exit point from the Assay Lab. A sample was not collected at the point of discharge to the dry well.

Secondary Crusher Dust Slurry Drain (UT-O)

Nine samples were collected along the Secondary Crusher Dust Slurry Drain (PA-UT 6, 7, 36, 37, 38, 39, 40, 48 and 59). Locations PA-UT36 to 40 were collected near the crusher to a depth of approximately 2 to 3 ft bgs. Locations PA-UT06 and 07 were collected at the first joint after exiting a manhole valve box, and location PA-UT59 was collected as a surface grab sample at the point where the drain line discharges from the pipeline to a surface ditch.

Vat Leach Pumphouse Drain (UT-P)

No samples have been collected on this drain because the pumphouse has been removed and the location of the drain line is not visible and not known.

Sulfide Pumphouse Overflow Ditch (UT-Q)

No samples have been collected along this drain line because it is no longer a visible surface feature. It is also likely positioned very close to the active Weed Heights Sewer line making subsurface collection of samples in this area difficult.

Leaching Overflow Ditch (FFF)

Eighteen samples were collected along the Leaching Overflow Ditch and are described above under Area 8. Also, one surface sample (PA-UT56) was collected at a point where the ditch exited a culvert back into the surface ditch.

East Stormwater Ditch (EEE)

Twenty one samples were collected along the East Stormwater Ditch and are described above under Area 9.

Administrative and Support Buildings Sewer (UT-R)

Five samples (PA-UT01, 02, 18, 45, 47) were collected along the sewer lines in the administrative area generally at a depth of 8 to 12 ft bgs. Sample locations were selected to be near coupling joints along a straight stretch of the sewer line, or at the first joint as the sewer line exited a manhole/ valve box.

Acid Plant Sewer (UT-S)

Four samples (PA-UT05, 08, 44, 46) were collected along the sewer lines coming from the Acid Plant, generally at a depth of 5 to 6 ft bgs. Sample locations were selected to be near coupling joints along a straight stretch of the sewer line, or at the first joint as the sewer line exited a manhole/ valve box.

Leach Plant Sewer (UT-T)

Three samples (PA-UT09, 17, 27) were collected along the sewer lines coming from the Leaching Plant, generally at a depth of 3.5 to 5 ft bgs. Sample locations were selected to be near coupling joints along a straight stretch of the sewer line, or at the first joint as the sewer line exited a manhole/ valve box.

Main Line Sewer (UT-U)

Four samples (PA-UT42, 48, 51, 52) were collected along the main sewer line connecting the Administration and Acid Plant sewer lines to the Sewage Solids Tank. The pipeline was generally at a depth of 5 to 6 ft bgs. Sample locations were selected to be near coupling joints along a straight stretch of the sewer line, or at the first joint as the sewer line exited a manhole/ valve box. The 700 ft long section of this sewer line located northeast of the Precipitation Plant was investigated in 3 areas and was not found, therefore no samples were collected along this section of the line.

Weed Heights Sewer (UT-V)

Four samples (PA-UT19, 20, 21, 22) were collected along the sewer lines coming from the Sulfide Plant, generally at a depth of 8 to 12 ft bgs. Sample locations were selected to be near coupling joints along a straight stretch of the sewer line, or at the first joint as the sewer line exited a manhole/valve box.

Electrical Stations and Transformer Sampling

Several electrical sub-stations were operated at the mine site and many transformers exist on-site, either inoperative or still in use. The transformers, mounted on poles or on concrete pads within fenced-in areas, may have leaked oil. The potential COCs include oil and PCBs. Surface grab samples were collected from underlying and adjacent soils associated with five transformer sites in the Process Areas. The samples were analyzed for the full suite of analytes except radionuclides. No visible oil staining was observed around any of the transformers that were sampled.

Stained Soil Excavation and Sampling

During the field investigation, two areas were identified for excavation based on visual observation of surface oil staining and samples were collected at two additional areas that were not excavated. At each of the excavated locations, a preliminary sample was collected of the stained soil. Subsequently, confirmation samples were collected of the bottom and side walls of the excavated area following removal of visible contaminated soil. The excavations were limited in size to less than 10 by 10 feet by 3 feet deep, in accordance with the Process Areas Work Plan. Other oil-contaminated areas were observed, such as the Upper and Lower Truck Sludge Pits. However, the excavation and removal of these larger areas was beyond the scope of the site characterization activities presented in the Process Areas Work Plan.

Four areas were identified as having oil stained soil of which only two were determined to meet the excavation criteria defined in the Work Plan. Locations EX-01 and EX-04 were excavated and visibly contaminated soil was removed and stockpiled near the sample locations in order to determine the waste characteristics of the material soils for subsequent management (e.g., disposal on- or off-site). All four locations yielded samples that exceeded the Nevada criteria for diesel and motor oils. A composite sample was collected from these stockpiles to complete the characterization profile.

Underground Storage Tanks

An initial survey was completed to determine the presence of possible underground storage tanks (USTs) remaining on the property. Areas around former fueling stations were investigated in a preliminary fashion to determine if any fuel or liquid is still remaining in those tanks. Follow-up characterization activities are presented in this Work Plan.