# Appendix F
# Brown and Caldwell Process Area (OU-3)
# 2007 Work Plan

### 2.1.3 Description of Ancillary Support Facilities

Truck Maintenance

All mine vehicles and equipment were serviced on-site in the Truck Shop and other support buildings such as the Wash Rack, Grease Shops, Tire Shop, and Equipment Garage. Descriptions of vehicle maintenance activities and practices have not been found in historical mine records so the following descriptions are based on visual observations at the Site and standard mine practices.

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Anaconda maintained a fleet of 30 or more 25-ton haul trucks which were used for hauling ore form the pit to the primary crusher, hauling spent ore from the leach tanks to the VLT pile, and hauling sulfur ore to the acid plant crusher. Additional road trucks were used for hauling copper cement and concentrate to the Wabuska rail spur and hauling scrap iron back from Wabuska to the plant. Based on historical photos, it appears that the fleet was likely parked in the current location of the Equipment Garage (L) where daily vehicle fueling and greasing would have been conducted by a mobile "grease truck". More extensive maintenance activities such as motor repair and oil changes would have been conducted inside the Truck Shop. Tanks located inside the north end of the Truck Shop likely contained fresh motor oil and other vehicle fluids, and used motor oil was collected and stored in the Used Oil Tank.

Documentation of the final disposition of the used oil has not been found, but it is possible that it was used on the mine and plant roads as a dust suppressant. In addition, uncertainty associated with where floor drains in the Truck Shop drain to, and what types of fluids may have drained, exists. One historic piping diagram shows a drain line labeled "grease pit drain" exiting the north end of the building heading towards the Lower Truck Sludge Pond but the terminus of the drain is off the map.

The Wash Rack is an open concrete area with a sloping floor that collects in a drain sump on the north side and appears to drain to the Upper Truck Sludge Pond (BBB). The wash rack was likely used for hosing off and steam cleaning a variety of mine vehicles and equipment and may have included the use of degreaser soaps or solvents. Drainage from the Wash Rack is the likely source of hydrocarbon contamination found in the Upper Truck Sludge Pond.

Mine excavators, including the digging shovels, dozers, and scrapers, would likely have remained in the pit at all times and would have been serviced by the mobile grease truck in the pit, rather than traveling back to the Process Areas.

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Laboratory Services

One primary, and a possible secondary, location in the Process Areas was established for laboratory analysis of mined materials for grade control and waste rock management. The south end of the Warehouse and Assay Lab Building was used as an assay lab, presumably for analysis of rock samples from the mine. Process control samples such as leach solutions, precipitation solutions, and copper cement and concentrates, were also likely analyzed in this lab area. Evidence of sample crushing and drying can be found in the building (e.g., sinks and hood vents indicate that wet chemistry analytical procedures such as sample digestion and atomic absorption were conducted).

Historical maps show a drain line exiting the lab portion of this building to a "dry well" located approximately 50 feet from the southeast corner of the building. It is possible that laboratory wastes were disposed in this dry well. A second lab area was potentially located in the northwest corner of the Change House, based on the observation of a large hood vent (approximately four feet by four feet). The precise purpose and use of this lab area has not been determined.

## 2.2 Descriptions of Sub-Areas and Associated Features

The process components and ancillary support facilities within the Process Areas were identified and assigned sub-areas in the initial *Process Areas Work Plan* (Brown and Caldwell 2003). For ease of remedial investigation planning and data evaluation, the process components and ancillary support facilities were divided into 12 sub-areas, as identified in Table 2-1. The sub-area designations are generally contiguous, and consist of one or more process component (e.g. leaching or precipitation), a physical feature (e.g. ditch), or general ancillary support features (e.g., administrative and maintenance buildings).

Throughout this Process Areas RI Work, sub-area designations are referred to as Areas (i.e., Area 1 through Area 12).

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| Table 2-1. Sub-Area Identifications | |
|---|---|
| Sub-Area | Description |
| Area 1 | Administration and Maintenance Support Buildings |
| Area 2 | Truck Shop, Crusher and Miscellaneous Features |
| Area 3 | Leach Vats |
| Area 4 | Solution Tanks |
| Area 5 | Precipitation Plant |
| Area 6 | Sulfide Plant |
| Area 7 | Calcine Ditch |
| Area 8 | Overflow Solution Ditch (former North Solution Ditch) |
| Area 9 | East Solution Ditch |
| Area 10 | North Low Area |
| Area 11 | South Low Area |
| Area 12 | Peripheral Process Components |

The North Solution Ditch has been renamed in this Process Areas RI Work Plan to the Overflow Solution Ditch to reflect current understanding of its past use, which was to drain the overflow sump, based on historic operations information. Process components and ancillary support facilities within the sub-areas are listed in Table 2-2, and shown in Figures 2-1 and 2-2.

| **Table 2-2. Process Areas Components and Sub-Area Designations** | | |
|---|---|---|
| **ID** | **Component** | **Sub-Area** |
| A | Administration Building | 1 |
| B | Tire Pile | 11 |
| C | Equipment Wash Building | 2 |
| D | Change House | 1 |
| E | School House | 1 |
| F | Warehouse and Assay Laboratory | 1 |
| G | Large Warehouse Annex | 1 |
| H | Small Warehouse Annex | 1 |
| I | Fire Engine Storage / Tire Shop | 2 |
| J | Grease Shop #1 | 1 |
| K | Truck Shop | 2 |
| L | Equipment Garage | 2 |
| M | Truck Wash and Paint Shop | 2 |
| N | Carpenter Shop | 2 |
| O | Lead Shop | 2 |
| P | Leach Vats | 3 |
| Q | Quonset Hut | 1 |
| R | Emergency Shed | 2 |

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**Table 2-2. Process Areas Components and Sub-Area Designations - Continued**

| ID | Component | Sub-Area |
|---|---|---|
| S | Sheet Metal Shop | 2 |
| T | Plumbers Shop | 1 |
| U | Filling Station #1 | 1 |
| V | Grease Shop #2 | 1 |
| W | Filling Station #2 | 1 |
| X | Filling Station #3 | 1 |
| Y | Electrical Shop | 2 |
| Z | Filling Station #4 | 1 |
| AA | Core Building | 12 |
| BB | Water Tank | 12 |
| CC | Primary Crusher | 2 |
| DD | Solution Tanks | 4 |
| EE | Precipitation Plant | 5 |
| FF | Solution Tanks Electrical Building and Pumphouse | 4 |
| GG | Sulfide Plant Office | 6 |
| HH | Sulfide Plant | 6 |
| II | Concrete Ramps | 10 |
| JJ | Low Area #1 | 10 |
| KK | Dump Leach Surge Pond | 10 |
| LL | Tar Drum Storage | 10 |
| MM | Drain Outlet | 11 |
| NN | Stacker Area | 2 |
| OO | Secondary Crusher | 2 |
| PP | Arimetco Acid Tanks | 12 |
| QQ | Arimetco Crusher/Hopper | 12 |
| RR | Arimetco Stacker | 12 |
| SS | Acid Plant | N/A |
| TT | Motor Cargo Building | 12 |
| UU | Old Crusher Site | 12 |
| VV | Tailings Pump Houses | 12 |
| WW | Calcine Ditch | 7 |
| XX | Acid Plant Pond | N/A |
| YY | Sulfide Ore Crusher and Stockpile | 3 |
| ZZ | Surface Pumps Foundation | 12 |
| AAA | Concrete Pump Tank | 12 |
| BBB | Upper Truck Sludge Pond | 11 |
| CCC | Lower Truck Sludge Pond | 11 |
| DDD | Truck Sludge Pond Ditch | 11 |
| EEE | East Solution Ditch | 9 |
| FFF | Overflow Solution Ditch | 8 |
| HHH | Low Area | 10, 11 |
| III | Coarse Ore Storage | 2 |

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### 2.2.1 Area 1 – Administration and Maintenance Support Buildings

Features in Area 1 include the Administration Building (A), Change House (D), School House (E), Warehouse and Assay Laboratory (F), Large Warehouse Annex (G), Small Warehouse Annex (H), Grease Shop #1 (J), Quonset Hut (Q), Plumber's Shop (T), Filling Station #1 (U), Grease Shop #2 (V), Filling Station #2 (W), Filling Station #3 (X), and Filling Station #4.

Administration Building (A)

The Administration Building was used for offices, record storage, gasoline filling station, and a parking garage. The building is currently empty and is in disrepair. The building is located at the southern edge of the Process Areas near Birch Drive. The front portion of the building is accessible to the public. The building contains offices, storage rooms, restrooms, and a 3-bay garage. The only service entrance is a single overhead garage door on the northwest side of the building. A gasoline filling station (pump island with two pumps) was located in the parking lot approximately 50 feet from the northeast side of the building. No potential past chemical sources are associated with this building. The building has an L-shaped floor area of approximately 9,285 square feet. The construction is wood framing, composite siding, asphalt composition roof, and a concrete floor.

Change House (D)

The Change House was used as a dressing room and showers. The building is currently empty. The building is located between the School House to the northwest and the Administration Building to the southeast. A small former laboratory is present at the north corner of the building. The nature of work conducted within the lab is unknown, and no chemicals are currently present. The building has a floor area of approximately 4,400 square feet and is constructed of metal roof and walls on a concrete floor.

School House (E)

The School House was used as a school for on-site training of employees. There is no reason to believe that any chemicals were ever stored or used within the School House. The School House

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is adjacent to and aligned parallel with the northwest side of the Change House. A service entrance consisting of a roll-up door is located on the southwest side of the building. No potential past chemical sources are associated with this building. The building is approximately 50 feet long by 25 feet wide (1,250 square feet) and is constructed of metal roof and walls on a concrete floor.

Warehouse and Assay Laboratory (F)

The center section of the Assay Laboratory building was used as a warehouse and shop area, while the south end of the building was used as a laboratory. The assay laboratory represents a potential source of chemicals, which may have been used or stored in the building. Since the building was also used as a shop, the potential exists for residual contamination from the storage of oils and lubricants. Loading docks were located along the southwest, northwest and northeast sides of the building, and a basement below approximately one third of the first floor area is located at the southeast end of the building. The loading dock is an extension of the main floor.

A small wire-cage service elevator serviced the basement and main floor. The southeast end of the building was used for private offices. Two overhead service doors exist along the northeast and southwest sides of the building at the center of the loading dock. The center section of the building was used as a warehouse and shop area. Various laboratory equipment remains inside the building. The building is approximately 200 feet long by 70 feet wide (13,800 square feet) and is constructed of metal roof and walls on a concrete floor.

Large Warehouse Annex (G)

A complete listing of items that were stored over time in the Large Warehouse is uncertain. The building currently contains fittings, supplies, miscellaneous scrap steel, debris and some tools. A 2-inch diameter pipe protrudes from the ground at the north end of the building. A small area of dark-stained soil was observed at the southeast end of the building. Past potential sources of chemicals include those associated with ancillary equipment storage and maintenance (e.g., large equipment, containers of lubricant, oil and solvents). The building is located northeast of and

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aligned parallel with the Assay Laboratory. Large sliding service doors are located at each end of the building. The building is approximately 150 feet long by 33 feet wide (4,950 square feet), and is constructed of metal roof and walls on a concrete floor.

Small Warehouse Annex (H)

A complete listing of items that were stored over time in the Small Warehouse is uncertain. The building currently contains 91 used transformers and oil-filled switches, and most of the transformers have been tagged as containing polychlorinated biphenyls (PCBs). Potential past sources of chemicals are those associated with transformers, ancillary equipment storage, and maintenance (e.g., large equipment and containers of lubricant, oil and solvents). The building is located to the northwest of and in line with the Large Warehouse. Large swinging service doors are located at the northwest end of the building. The building is approximately 35 feet by 40 feet (1,400 square feet), and is constructed of metal roof and walls on a concrete floor.

Grease Shop #1 (J)

Grease Shop #1 was used for shop and storage activities involving grease and lubricants. Formerly stored lubricants and oils represent a potential past source of petroleum hydrocarbons. The building is currently empty, and is located northeast of and aligned parallel with the Large Warehouse. Small swinging service doors are located on the northwest side of the building. This small storage building is approximately 20 feet by 20 feet (400 square feet) with metal roof and walls on a concrete floor.

Quonset Hut (Q)

The Quonset Hut and storage yard was apparently used to store electrical equipment and transformers, potential past sources of organic compounds and PCBs. The building currently contains old scrap electrical supplies (e.g., wire, switches, lights, and control equipment). At least one old transformer is still present in the storage yard. The building is located in the northeast edge of the Process Area. A door is located on the northeast side of the building. A fenced-in storage yard is adjacent to the building. A large electrical structure is located

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approximately 50 feet north of the building. The Quonset Hut is approximately 100 feet long and 25 feet wide (2,500 square feet) and is constructed of wood. There is no floor in the building.

Plumber's Shop (T)

This building was used for storage of pipe fittings and plumbing supplies, and it may also have been used for maintenance activities. Currently, the building is empty except for scrap piping and a portable generator. The building is located in the southwest edge of the main Process Area, west of the Warehouse/Assay Lab. Potential past chemical sources associated with this building include organic compounds. This small building is approximately 25 feet by 30 feet (750 square feet) with metal roof and walls on a concrete floor.

Filling Station #1 (U)

Filling Station #1 consists of two above-ground storage tanks ("ASTs") currently used for petroleum fueling. The station represents a potential past and present source for impact from petroleum hydrocarbons (e.g., diesel fuel and gasoline). The station is located east of the Large Warehouse and south of Grease Shop #1. The station consists of two ASTs that are not housed in a building. The larger AST has a 10,000-gallon capacity and contains diesel fuel. It has a secondary containment consisting of an earthen berm and plastic liner. The smaller AST has a 1,000-gallon capacity and appears to contain gasoline. It sits on a cradle approximately 6 feet high with no secondary containment. The cradle is mounted to a concrete apron where vehicles park to fill up. The ASTs appear to be constructed of steel.

Grease Shop #2 (V)

Grease Shop #2 was used for shop and storage activities involving grease and lubricants. Formerly stored lubricants and oils represent a potential past source of petroleum hydrocarbons PCBs. The building currently contains dry scrap and debris. The building is located just southeast of Grease Shop #1. A small door is located on the south side of the building. This small building is approximately 15 feet by 18 feet (270 square feet) with a metal roof and walls on a concrete floor.

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Filling Station #2 (W)

Filling Station #2 was formerly used for petroleum fueling. The station has been decommissioned, but represents a potential source of diesel fuel and gasoline. The station has fuel pumps located in a shed. Underground pipes (two 2-inch lines) are protruding from the ground outside the southeast end of the building possibly indicating the presence of USTs. The shed was constructed of metal on a concrete pad.

Filling Station #3 (X)

Filling Station #3 was formerly used for petroleum fueling. The station has been decommissioned, but represents a potential past source of diesel fuel and gasoline. The station has fuel pumps located in a shed. Underground pipes are protruding from the ground, possibly indicating the presence of underground storage tanks ("USTs").

Filling Station #4 (Z)

Fuel pumps were located on a concrete pad and used for fueling mine vehicles. An underground fuel line connects from the above-ground fuel tanks to the concrete pad where the pumps were located. The inactive concrete pad is located between the Assay Laboratory and the Small Warehouse. This feature represents a potential past source of gasoline and diesel.

### 2.2.2 Area 2 – Truck Shop, Crusher and Miscellaneous Features

Features in Area 2 include the Equipment Wash Building (C), Fire Engine Storage/Tire Shop (I), Truck Shop (K), Equipment Garage (L), Truck Wash and Paint Shop (M), Carpenter Shop (N), Lead Shop (O), Emergency Shed (R), Sheet Metal Shop (S), Primary Crusher Foundation (CC), Stacker Area (NN), Secondary Crusher Area (OO), and the Coarse Ore Storage Area (III).

Equipment Wash Building (C)

It appears that small portable equipment was washed inside the Equipment Wash Building. Cleaning solutions represent a potential past source of organic compounds such as volatile and semi-volatile organic compounds ("VOCs" and "SVOCs"). The stained ground surface

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associated with this building could indicate a potential past source for petroleum hydrocarbons. The building is located west of the Truck Wash and Paint Shop. The northeast end of the building contains pipelines that were connected to former "cleaning solution" tanks. A sign mounted on the northeast wall indicates that "cleaning solution" tanks were positioned along that interior wall at one time. A small concrete sump sits along the outside northeast wall of the building; the purpose of the sump is unknown. An area of dark-stained ground surface approximately 2 feet in diameter was observed next to the sump. A drain line leads from the Equipment Wash Building to the Upper Truck Sludge Ponds (BBB). This relatively small building has a floor area of approximately 300 square feet and is constructed of concrete with a concrete floor.

Fire Engine Storage / Tire Shop (I)

The Fire Engine Storage building was originally used to house fire-fighting equipment, fire trucks, and an ambulance. Historic maps identify the building as a Tire Shop, presumably where mine vehicle tires were repaired. Currently, six large used transformers are stored in the building, with some transformers labeled as containing PCBs (the rest of the building is empty). The potential past source of chemicals are those associated with truck storage and maintenance operations (i.e., organic compounds and petroleum hydrocarbons) and storage of the transformers. The building is located southwest of the Truck Shop and is adjacent to the Emergency Shed. A large overhead service door opens up along one side of the building to a 40-foot wide concrete driveway. The building is approximately 60 feet by 35 feet (2,100 square feet), and is constructed of metal walls and roof with a concrete floor.

Truck Shop (K)

The Truck Shop was used for large equipment servicing and transformer storage. Electrical transformers were re-conditioned inside the Truck Shop in the 1980s by Unison. The south half of the building was used as a machine shop, which was partitioned with metal from the north half of the building, and the southeast portion of the building contained offices. Overhead service doors along the northeast side of the building provided access to the large equipment repair shop.

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Several areas are present on the concrete floor where former floor drains have apparently been filled in with cement. Two grease pits at the northern end of the machine shop are present near the center of the building, each measuring 4 feet wide by 30 feet long. The potential past source of chemicals in the Truck Shop are those associated with oils, gasoline, solvents and PCBs. The Truck Shop is the largest ancillary building in the Process Areas and is located northwest of and in line with the Assay Laboratory. The building is approximately 350 feet long, 100 feet wide over half its length, and 75 feet wide over the other half (35,000 square feet). The walls and roof are metal, and the floor is concrete.

At the northwest end of the Truck Shop, three oil tanks (approximate 3,000-gallons capacity each) are located outside the building within a concrete secondary containment structure. Dark-stained ground surface is apparent along the edge of the secondary containment. Stained ground surface is also apparent near the outside southwest wall at the northwest corner of the building, along a 2-inch plastic pipeline that is installed between a large secondary containment structure (no tanks are present) and the inside of the building. A floor drain exits the Truck Shop with a discharge point to the ground surface approximately 600 feet to the northeast of the building.

Equipment Garage (L)

The Equipment Garage was used for vehicle and light equipment servicing and storage, and represents a potential past source for oils, gasoline, solvents and PCBs. The building is located to the northeast of and aligned parallel with the Truck Shop. There are six large overhead service doors along the southwest side of the building, and another overhead door at the southeast corner. The northeast corner of the building was occupied by an office. A small sump is located outside the building at the south corner. An area of dark-stained ground surface is apparent along the northeast side of the building. A small fenced compound with an active electrical transformer and visible oil staining is located behind this building. The building is approximately 150 feet long by 65 feet wide (9,750 square feet) and is constructed with a metal roof and walls on a concrete floor.

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Truck Wash and Paint Shop (M)

The Truck Wash and Paint Shop building and pad were used to wash and paint vehicles and equipment. The stained ground surface may indicate past sourcing of oil, and the old paint represents a potential past source of lead. The building is located north of the Equipment Garage and east of the Equipment Wash Building. The building has two large overhead service doors on opposing sides where vehicles and equipment entered and exited. Some dark staining is apparent on the ground surface outside of the building overhead doors.

Outside the building, on the southwest side, a large concrete wash pad drains to a nearby sump and discharges to an unlined pit. The building floor area is approximately 45 feet by 45 feet (2,025 square feet) and is constructed of metal roof and walls on a concrete floor.

Carpenter Shop (N)

The Carpentry Shop was likely only used for carpentry work, and included an office and shop area. No evidence exists that the building was ever used for other activities, or that any potential past sources of chemicals were present. The southeast end of the building has overhead service doors. The shop is empty except for scrap supplies and a few tools and equipment. A small concrete sump with a valve is present outside the west wall of the building. This building is located northwest of the Truck Shop. This building has a floor area of approximately 70 feet by 40 feet (2,800 square feet) and is constructed of metal roof and walls on a concrete floor.

Lead Shop (O)

The Lead Shop was likely used to work lead pipes and, perhaps, construct lead pipe joints. The building is aligned with the Carpenter Shop to the northwest. A large service door is on one side of the building, and a steel I-beam inside the building once supported a crane for lifting equipment and stock. This building has a floor area of approximately 20 feet by 40 feet (800 square feet) and is constructed of metal roof and walls on a concrete floor.

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Emergency Shed (R)

The nature of past activities conducted inside the Emergency Shed is unknown, although the name suggests that "emergency" supplies were stored inside (e.g., gasoline or diesel for generators). It is not likely that emergency supplies would have included process-related chemical such as acids or solvents. The Emergency Shed may represent a past source of petroleum hydrocarbons or diesel. Currently, the building is empty except for stored soil samples and scraps of materials. There is a 2-inch pipeline protruding from the ground near the southeast corner of the building. The building is located southwest of the Truck Shop and is adjacent to the Fire Engine Storage. The building has a floor area of approximately 50 feet long by 16 feet wide (800 square feet) and is constructed of metal roof and walls on a concrete floor.

Sheet Metal Shop (S)

No historical information exists to indicate that the building was used for any purpose other than as a sheet metal fabrication shop. The building is empty except for scrap and debris on the floor. Potential past sources of chemicals include diesel fuel. This building is located near the southern corner of the Truck Shop and is adjacent to the Electrical Shop. Service doors are located along its northeast side, off the edge of the concrete. An attached shed on the east wall of the building is locked and labeled "Diesel", and may have stored fuel for portable equipment. This building has a floor plan of approximately 60 feet long by 35 feet wide (2,100 square feet) and is constructed of metal roof and walls on a concrete floor.

Electrical Shop (Y)

The Electrical Shop was formerly used to store electrical equipment and supplies. The building currently contains shelves full of wire, fittings and devices, but there are no containers of any liquids or chemicals inside the building. The small spacing of the aisles and shelves precludes the storage of any large transformers. There is no indication that chemicals were used or stored in this building. The Electrical Shop is located near the southern corner of the Truck Shop and is adjacent to the Sheet Metal Shop. This building has a floor plan of approximately 70 feet long by 25 feet wide (1,750 square feet) and is constructed of metal roof and walls on a concrete floor.

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Primary Crusher (CC)

The Primary Crusher (54-inch Traylor gyrator crusher) was used to crush the ore to a 5-inch product before being sent on to the Secondary Crusher. The crushed ore was conveyed to a storage bin using a 48-inch overhead conveyor, which initially started below ground and emerged next to the stockpile and crusher. Historical records indicate that ore crushing was the only activity at this location, and the only potential past source of chemicals would include metals and radiochemicals from the ore and lubricants (i.e., oil for machinery parts) stored or used in this area. All that remains of the Primary Crusher is the concrete foundation and walls, located south of Process Areas near the bridge crossing over Birch Drive. The area of the foundations is approximately 100 feet by 130 feet (13,000 square feet).

Stacker Area (NN)

This conveyance between the primary and secondary ore crushers has had all components removed, and has been re-graded. The potential past chemical sources include metals and radiochemicals associated with crushed ore. The Stacker Area is located in the southern portion of the Process Areas south of the Secondary Crusher.

Secondary Crusher (OO)

The Secondary Crusher was used to further reduce coarsely crushed ore from the Primary Crusher to a nominal 0.5-inch diameter. The potential past chemical sources are metals and radiochemicals associated with crushed ore. The Secondary Crusher is located in the southern portion of the Process Areas near the Fire Engine Storage and Emergency Shed. The crusher cones along the north side of the building have been completely removed, but the concrete foundations remain. An underground concrete conveyor exists underneath the Secondary Crusher cone foundations, between the crusher and the ore stockpile.

Coarse Ore Storage (III)

This area contained two ore stockpile storage buildings, one for coarse oxide ore and the other for coarse sulfide ore. Ore entered the buildings by conveyor belt from the Primary Crusher and

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was removed by an underground conveyor belt for feeding to the Secondary Crusher. The remains of the buildings include visible concrete foundations. The potential past chemical sources are metals and radiochemicals associated with crushed ore. The Coarse Ore Storage buildings are locate din the southwest corner of the Process Area, several hundred feet west of the Administration Building.

### 2.2.3 Area 3 – Leach Vats

Area 3 consists of Leach Vats (P) and Sulfide Ore Stockpile Area and Underground Conveyors (YY).

Leach Vats (P)

Eight leach vats were used for the leaching of the copper oxide ores received from the Secondary Crusher. The vats were used to percolate sulfuric acid leach solution through the crushed ore and, subsequently, the application of rinse solution. Each vat was capable of processing 12,000 tons of crushed ore. The potential past sources of chemicals are the acidic solutions that contained metals and radiochemicals. Additionally, the vats were serviced by a permanent overhead rolling crane, which represents a past potential source of oil.

The vats are located along the southwest portion of the Process Areas and northwest of the Truck Shop. Each vat measures 120 feet by 135 feet by 20 feet deep, and was constructed with (average) 18-inch concrete walls and concrete floors (wall thickness is reported to range from one foot thick at the top to three feet thick at the bottom). The interiors of the vats were lined with asphalt mastic (30 percent asphalt and 70 percent sand, reinforced with two layers of thick wire mesh) to protect the concrete from deterioration by the sulfuric acid.

Sulfide Ore Crusher and Stockpile (YY)

This area was used to stockpile sulfide ore supplied to the Sulfide Plant for processing through the flotation and concentration process. Two underground conveyors enclosed in a concrete

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tunnel travels under the main roadway to connect the sulfide ore stockpile to the Sulfide Plant. The potential past source of chemicals are metals and radiochemicals associated with the conveyed ore.

### 2.2.4 Area 4 – Solution Tanks

Features in Area 4 consist of Solution Tanks (DD) and Solution Tanks, Electrical Building and Basement (FF).

Solution Tanks (DD)

Three Solution Tanks were used for short term storage of pregnant acid leach solution from the Leach Vats awaiting precipitation in the Precipitation Plant. The southernmost Solution Tank was most recently used to store chemicals or petroleum products in approximately 280 55-gallon drums and soils in nine plastic 250-gallon containers. Several of the drums had been damaged, and some were labeled as containing PCBs. All of these drums have since been characterized and removed as of July 2003 (Phillips Services Corporation, 2003). The potential past sources of chemicals acid, metals, radiochemicals and the materials stored in the 55-gallon drums.

The tanks are located between the Leach Vats to the southwest and the Precipitation Plant to the northeast. The tanks are constructed of concrete floors and concrete walls and are approximately 90 feet wide and 18 feet deep. The tops of the tanks are at ground level with wall and floor thickness at minimally 12 to 18 inches. Effects of acid pitting and erosion of the inside surfaces of the tanks are visible, possibly reducing wall thickness to less than 12 inches in some areas. The length of the tanks is approximately 360 feet (tank lengths vary from 90 to 140 feet in length).

Solution Tanks Electrical Building and Pumphouse (FF)

The Solution Tanks Electrical Building and Pumphouse area supported the pumps for the solution tanks and precipitation plant. Switchgear is present in the Electrical Building and, although there is no apparent oil staining, the potential for the past use of transformers in this

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building exists. The potential past sources of chemicals include acid solutions with metals and radiochemicals, and transformer oil. The Electrical Building and Pumphouse area are located immediately southwest of the three large Solution Tanks. The area is approximately 60 feet wide by 200 feet long (12,000 square feet).

### 2.2.5 Area 5 – Precipitation Plant

Area 5 has one feature, the Precipitation Plant (EE).

Precipitation Plant (EE)

The Precipitation Plant consists of fifteen parallel "iron launders" that were filled with light gauge scrap iron used to precipitate copper from the sulfuric acid leach solution pumped out of the Leach Vats and temporarily stored in the Solution Tanks. The copper in solution replaced the iron in the scrap materials, creating a copper cement product that was transported off-site for final processing. The waste product from the Precipitation Plant was a ferrous sulfate solution that was conveyed to the evaporation ponds. Pregnant copper solution from dump leaching activities was also sent to the Precipitation Plant, but was kept separate from the vat leach solution.

Historical information indicates that several pumps, sumps and associated piping were constructed to convey solutions along the outside perimeter of the launders. The iron launders still contain scrap iron. Several 55-gallon drums previously stored in one of the launders at the southeast end of the plant were removed in 2003 (Phillips Services Corporation, 2003). The potential past sources of chemicals include solutions and leached solid materials with metals and radiochemicals, and the materials stored in the 55-gallon drums.

The plant is located between the Solution Tanks to the southwest and the North Low Area to the northeast. On the northeast side of the plant, a partially buried concrete trench extends approximately 20 feet from the base of the tanks. Beyond the trench is a concrete and asphalt apron that was used to store scrap iron. On the southeast side of the plant, an overhead crane is

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located on a concrete footing and rail. Each concrete launder measures 10 feet by 58 feet by five feet deep, with a 1.25 percent slope to facilitate flow from one launder to the next. The entire Precipitation Plant is approximately 600 feet long.

### 2.2.6 Area 6 – Sulfide Plant

Features in Area 6 consist of the Sulfide Plant Office (GG) and the Sulfide Plant (HH).

Sulfide Plant Office (GG)

The Sulfide Plant Office building was apparently used for ancillary administrative purposes related to Sulfide Plant operations. The building is currently empty with the exception of archived core samples. No indication of chemical use or storage in the Sulfide Plant Office building has been observed. The building is located between the Sulfide Plant to the northwest and the Solution Tanks to the southeast. This L-shaped concrete building is approximately 50 feet by 25 feet along one wing, and 25 feet by 25 feet at the other (1,875 square feet).

Sulfide Plant (HH)

Sulfide ore was processed in the plant by first crushing the ore and then feeding it through a rough flotation circuit consisting of four concrete rows containing 24 separate cells. The resulting rough concentrate was routed to a 75-foot diameter thickener, then to a fine-grinding mill. From this mill, the concentrate was fed to a scavenger flotation circuit of similar construction to the first, and then conveyed to two 50-foot diameter thickeners. The final concentrate was dried in two six-foot diameter vacuum filters. The potential past sources of chemicals include solutions with metals and radiochemicals associated with the sulfide ore.

All buildings in the Sulfide Plant area have been removed, and only concrete structures remain. These concrete structures cover an area approximately 800 feet by 400 feet (320,000 square feet) and consist of foundations, slabs, columns, trenches, ramps and thickeners. Some of the structures, such as slabs and ramps, appear to be at, and above surface grade, and some of the structures such as trenches and thickeners are partially buried. Two concrete-lined conveyor

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ways, each approximately 175 feet long, extend from the bottom of the sulfide fine ore stockpile, underneath the road and up to the Sulfide Plant. All of the circular-shaped thickeners have been filled with alluvial and/or VLT materials.

### 2.2.7 Area 7 – Calcine Ditch

Area 7 consists of the Calcine Ditch (WW). No other features are present in Area 7.

Calcine Ditch (WW)

Dust from gas produced in the former Acid Plant was removed by wet scrubbers, mist precipitators and cyclones. The resulting wet slurry was directed to four calcine launders (i.e., concrete troughs covered with steel plates), from which the slurry was sent along with calcines (i.e., burned ore) from the former Acid Plant reactors to the evaporation ponds north of the Process Areas. The conveyance along the calcine ditch used spent solution from the precipitation launders as a conveyance medium.

Potential past sources of chemicals include calcines and the collected stack dust with metals and radiochemicals. It is possible that other waste solutions were transported in this ditch. The length of the ditch is approximately 3,200 feet. The 1,200–foot portion of the ditch closest to the source (former Acid Plant) is buried under an Arimetco heap leach pad.

### 2.2.8 Area 8 – Overflow Solution Ditch

Area 8 consists of one feature, the Overflow Solution Ditch (FFF).

Overflow Solution Ditch (FFF)

The Overflow Solution Ditch was identified by examination of photographs of the Process Areas taken in 1961 and 1964. The surface expression of the ditch starts at approximately the northwest end of the Solution Tanks (DD), and extends about 1,000 feet northeast where it disappears under the sulfide tailings adjacent to the Process Areas. The ditch is unlined, and it is uncertain whether solutions flowed freely in the ditch or were contained in piping that is no

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longer in place. Although the precise use of this ditch is uncertain, it may have carried waste solutions or runoff from the Solution Tanks to the sulfide tailings ponds because of its location. The potential past sources of chemicals include solutions with metals and radiochemicals.

### 2.2.9 Area 9 – East Solution Ditch

Features in Area 9 consist of the East Solution Ditch (EEE), Low Area #1 (JJ), and the Tar Drum Storage area (LL).

East Solution Ditch (EEE)

The East Solution Ditch runs northwest from the Lower Truck Sludge Pond (CCC) along the margin of the sulfide tailings. The ditch can be traced for approximately 1,500 feet to the point where it disappears under the main haul road. The ditch is unlined and was likely used to convey surface drainage from the Truck Wash Pad, Upper and Lower Truck Sludge Ponds, and other localized surface runoff. Hydrocarbon residue is visible along the sides of the ditch and potential past sources of chemicals include gasoline, diesel and motor oil residues.

Low Area #1 (JJ)

This area was identified during the preliminary Process Areas characterization as a low point where storm water was likely to collect, but is covered by the East Solution Ditch (EEE). Potential past sources of chemicals include gasoline, diesel and motor oil residues. This low area is located at the north end of the East Solution Ditch.

Tar Drum Storage (LL)

The Tar Drum Storage area was identified as having contained 23 drums of tar, some of which showed some leakage to the ground. Potential past sources of chemicals include petroleum hydrocarbons. All drums have been characterized and removed from the area (Phillips Services Corporation, 2003). The total area of the storage area is approximately 25 feet by 10 feet.

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### 2.2.10 Area 10 – North Low Area

Features in Area 10 consist of the North Low Area (HHH), Concrete Ramps (II), and Surge Pond (KK).

North Low Area (HHH 1-16)

The North Low Area has been used for general equipment and materials storage and exhibits apparent runoff accumulation from the surrounding topography. The potential past sources of chemicals include solutions and leached solid materials with metals and radiochemicals, and runoff containing oil, solvent or other organic compounds. This is an area located northeast of the Precipitation Plant (EE) at a lower elevation than the general ground surface in the Process Areas.

Concrete Ramps (II)

There are two sloped concrete ramps east of the Sulfide Plant that are approximately 25 feet wide by 50 feet long. Their past use is uncertain, but they may have been used to store or load trucks with copper cement from the Precipitation Plant. The potential past sources of chemicals include solutions and leached solid materials with metals and radiochemicals.

Dump Leach Surge Pond (KK)

The Dump Leach Surge Pond was used for temporary storage of pregnant process solutions from the Dump Leach. The potential past sources of chemicals from the Surge Pond, which may have been clay-lined, include solutions and leached solid materials with metals and radiochemicals. The Surge Pond is approximately 150 by 150 feet with a maximum depth of about 5 feet. It is located approximately 200 feet northeast of the Precipitation Plant.

### 2.2.11 Area 11 – South Low Area

The features in Area 11 consist of the Tire Pile (B), South Low Area (HHH 17-38), Upper Truck Sludge Pond (BBB), Lower Truck Sludge Pond (CCC), Ditch between Upper and Lower Truck Sludge Ponds (DDD), and Drain Outlet (MM).

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Tire Pile (B)

Old tires from haul trucks and other vehicles are stored on the ground in a large pile. There was no discolored soil observed in the area of the Tire Pile, and no indication of equipment storage or repair. The Tire Pile is located at the northeastern edge of the Process Areas and covers an area approximately 200 feet long by 80 feet wide.

South Low Area (HHH 17-38)

General use of the area includes miscellaneous material storage (such as discarded heavy equipment tires), general vehicle roadways, and conveyance of process solutions through above ground pipelines. The area also includes a used oil tank (1,800-gallon capacity) inside an old haul truck bed which serves as secondary containment. The potential past sources of chemicals include solutions with metals and radiochemicals, and petroleum hydrocarbons. This is the continuation of the low area situated between the Process Areas and the VLT pile. The area also includes some of the intermediate elevations areas around the Precipitation Plant and the tire pile.

Upper Truck Sludge Pond (BBB)

This pond or pit area is located just north of the Equipment and Truck Wash areas (C and M) and appears to have been a collection point for wash water from the Wash Pad and possibly other drains from the Truck Shop Building (K). The soil in this area exhibits hydrocarbon contamination. During the initial phase of investigation, this area was not able to support the weight of heavy equipment (drill rig or backhoe). The pit is approximately 10 feet wide and 40 feet long, with an 8-inch diameter drain pipe that drains into this area.

Lower Truck Sludge Pond (CCC)

A second pond area exists in the South Low Area that received additional drainage from the Upper Truck Sludge Pond. This pond appears to have had a synthetic liner installed at one time that might have contained solutions and solids. The solids in the pond exhibit the presence of petroleum hydrocarbons.

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Truck Sludge Pond Ditch (DDD)

A possible ditch, or drainage pathway, between the Upper and Lower Truck Sludge Ponds was identified and sampled. Petroleum hydrocarbons would likely be sourced from this feature.

Drain Outlet (MM)

A drain outlet was identified in the South Low Area. The origin of the drain is uncertain, although it is likely that it is related to the Dust Slurry Drain line coming from the Secondary Crusher, which traveled underground and exited to a surface ditch in the area of this pipe and allowed to drain to the Sulfide Tailings or the East Solution Ditch (the drain was previously considered to have originated in the Truck Shop). Potential past sources of chemicals include petroleum hydrocarbons. An 8-inch drain pipe exits to the surface in the southeast portion of the South Low Area at the point of a small embankment.

### 2.2.12 Area 12 – Peripheral Process Components

The features in Area 12 consist of the Core Building (AA), Water Tank (BB), Acid Tanks (PP), Arimetco Crusher/Hopper (QQ), Arimetco Stacker Area (RR), Former Acid Plant (SS), Motor Cargo Building (TT), Old Crusher Site (UU), Tailings Pump Houses (VV), Former Pond (XX), Surface Pumps Foundation (ZZ), and Concrete Pump Tank (AAA).

Core Building (AA)

The Core Building, used for core storage and logging activities, is located southwest of the Process Areas and contains several hundred boxes of core samples on shelves. The building was constructed a relatively long distance (approximately 0.25 miles) from the edge of the existing Process Areas. The building is constructed of sheet metal on framework without a floor (i.e., a dirt floor).

Water Tank (BB)

There is a single water tank located northwest of Yerington Pit and approximately 1,500 feet southwest of the Leach Vats. The tank was used to supply water for the mine and for Weed

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Heights, and is currently out of operation. The capacity of the tank and volume of water remaining inside are unknown. There is no reason to believe that any chemicals were ever used or stored at this location.

Arimetco Acid Tanks (PP)

The Acid Tanks are located approximately one mile northwest of the main Process Areas on top of a VLT pile. The tanks include a 50,000-gallon, two 5,000-gallon and a 10,000-gallon metal sulfuric acid tanks. The contents of the tanks were likely a dilute (approximate one percent) sulfuric acid solution used for leaching of the nearby Arimetco leach pad. Three of the four tanks are situated within secondary containments. Some yellow staining of soil is visible, suggesting possible spillage of sulfuric acid. The contents of all the acid tanks have been drained, but the tanks have not been cleaned out. The volume of residual acid sludge in the tanks is unknown. The potential past source of chemicals in this area is sulfuric acid. The tanks include a 50,000-gallon, two 5,000-gallon and a 10,000-gallon metal sulfuric acid tanks.

Arimetco Crusher/Hopper (QQ)

The Arimetco Crusher/Hopper was located approximately one mile northwest of the main Process Areas, on the north side of the Oxide Ore waste rock area. The components have been removed and the area has been re-graded. The potential past source of chemicals in this area include metals and radiochemicals associated with the crushed ore, and sulfuric acid.

Arimetco Stacker Area (RR)

A lined stockpile existed on the area where the former Stacker was located, approximately one mile northwest of the main Process Areas. Acid-treated crushed ore was placed on the stockpile area. After the Crusher Plant was removed, the stockpile area was excavated and placed on the VLT Leach Pad. The potential past source of chemicals in this area include metals and radiochemicals associated with the crushed ore, and sulfuric acid.

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Acid Plant (SS)

The Acid Plant was located where the Arimetco Phase III/South Heap Leach Pad is currently situated. Historic records indicate that the acid plant produced sulfuric acid solution as early as 1954, and continued production of approximately 200 to 450 tons of sulfuric acid per day until at least 1975. The potential past source of chemicals in this area is sulfuric acid.

Motor Cargo Building (TT)

The Motor Cargo Building is located northwest of the Core Building, to the southwest of the Former Acid Plant. The community of Weed Heights operates the building and surrounding fenced-in storage yard for equipment and supplies storage. Several 55-gallon drums of unknown content were observed inside the storage yard. Previously, the building was used for parking and, possibly, repair of trucks that were used to transport oxides and chemicals to and from Wabuska for train shipment. The current nature of operations inside the building is unknown.

Old Crusher Site (UU)

The foundation has no structures or equipment attached. Next to the foundation is an area where a former acid tank may have been located. The ground surface around the former tank area is discolored yellow. The potential past source of chemicals in this area include metals and radiochemicals associated with the crushed ore, and sulfuric acid. A concrete foundation of an old crusher unit exists approximately 2,100 feet southeast of the Administration Building (A) on the south side of the Weed Heights Road north of the Yerington Pit.

Tailings Pump Houses (VV)

Operation of the Tailings Pump Houses most likely involved pumping of fluidized, spent processed ore from the Process Areas to the sulfide tailings. The potential past source of chemicals in this area include metals and radiochemicals associated with the sulfide tailings, sulfuric acid, and lubricant oil from the pumps. Two buildings containing large pumps and associated piping are located east of the Evaporation Ponds. The easternmost building was named the Tailings Pump House and contains two large pumps with approximate 16-inch

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diameter piping entering straight into the ground and underground out to the south. The other building consists of large pumps on a raised concrete deck, associated piping and a concrete holding tank with level gauge.

Acid Plant Pond (XX)

A holding pond located adjacent to, and northwest of, the former Acid Plant may have been used to temporarily hold, or evaporate, solutions from the plant (the exact nature of the solution stored in the pond is unknown). The potential past source of chemicals in this pond is likely sulfuric acid.

Surface Pumps Foundation (ZZ)

The structure appears to have collected surface water or fluids from the surrounding topographic low area. The potential past source of chemicals in this area include metals and radiochemicals associated with surface runoff over tailings. An above-ground concrete foundation exists just east of the middle Evaporation Pond in a low area near the northeast boundary of the mine site. The structure is a concrete holding tank approximately four feet deep with a grated inlet on the north side at ground surface, and openings in the top that suggest the presence of large pumps.

Concrete Pump Tank (AAA)

A large abandoned above-ground concrete tank is present at the southern end of the Unlined Evaporation Pond. Potential COCs in the area of the tank include acidic solutions and calcines (the latter if the piping represents a continuation of the Calcine Ditch). The tank is approximately 12 feet high and appears to have had pumps attached to an integral concrete platform above the tank. A manhole with an apparent former valve ahead of the tank is present approximately 60 feet to the south of the tank.

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### 2.2.13 Descriptions of Process and Utility Pipelines, Drains and Ditches

Process and utility pipelines, drains and ditches includes all identified solution conveyance methods within the Process Areas for conveying chemicals, process solutions and wastes. Types of solutions that were conveyed can be subdivided into the following categories:

- Pregnant Process Solutions – Solutions that are metal rich after leaching of the ore;
- Spent Process Solutions – Process solutions that have had the copper removed before reuse or disposal to the waste ponds;
- Acid – Sulfuric acid of varying concentrations produced in the Acid Plant for use in leaching, prior to application to the ore;
- Fuel – Gasoline or diesel fuel lines distributing fuel from the storage tanks to the fuel pumps;
- Drain Lines – Gravity flow drain lines from floor drains, sumps or other sources; and
- Sewer – Sewer lines connecting bathrooms, sinks or other non-process waste points to the sewage disposal and solids separator system.

Process and waste solutions were transferred from point-of-origin to point-of-use to point-of-disposal by a variety of methods, including:

- Above ground piping,
- Underground piping, and
- Gravity flow surface ditches, lined and unlined.

A listing of the identified pipelines and conveyance features is provided in Table 2-3 and are shown on Figure 2-3. Several features, primarily ditches, were initially included as features in the sub-areas and are described in detail in Sections 2.2.1 through 2.2.12, but they are included in this section to provide a complete listing and are referred to by the original sub-area component listed in Table 2-1.

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| Table 2-3. Solution Conveyance Feature Identifications | | |
|---|---|---|
| ID | Component | Category |
| UT-A | Vat Leach Pregnant Solution | Pregnant Solution |
| UT-B | Dump Leach Pregnant Solution | Pregnant Solution |
| UT-C | Sulfide Concentrate Slurry | Pregnant Solution |
| UT-D | Precipitation Plant Spent Solution to Pond | Spent Solution |
| UT-E | Precipitation Plant Spent Solution to Acid Plant | Spent Solution |
| UT-F | Sulfide Tails Slurry, North | Spent Solution |
| UT-G | Strong Sulfuric Acid to Vat Leach | Acid |
| UT-H | Sulfuric Acid to Dump Leach | Acid |
| UT-I | Acid Line | Acid |
| UT-J | Fuel Distribution Pipeline | Fuel |
| UT-K | Truck Wash Sump Drain | Drain |
| UT-L | Grease Pit Drain | Drain |
| UT-M | Fuel Tank Sump Drain | Drain |
| UT-N | Assay Lab Drain | Drain |
| UT-O | Secondary Crusher Dust Slurry Drain | Drain |
| UT-P | Vat Leach Pumphouse Drain | Drain |
| UT-Q | Sulfide Pumphouse Overflow Ditch | Drain |
| UT-R | Administration Sewer | Sewer |
| UT-S | Acid Plant Sewer | Sewer |
| UT-T | Leach Plant Sewer | Sewer |
| UT-U | Main Line Sewer | Sewer |
| UT-V | Weed Heights Sewer | Sewer |
| UT-W | Sulfide Tails Slurry, South | Spent Solution |
| EEE | Overflow Solution Ditch | Drain |
| FFF | East Solution Ditch | Drain |
| WW | Calcine Ditch | Spent Solution |

**Pregnant Process Solutions**

Pregnant process solutions are typically transported in contained pipelines which are generally laid on the surface or in concrete trenches in order to minimize the loss of valuable metal content. Three pregnant process solution pipelines have been identified:

Leach Vat Pregnant Solution (UT-A)

Pregnant leach solutions from the Leach Vats were transferred to the Solution Tanks and to the Precipitation Tanks by a 12 inch transite pipe located in the concrete lined ditch which is at ground level and under the roadway between the Leach Vats and the Precipitation Plant. The pipes are fully accessible for observation and repair and any spillage was collected in the Overflow Sump located southwest of the Solution Tanks.

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Dump Leach Pregnant Solution (UT-B)

Low grade ore was stockpiled on a liner on the south side of Burch Drive and leached in place with sulfuric acid solution. The pregnant solution was collected on a liner underlying the ore and was transferred to the Precipitation Plant via a 12-inch transite pipe laid on the ground surface. Dump Leach solution was stored in the Dump Leach Surge Pond (KK) and then transferred to the Precipitation Plant by an underground pipeline around the northwest end of the tanks where it was processed separately from the Vat Leach solutions. Most of the piping is still visible on the ground though some of it has been removed as it nears the Dump Leach Surge Pond.

Sulfide Concentrate Slurry (UT-C)

Sulfide concentrates were piped from the floatation cells to various thickeners and settling tanks. Uncertainty exists as to the construction materials and position relative to ground surface for this conveyance, as no evidence exists of the pipes and most of the Sulfide Plant has been dismantled.

**Spent Process Solutions**

Spent process solutions were transported in above ground pipelines, underground pipelines and surface ditches and the chemistry and makeup of the spent solutions was likely to have been highly variable depending on the source of the waste. Spent solutions often contained solids slurried in the solutions. Six spent process solution pipelines have been identified:

Precipitation Plant Spent Solution to Pond (UT-D)

Spent solution consisted of iron sulfate solution and wash water generated during precipitation of the copper. The spent solution was recirculated and stored in the Spent Solution Sump located at the northwest end of the Precipitation Plant. From there it was piped directly to the Evaporation Ponds or to the Acid Plant for slurry of the calcines. According to the historic plan map, the spent solution exited the sump through underground piping, discharged into an open ditch for approximately 100 feet, and then re-entered an underground pipe that likely discharged to the north end of the Calcine Ditch. The spent solutions were likely transferred to the Acid Plant rather than through this piping system.

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

The alternate disposal method for the Precipitation Plant spent solutions was to convey them to the Acid Plant for use in the calcine slurry through enclosed piping located in the main concrete trench between the Leach Vats and Precipitation Plant. The type of piping is uncertain.

Sulfide Tails Slurry, North (UT-F)

Waste solutions from the Sulfide Plant exited the plant at several points in underground and aboveground 12 inch transite pipes. The pipes carried the wastes to the Sulfide Tailings as a slurry of solids and waste water.

Sulfide Tails Slurry, South (UT-W)

A second Sulfide Tails Slurry line was installed which exited the Sulfide Plant and paralleled the Dump Leach Pregnant Solution pipeline for approximately 1000 feet. The pipeline continued to the top of the Sulfide Tailings embankment where it discharged waste solutions to the tailings pond in several places. The Sulfide Tails Slurry Line was constructed of 12 inch transite pipe and was laid on the ground surface. Much of the original pipeline has been removed but remnant sections are still visible as are the anchoring brackets.

Calcine Ditch (WW)

The Calcine Ditch has previously been discussed in Section 2.2.12 as Area 7 Feature WW. It is included here because it is a main conveyance feature for process solutions. The Calcine Ditch was an unlined surface ditch which was used to convey the calcine solid waste from the Acid Plant with the Spent Solution from the Precipitation Plant to the Evaporation Ponds.

**Acid**

Sulfuric acid was distributed to leaching components in 12 inch transite pipes. Strong acid pipelines were located in concrete lined ditches at ground surface. Weak acid appears to have been conveyed in underground and aboveground pipelines. Three acid pipelines have been identified:

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Strong Sulfuric Acid to Vat Leach (UT-G)

Sulfuric acid was distributed from the Acid Pant to the Vat leach Tanks in a 12 inch transite pipe located in the main concrete trench. It is assumed that the 98% sulfuric acid was diluted to a lower concentration for conveyance in the piping but has not been confirmed.

Sulfuric Acid to Dump Leach (UT-H)

Sulfuric acid was also piped to the Dump Leach located south of Burch Drive in underground and aboveground 12-inch transite piping. The piping was primarily aboveground and parallels the return piping of pregnant leach solutions from the Dump Leach. It appears that the acid piping was underground for about 1,000 feet from the Precipitation Plant to the approximate location of the Tire Pile. The acid concentration in this piping is assumed to be weaker than that used in the Vat Leach Tanks, but the actual concentration has not been determined.

Acid Line (UT-I)

A small 4-inch steel line is visible on the surface and is labeled n the Sit map as an acid line. It is unclear how this line is connected to the main acid distribution lines.

**Fuel**

Fuel lines were buried underground to convey vehicle fuel, diesel and gasoline, from the storage tanks to the fuel pumps. One fuel pipeline has been identified:

Fuel Distribution Pipeline (UT-J)

Four 2 inch underground steel pipelines were used for the transfer of various fuel mixtures from the storage tanks to the fuel pumps located on the concrete island in the middle of the driveway.

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## Drains

Nine drain lines (i.e., underground pipelines and surface ditches that were gravity drained from minor floor drains and sumps) have been identified. These features did not originate from plant process tanks, but from ancillary support locations such as the Truck Shop or laboratory. Drain lines conveyed much smaller volumes than process solution pipelines.

Truck Wash Sump Drain (UT-K)

A small 2 by 2 ft concrete sump box is located on the north side of the concrete Wash Pad (C). A 6 inch drain line exits the sump and drains underground approximately 50 feet to the Upper Truck Sludge Pond (BBB). Wash water from vehicle or equipment washdowns ran off through the drain line to the pond area.

Grease Pit Drain (UT-L)

Historic Site plan maps show a drain line, identified as the "Grease Pit Drain", exiting the Truck Shop traveling towards the north east. The line appears to drain to the Lower Truck Sludge Pond (CCC), but connection to the pond is inferred because there is no map coverage of the area to confirm this.

Fuel Tank Sump Drain (UT-M)

Historic Site plan maps show a drain line coming from the fuel tank storage area and draining to the northeast. It is assumed that this drained from a collection sump similar to the Wash Pad sump but cannot be confirmed as tanks and foundations have been removed. Final disposition of the drain line is not known.

Assay Lab Drain (UT-N)

A drain line exits the southeast corner of the Assay Lab (F), travels approximately 100 feet northeast and appears to drain into a dry well. The dry well appears on the Site map as a square feature which might indicate it as a hand-dug well, not likely to be very deep. No expression of the well exists at the surface and is indicated on the map as 4 ft bgs.

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Secondary Crusher Dust Slurry Drain (UT-O)

Water was sprayed onto the crushed ore at the Secondary Crusher for agglomeration and dust control. The source and quality of the water is not known and may have been fresh well water or recycled water from other parts of the process, such as wash water from leaching or precipitation. Excess runoff was collected in a sump and conveyed in an underground 8 inch steel pipe until it exited to an unlined surface ditch in Area 11 and drained to the Sulfide Tailings or other surface ditch. The exit point of the dust slurry line is described in Section 2.2.12 as Feature MM.

Vat Leach Pumphouse Drain (UT-P)

Documentation of a drain line from the Vat Leach Pumphouse, previously located at the northwest end of Vat No. 8, to an unidentified "dry well" was found on historical Site maps. The pumphouse has been removed and no evidence of the dry well has been found. The drain line likely was used to collect and dispose of minor floor spillage from leach vat solutions including pregnant and wash solutions.

Sulfide Pumphouse Overflow Ditch (UT-Q)

A third Solution Ditch was identified at the north end of the Process Areas, north of the Sulfide Plant, by the BLM through examination of old aerial photos. This was likely to have been an overflow ditch from the Sulfide Pumphouse. Ground surface examination by Brown and Caldwell and BLM personnel could not locate any remaining surface expression of this ditch.

Overflow Solution Ditch (FFF)

The Overflow Ditch has previously been discussed in Section 2.2.12 as Area 8 Feature FFF and is being included here because it was used as a process solution conveyance feature. The Overflow Ditch is an unlined surface ditch with occasional culverts where it passes under roads. The ditch is visible on historical photos carrying solutions from the Overflow Sump around the northwest end of the Solution Tanks and Precipitation Plant for disposal in the Sulfide Tailings Pond. Source and composition of the solutions is not known.

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East Solution Ditch (EEE)

The East Solution Ditch has previously been discussed in Section 2.2.12 as Area 9 Feature EEE and is included here to be comprehensive in the discussion of solution conveyance features. This ditch was likely used to convey stormwater or other runoff solutions that collected at the Lower Truck Sludge Pond to the Calcine Ditch.

**Sewer Lines**

Sewer lines were constructed of 8 inch steel pipes and were entirely underground. Sewer pipes collected the waste water from toilets and sinks in all ancillary support buildings. All sewer pipes were connected to one system which drained to the Sewage Solids Tank located at the north end of the Process Areas. Solids were settled in this tank and sewage water was transferred to the north end of the mine site to an unknown location. Today the sewage water from this tank is conveyed to the Weed Heights Sewage Lagoons located at the southwest corner of the Lined Evaporation Ponds. Five sewer pipelines have been identified:

Administration Sewer (UT-R)

Several 8 inch steel pipes, typically 8 to 10 ft bgs, collect sewage and waste water from building bathrooms kitchens and sinks. Buildings serviced on this line include: Administrative Building, Change House, School House, Assay Lab, Truck Shop, Electrical Shop, and Primary Crusher.

Acid Plant Sewer (UT-S)

Buildings serviced on this line include: Acid Plant, Vat Leach, Secondary Crusher, and Carpenter's Shop.

Leach Plant Sewer (UT-T)

Buildings serviced on this line include: Solution Tanks Pumphouse and Sulfide Plant Foreman's Office.

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Main Line Sewer (UT-U)

The main sewer line connects the upstream points to the Sewage Solids Tank.

Weed Heights Sewer (UT-V)

Buildings serviced on this line include: All Weed Heights residential and community buildings and the Sulfide Plant. This line drains directly to the Sewage Solids Tank.

### 2.2.14 Descriptions of Electrical Sub-Stations and Transformers

The following five inactive and active electrical sub-stations, and associated transformers, remain on-site:

PA-TR1 is located on the upper road level between the Emergency Shed and the Electrical Shop and consists of four transformer units positioned at ground level inside a chainlink fence enclosure. Labels are visible on all four transformers stating that they do not contain PCBs.

PA-TR2 is located just south of the Lead Shop and west of the Carpenter Shop and consists of three transformers positioned on raised concrete foundations inside a chain link enclosure. Evidence of corrosion is visible around the bottom of one of the transformers. Labels are visible on all three transformers stating that they do not contain PCBs.

PA-TR3 is located just northwest of the Sulfide Plant on the northern boundary of the Process Areas and consists of one small transformer unit elevated approximately 12 feet above the ground surface on a power pole. There is no visible corrosion.

PA-TR4 is located at the southwest corner of the Assay Laboratory and consists of two transformers raised approximately 20 feet above ground level on a power pole. There is no live electrical service to the building so these transformers are inactive.

PA-TR5 is located at the northwest corner of the Secondary Crusher and consists of three transformer units mounted on a concrete slab at ground level enclosed in a chain link fence. There is an active pumping station adjacent to this area that may draw power from at least one of the transformers in this area.

These transformers, mounted on poles or on concrete pads within fenced-in areas, may have leaked oil. The potential past chemicals sources include oil and PCBs. In addition to the five electrical substation/transformer areas described above, the following areas/features currently or previously exhibit electrical transformer servicing, use or storage:

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Small Warehouse Annex (H): Previously, 91 used transformers and oil-filled switches were stored in this building. Most of the transformers have been tagged as containing PCBs.

Fire Engine Storage/Tire Shop (I): Currently, six large used transformers are being stored in this building. Some of the transformers have been tagged as containing PCBs.

Quonset Hut (Q): The building was used to store electrical equipment that may have included transformers. The fenced-in storage yard next to the building was formerly used to store transformers (at least one old transformer is still present).

Solution Tanks (DD): The primary former use of the Solution Tanks was to temporarily hold the leach solution from the Leach Vats before being pumped into the Precipitation Plant. However, the southernmost tank was also used to store chemicals or petroleum products in approximately 280 55-gallon drums and soils in nine plastic 250-gallon containers. Several of the drums were damaged, including those labeled as containing PCBs. All of these drums have been characterized and removed.

Solution Tanks, Electrical Building, and Basement (FF): The electrical building near the Solution Tanks serviced the pumps for the tanks. Transformers could have been serviced or stored there as well. Currently, switchgear is present in the building.

Electrical transformer servicing, use, or storage at these areas/features had the potential to release PCBs.

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