7. MIGRATION/EXPOSURE PATHWAYS AND TARGETS

The following sections describe migration/exposure pathways and targets within the site's range of influence applicable to each pathway. Analytical data forms from laboratory analyses (Form I's) are provided in Appendix I. This section discusses the groundwater migration pathway (Section 7.1), the surface water migration pathway (Section 7.2), the soil exposure pathway (Section 7.3) and the air migration pathway (Section 7.4).

7.1 GROUNDWATER MIGRATION PATHWAY

This section describes the site's geology, hydrogeology, groundwater targets (receptors), sample locations and analytical results.

7.1.1 Geology

The Soil Conservation Service Soil Survey of the Bonner County Area (Idaho) provides subsurface information to a depth of 60 inches and indicates that the PI site is underlain by Bonner gravelly silt loam formed in glacial outwash derived predominantly from granite, gneiss and schist with a mantle of volcanic ash and loess. The surface layer is a pale brown, slightly acid gravelly silt loam about 5 inches thick. The subsurface soil is a pale to very pale brown, slightly acid gravelly silt loam and gravelly sandy loam about 24 inches thick. The substratum to a depth of 60 inches or more is a very pale brown, slightly acid and neutral very gravelly loamy sand. Permeability of the Bonner soil is moderate to a depth of about 29 inches and rapid to very rapid below this depth. Available water capacity and runoff is low. (SCS 1982)

Based on the geologic logging of on-site soil borings installed during the IA, subsurface soil consisted primarily of fine to coarse sand and gravelly sand from 0 to 20 feet bgs, sand and silty sand from 20 to 40 feet bgs, sandy gravel and gravelly sand from 40 to 60 feet bgs, silty and gravelly sand from 60 to 80 feet bgs and fine to coarse sand and silty sand from 80 to 85 feet bgs. The site geology consistently contained unconsolidated alluvial material generally consisting of well- to poorly-graded

gravelly and silty sands. Clasts range from subrounded to well rounded. In general, degree of rounding does not appear to be correlative with clast size. Borehole locations TP07 and TP08 contained a small layer or several lenses of well-cemented fine sand and silty sand between 36 and 37 feet bgs. For detailed geologic descriptions, see the boring logs in Appendix E. Thickness of the alluvial deposits at the site was not determined during this investigation since the investigation was limited to shallower depths. Thickness of alluvial deposits in the Oldtown vicinity is highly variable and can range up to 100 meters in major river valleys (USGS, date unknown).

7.1.2 Hydrogeology

Based upon observations made by the START-2 during the installation of soil borings and monitoring wells at the site, the site is underlain predominantly by gravelly sand with localized intervals of well- to poorly-graded sand and silty sand. Groundwater exists under unconfined conditions at the site and was measured at a depth of approximately 76 feet bgs in monitoring wells MW01, MW02 and MW03 (borehole locations TP04, TP05 and TP06, respectively) on October 13, 2001, by IDEQ personnel and a contractor. Each of these wells was completed to a depth of 85.5 feet bgs and were developed by pumping an estimated three well-volumes of water out of each well into a dedicated 55-gallon drum. These drums became part of the IA IDW and were disposed as indicated in Section 3.4. The water level was allowed to stabilize in each well, then the wells were surveyed and water levels were measured by a State of Idaho Registered Professional Engineer. Based upon these measurements, groundwater in the unconfined aquifer in the vicinity of the site was determined to flow to the east-northeast towards the Pend Oreille River. Groundwater was measured in these wells at approximately 77.5 feet bgs during Phase 2 sample collection activities.

7.1.3 Groundwater Target

Groundwater within a 4-mile radius of the site is used for domestic drinking purposes. The population residing within a 4-mile radius of the site obtains drinking water either from private wells or the Newport, Washington/Oldtown, Idaho (West Bonner) combined public water system. This municipal water system primarily uses surface water from a spring located approximately 1.5 miles south (upgradient) of the PI facility, but when additional capacity is required, any of eight municipal wells located approximately 0.75 mile southwest (upgradient) of the PI facility may be blended with the surface

water supply (King 2001). Well logs maintained by the Idaho Department of Water Resources and the State of Washington indicate that 536 domestic wells are located within a 4-mile radius of the site serving an estimated population of 1,340 people based on the average number of persons per household (2.5) for Bonner and Pend Oreille Counties (Figure 7-1; USCB 2000a and 2000b). The nearest private well, serving an estimated 2.5 people, is located approximately 2,500 feet southeast of the site (IDWR 2001). It is unknown if any nearby drinking water wells are screened in the same aquifer as the IA monitoring wells, but there are no wells located downgradient from the PI facility that are used as a drinking water source. The estimated groundwater drinking water population within a 4-mile radius of the site is summarized in Table 7-1. Residents that have domestic wells or workers that live outside the 4-mile range but work within the 4-mile range may also utilize municipal water supplies and therefore be counted more than once on this table. The thickness of the least conductive soil layer (silty sand) is approximately 10 feet.

Groundwater is not reported to be used for commercial livestock watering, irrigation of more than 5 acres of commercial food crops or commercial forage crops, watering of commercial aquaculture or as a supply for a major or designated water recreation area within 4 miles of the PI facility.

On August 30, 2001, the IDEQ collected water samples from the West Bonner Well for PAH (EPA SW-846 Method 8270), PCP (EPA SW-846 Method 8270) and VOC (EPA Method 624) analyses. The only analyte detected was the VOC trichloroethylene at 2.7 µg/L. This contamination is believed to have originated from a nearby former dry cleaning facility. The well was installed by the City of Oldtown for use as a municipal well, but is not used because of the VOC contamination. (Lyon 2001)

7.1.4 Sample Locations

During Phase 1, five groundwater samples (TP04GW, TP05GW, TP06GW, TP08GW and TP09GW) were collected five of the seven boreholes completed in August 2001 (Table 3-1; Figure 3-1). Samples collected during Phase 1 from boreholes TP04, TP05 and TP06 were collected prior to installation of the well screen and prior to development of the wells; these results are used for screening purposes only. During Phase 2, groundwater samples (Table 3-1; Figure 3-1) were collected from these three boreholes after completion and development as monitoring wells (known as MW01, MW02 and MW03, respectively).

7.1.5 Sample Results

Phase 1 results are summarized in Table 7-2. Groundwater sample results for selected analytes (those that exceeded PRGs) are presented in Figure 7-2. Twelve TAL inorganics were detected at elevated concentrations in the four Phase 1 groundwater samples ranging from 6.6 µg/L (beryllium in sample TP08GW) to 25,700 µg/L (manganese in sample TP04GW). TAL inorganic PRGs were exceeded in all five samples, including arsenic and manganese in five samples, vanadium in four samples and barium in one sample. Three Pesticides were detected at elevated concentrations in the four groundwater samples, including 4,4'-DDD in two samples ranging from 0.15 µg/L (TP04GW) to 0.24 µg/L (TP08GW), dieldrin in two samples ranging from 0.26 µg/L (TP04GW) to 0.35 µg/L (TP08GW) and endrin aldehyde in four samples ranging from 0.12 µg/L (TP08GW) to 0.91 µg/L (TP06GW). Pesticide PRGs were exceeded by dieldrin in two of five samples. No PCBs were detected at elevated concentrations or above PRGs in groundwater samples. Two SVOCs were detected at elevated concentrations in three of four Phase 1 groundwater samples including 2-methylnaphthalene in sample TP08GW (28 µg/L) and PCP in three samples at concentrations of 260 µg/L (TP05GW), 970 µg/L (TP08GW) and 1,300 µg/L (TP04GW). SVOC PRGs were exceeded by PCP in all five samples. The VOC acetone was detected at an elevated concentration in one groundwater sample (11 µg/L). No VOC PRGs were exceeded. Pesticides, TAL inorganics and VOCs are not known to be used in operations at the PI facility and therefore will not be considered attributable to site activities.

For Phase 2 samples (Table 7-3), the Phase 1 background sample was used for comparative purposes. In Phase 2 samples collected from the developed monitoring wells, four TAL inorganics were detected at elevated concentrations in the two of three Phase 2 groundwater samples ranging from 6.4 µg/L (beryllium in sample MW02GW) to 25,700 µg/L (lead in sample MW03GW). TAL inorganic PRGs were exceeded in all three samples, including arsenic and manganese in all three samples, thallium in two samples and vanadium in one sample. The SVOC caprolactam was detected at an elevated concentration in two of three groundwater samples (MW02GW at 70 µg/L and MW03GW at 130 µg/L). Caprolactam is not known to be used in operations at the PI facility and therefore is not considered attributable to site activities. SVOC PRGs were exceeded by PCP in one sample. The VOC acetone was detected at an elevated concentration in one of three groundwater samples (MW03GW at 43 µg/L). No VOCs exceeded PRGs. No Pesticides/PCBs were detected at elevated concentrations or exceeded PRGs in the Phase 2 groundwater samples. TAL inorganics and acetone are not known to be used in

operations at the PI facility and therefore will not be considered attributable to site activities.

Groundwater results were also compared to EPA drinking water Maximum Contaminant Levels (MCLs) for informational purposes only. TAL inorganic MCLs were exceeded in all five Phase 1 groundwater samples, including antimony, arsenic and lead in five samples, barium, beryllium and chromium in four samples and cadmium in one sample. Phase 1 SVOC MCLs for PCP were exceeded in all five groundwater samples. No Pesticides/PCBs or VOCs exceeded MCLs in any Phase 1 sample. TAL inorganics are not known to be used in operations at the PI facility and therefore will not be considered attributable to site activities.

Phase 2 TAL inorganic MCLs were exceeded in all three groundwater samples, including antimony, arsenic and lead in three samples and beryllium and chromium in two samples. The MCL for PCP was exceeded in one of three Phase 2 groundwater samples (MW03GW with an adjusted concentration of 4.55 µg/L). No Pesticides/PCBs or VOCs exceeded MCLs in any Phase 2 sample. TAL inorganics are not known to be used in operations at the PI facility and therefore will not be considered attributable to site activities.

The only VOCs detected in both phases were the common laboratory contaminants acetone and methylene chloride; these contaminants are not known to be associated with operations at the PI facility and therefore will not be considered attributable to site activities. The SVOC caprolactam was not detected in Phase 1 sampling but was detected in two of three Phase 2 samples; this contaminant is not known to be associated with operations at the PI facility and therefore will not be considered attributable to site activities. PCP results were significantly lower in two of three Phase 2 samples and the results were similar for both Phases in the third sample. Phase 2 results were typically less than or similar to the Phase 1 results from the same sampling location likely due to well development and purging prior to Phase 2 sample collection. Based on these groundwater results, it does not appear that contamination is migrating from the PI facility to groundwater.

7.2 SURFACE WATER MIGRATION PATHWAY

This section presents the pathway description, targets (receptors), sample locations and sample results for the surface water migration pathway.

7.2.1 Pathway Description

An engineered surface water collection system does not exist at the PI site. Surface water runoff from the site is allowed to drain into the soil and/or flows by sheet action north from the site. Most of the surface topography has little slope, including the Pole Yard area, with a gradient of less than 1 % (E & E 2001a). Drainage from the TP area leads towards the Pend Oreille River, with a little used dirt path down to the river providing the most direct route (photograph 5-11 in Appendix D; Figure 3-2). The facility has NPDES Permit No. IDR05A497 due to the surface water discharge to the Pend Oreille River.

Surface water drainage from the hill south of PI property comes from the School and nearby residences. This water reaches the southern portion of PI property, but due to natural topography, the presence of permeable surface and subsurface soils and railroad tracks crossing the property, it is unlikely that this runoff reaches the Pend Oreille River.

From the site, the Pend Oreille River generally flows north-northwest approximately 75 miles to its' confluence with the Columbia River near the Washington-British Columbia border. The 15-mile surface water pathway target distance limit (TDL) begins at the PPE adjacent to the PI site (River Mile 88.5) and extends 15 river miles downstream in the Pend Oreille River to River Mile 73.5 (Figure 7-3; Maptech 1997). Average annual flow for the Pend Oreille River in 1999 was 26,960 cubic feet per second at Newport, Washington (USGS 1999). The site does not appear on the Flood Insurance Rate Map for Bonner County, Idaho (FEMA 1987), but the facility is not believed to lie within a flood plain because the PI facility is approximately 75 feet above the Pend Oreille River (E & E 2001a). The average annual precipitation and the two-year, 24-hour rainfall event for the site area are 31.22 inches (WRCC 2001) and 2.0 inches (NOAA 1973), respectively. The upgradient drainage area of the site was estimated from the site visit and a topographic map to be 10 acres (USGS 1996).

7.2.2 Targets

The Pend Oreille River is used as a source of drinking water and recreational boating and fishing. There are three water intakes in Idaho within 15 miles of the PI facility, but all are upstream of PI and therefore are not likely to be impacted by potential contamination from the PI facility. There are no surface water drinking water intakes within 15 miles downstream of the PPE (King 2001). Water from

the spring near Oldtown is the primary drinking water supply for the residents of Oldtown and Newport; the remainder comes from groundwater wells located near Newport (King 2001). The system serves a total of approximately 2,250 people. Estimating that the surface water contributes approximately 70 % to the total supply, the apportioned population served by surface water is calculated to be 1,575 people (2,250 x 0.70 =1,575).

No commercial fishing activities are known to be conducted on the Pend Oreille River in the vicinity of the PI facility. Although recreational fishing occurs (E & E 2001a), harvest records are not kept; however, the START-2 estimates that at least one pound of fish is caught annually for human consumption within the 15-mile TDL. START-2 personnel did not observe recreational fishing near PI (River Mile 88.5), but did observe boats with fishing gear in the Pend Oreille River both upstream and downstream of the facility (E & E 2001a). Within the 15-mile TDL, approximately 5.17 miles of the Pend Oreille River are listed as Washington State stream segments of concern (EPA 2001).

The Pend Oreille River within the 15-mile TDL is a habitat for federal-listed threatened bull trout (*Salvelinus confluentus*). Westslope cutthroat trout (*Onchorhynchus clarki lewisi*), a federal- and state-listed species of concern, also utilize the 15-mile surface water pathway TDL. (IDFG 2001)

It is estimated from National Wetlands Inventory maps that 6.4 miles of wetland frontage that meet 40 CFR criteria exist within 15 miles downstream of the site (USFWS 1993). No wetlands exist on the PI site. The nearest wetland is located approximately 0.5 mile downstream from the PI site.

The use of surface water within 15 miles downstream for crop irrigation and stock watering is assumed based on the water rights information for the area (Ecology 2001).

7.2.3 Pend Oreille River Sediment Samples

7.2.3.1 Sample Locations

Three sediment samples (PO01SD, PO02SD, PO03SD) were collected from the Pend Oreille River to determine whether contaminants are migrating from potential sources at the site and are impacting Pend Oreille River targets. None of the samples were observed by the START-2 to have visual staining or odors.

7.2.3.2 Sample Results

Sample results are summarized in Table 7-4. Lead was detected at an elevated concentration in downstream sample PO03SD (73.2 mg/kg). This result is below the residential soil PRG of 400 mg/kg (used for comparison purposes only). No Pesticides/PCBs, SVOCs or VOCs were detected at elevated concentrations in the three Pend Oreille River sediment samples. Lead is not known to be used in operations at the PI facility and therefore is not considered attributable to site activities. Based on these sediment results, it does not appear that contaminants are migrating from the PI facility to the Pend Oreille River.

7.3 SOIL EXPOSURE PATHWAY

This section presents the pathway description, targets (receptors), sample locations and sample results for the soil exposure pathway.

7.3.1 Pathway Description

Public access to the site is not limited. The TP is fenced with a locked gate but the remainder of the property is not fenced. The site is regularly used by locals as a shortcut between the housing area south of the site and the business districts of Oldtown and Newport. The START-2 observed trespassers each day during the field event, including several children (see photograph 3-23 in Appendix D). There is adequate lighting in the TP area to discover trespassers at night, but the majority of the facility does not have security lighting. The facility has been vandalized several times (Tinling 2001).

7.3.2 Targets

Ten people work at the PI facility (Tinling 2001). The population within a 1-mile radius of the site is estimated to be 2,586 people based on the sum of: 1) census data for Newport and Oldtown; and 2) multiplying the house count from a topographic map for people outside city limits by the average number of persons per household (2.5) for Bonner and Pend Oreille Counties (Table 7-5; USGS 1996; USCB 2000a and 2000b). The difference between total residents (Table 7-5) and groundwater-use residents (Table 7-1) is likely due to residents with domestic wells also utilizing municipal water supplies (and therefore are counted more than once on Table 7-1). Additionally, some of the municipal supplies listed on Table 7-1 are for businesses, therefore nearby residents may be counted more than once. Workers at these businesses that live outside the 4-mile boundary for Table 7-5 are counted in Table 7-1. The

nearest single-family residence, located approximately 100 feet from the western boundary of the site, houses three adults (E & E 2001a). The School is located approximately 500 feet south of PI. No terrestrial sensitive environments or resources are known to be present on-site (Hennekey 2001; WDNR 2001).

7.3.3 Sample Locations

Seven surface soil samples were collected from three off-site areas during the IA. On-site surface soil samples locations are previously discussed in Section 6. Surface soil sample HO01SS was collected within 0.25 mile of site sources from an exposed soil area near an occupied residence. Samples SC01SS through SC05SS were collected from the School within 0.25 mile of site sources. Sample BG01SS was collected from an abandoned residence near the corner of East 7th South and Meadowdale Streets (Figure 3-1) approximately 0.5 mile south of PI. Sample results are found in Table 7-6.

7.3.4 Sample Results

Surface soil samples collected from off-site locations contained elevated concentrations of Pesticides/PCBs, SVOCs, TAL inorganics and VOCs. Sample results for on-site surface soils were previously discussed in greater detail in Section 6.

TAL inorganics were detected at elevated concentrations in all six off-site surface soil samples, ranging from mercury (0.12 mg/kg) to zinc (238 mg/kg) in sample HO01SS. Pesticides were detected at elevated concentrations in one of six off-site surface soil samples, including 4,4'-DDD (7.4 µg/kg), 4,4'-dichlorodiphenyldichloroethylene (DDE [6.3 µg/kg]) and 4,4'-dichlorodiphenyltrichloroethane (DDT [22 µg/kg]) in sample HO01SS. It is suspected that the presence of these Pesticides at elevated concentrations in residential soil is from personal use. The VOC 1,1,2-trichloroethane was detected at an elevated concentration in two of six off-site surface soil samples (SC04SS and SC05SS). No PCBs or SVOCs were detected at elevated concentrations in the off-site surface soil samples. Pesticides, TAL inorganics and VOCs are not known to be used in operations at the PI facility and therefore will not be considered attributable to site activities. The SVOC benzo(a)pyrene (75 µg/kg) slightly exceeded the residential soil PRG (62 µg/kg) in sample HO01SS; the concentration was below the CRQL, therefore the result was not considered elevated. Based on these results, it does not appear that contaminants are migrating from the PI facility to off-site surface soil.

7.4 AIR MIGRATION PATHWAY

This section presents the pathway description, targets (receptors), sample locations and sample results for the air migration pathway.

7.4.1 Pathway Description

The prevailing wind direction at the PI site was generally west-southwesterly following the Pend Oreille River Valley with speeds averaging from 4.6 to 6.9 mph. A secondary wind direction from the north-northeast was recorded during the first sampling period, which may have been due to a diurnal shift in wind direction during the night and early morning hours. When the prevailing wind direction was north-northeasterly, wind speeds averaged from 1.2 to 3.5 mph (E & E 2001a). The downtown areas of Oldtown and Newport are located within 0.5 mile west-northwest of the site (Figure 2-1; Maptech 1997).

7.4.2 Targets

Approximately 10 people work at the site (Tinling 2001) and approximately 3,722 people live within a 4-mile radius of the site (Table 7-5). The Newport and Oldtown populations were determined from 2000 census data (USCB 2000a and 2000b). The estimated population for Bonner and Pend Oreille County residents outside city limits within a 4-mile radius was obtained by multiplying the average number of persons per household for each county (2.5) by the house count from topographic maps (USGS 1996). These city and estimated county populations were summed to total 3,722 people.

The site is located adjacent to the Pend Oreille River, which is used for recreational boating and recreational fishing. The States of Idaho and Washington do not have records of State-listed threatened or endangered species that exist within 4 miles of the site (Hennekey 2001; WDNR 2001). Several occupied, man-made osprey (*pandion haliaetus*; a state-listed species of recreational, commercial and/or tribal importance) nests were observed within a 4-mile radius of the site, including two nests near sample location PY07AM (Figure 3-1).

It is expected that commercial silviculture, livestock production and grazing occur within the 4-mile air pathway TDL of the site.

According to National Wetlands Inventory Maps, approximately 381.7 acres of EPA-recognized wetlands are located within a 4-mile radius of the site (Table 7-5; USFWS 1993). No on-site wetland areas were noted during the IA field event (E & E 2001a).

7.4.3 Ambient Air Samples

7.4.3.1 Sample Locations

Downwind sample locations were determined in the same manner as the upwind locations; they were based on daily site wind direction and speed measurements. A more detailed description of upwind/downwind designation criteria is presented in Section 5. Downwind stations and corresponding samples were designated as follows:

- On August 22-23, 2001, downwind stations were PY01AM, PY02AM, PY03AM, PY05AM and PY07AM (samples 01344101, 01344102, 01344103, 01344105 and 01344107);
- On August 23-24, 2001, downwind stations were PY01AM, PY02AM, PY05AM and PY07AM (samples 01344111, 01344112, 01344115 and 01344117); and
- On August 24-25, 2001, downwind stations were PY01AM, PY02AM, PY05AM and PY07AM (samples 01344121, 01344122, 01344125 and 01344127).

Twenty four SVOC air samples were collected from eight locations (PY01AM through PY08AM; Figure 3-1) over three consecutive 24-hour sampling periods from August 22 through August 25, 2001. One SVOC sample was collected from each location for each sampling period. Station PY01AM was located approximately 1,000 feet east of the TP near the MET station. Station PY02AM was located near the Pend Oreille River bluff 120 feet north of the TP shed. Station PY03AM was located at the adjacent residence approximately 800 feet west of the TP shed. Station PY04AM was located approximately 400 feet south of the TP shed on the bluff overlooking the PI facility at the School. Station PY05AM was located approximately 50 feet east of the dip tank. Station PY06AM was located near Classroom 1 inside the School hallway beneath a vent for the roof-mounted air handling system and approximately 450 feet south of the TP shed. Station PY07AM was located approximately 2,000 feet northeast of the PI facility on the north side of the Pend Oreille River. Station PY08AM was located approximately 2,520 feet east and downwind of the treatment plant shed.

Surface soil samples were also collected from the adjacent residence (HO01SS) and the School (SC02SS) near air sample locations PY03AM and PY04AM, respectively. Residential and school surface soil sample locations were discussed previously and discussed in greater detail in Section 7.3.

7.4.3.2 Sample Results

Sample results are reported in Table 7-7 and selected results (those with PRG exceedances) are included on Figure 7-4. The results were obtained by dividing the sample results listed in Appendix I by the sample collection volumes provided in Appendix F. The air samples were not analyzed for

Pesticides/PCBs, TAL inorganics or VOCs. The PRG for PCP of 0.056 µg/m^3 is lower than the SQL for all samples, however, any positive PCP sample results between approximately 0.03 µg/m^3 and the SQL were reported as estimated quantities (JQK).

On August 22-23, 2001, SVOCs were detected at elevated concentrations in two of four on-site samples, including benzoic acid (1.15 µg/m^3 in sample PY01AM) and phenanthrene (an EC of 0.04 JL µg/m^3 in sample PY08AM). Four SVOCs were detected at elevated concentrations in two of three off-site samples ranging from 0.05 µg/m^3 (phenanthrene in sample PY07AM) to an EC of 35.48 JL µg/m^3 (2-methylnaphthalene in sample PY03AM). Ambient air PRGs were exceeded in off-site samples PY03AM (2-methylnaphthalene) and PY02AM (PCP). In the absence of a 2-methylnaphthalene air PRG, the naphthalene PRG was used as a surrogate value.

On August 23-24, 2001, eight SVOCs were detected at elevated concentrations in four of four on-site samples ranging from an EC of 0.10 JL µg/m^3 (dibenzofuran in sample PY05AM) to an EC of 25.3 JL µg/m^3 (2-methylnaphthalene in sample PY05AM). Three SVOCs were detected at elevated concentrations in two of three off-site samples, including benzoic acid (1.07 µg/m^3) in sample PY03AM and fluoranthene (0.26 µg/m^3) and naphthalene (0.21 µg/m^3) in sample PY06AM. 2-methylnaphthalene and PCP exceeded the ambient air PRG in on-site sample PY05AM.

On August 24-25, 2001, 10 SVOCs were detected at elevated concentrations in three of four on-site ambient air samples ranging from 0.03 µg/m^3 (dibenzofuran in sample PY01AM) to an EC of 23.71 JL µg/m^3 (2-methylnaphthalene in sample PY05AM). PRGs for ambient air were exceeded in on-site samples PY02AM (PCP) and PY05AM (2-methylnaphthalene and PCP). Naphthalene was detected at an elevated concentration in one of three off-site ambient air samples (0.22 µg/m^3 in sample PY06AM). PRGs for ambient air were not exceeded in off-site ambient air samples.

Several phthalates were detected in the ambient air samples. These results are not discussed in this report or listed in the table as phthalates are common laboratory contaminants and are not known to be related to PI operations. Elevated concentrations of SVOCs were not detected in any of the co-located residential or school surface soil samples (HO01SS, SC02SS-Section 7.3.4). All contaminants that were detected at elevated concentrations in ambient air samples were also detected in the dip tank product samples. PCP was also detected at elevated concentrations in on-site surface soil samples. Based on these results, it appears that PCP and other SVOCs are migrating off-site through the air pathway.

7.4.3.3 Additional Information

Between August 22 and 24, 2001, trained odor investigators from the IDEQ collected odor observations from various locations on and around the PI site following American Society for Testing and Materials (ASTM) Method E544. Observations were recorded at the north PI property line, near the adjacent residence, at the School yard, near the MET station location, across the Pend Oreille River from the PI facility and near station PY07AM at several different times during these days of pole treatment activities. On August 22, 2001, very light diesel-type odors were recorded at the School at 4:40 p.m. and at the adjacent residence at approximately 4:52 p.m. and a very light to light odor was noted along the north property line at 8:27 p.m. On August 24, 2001, a light to moderate odor was noted along the north property line at 10:32 a.m. and a very light odor was noted at 11:04 a.m. at the adjacent residence. These odor observations are provided for informational purposes only.

At the OSC's request, the Agency for Toxic Substances and Disease Registry (ATSDR) provided technical assistance and included a Strike Team Request Memorandum in evaluating the Phase 1 ambient air data collected at PI in August 2001. The memorandum concluded that current exposure to PCP through the air pathway is unlikely to cause imminent adverse health effects to the general population and there is no apparent increased risk of getting cancer from long-term exposure. A copy of the memorandum is included in Appendix K. (ATSDR 2001)

7.4.4 Wipe Samples

7.4.4.1 Sample Locations

Three SVOC wipe samples were collected from Classroom 1 at the School. Samples SC01WP and SC02WP were four-point composite samples collected from each of the walls (one wipe from each wall per sample) in potential high-contact areas (see photographs 2-14 through 2-24 and 3-1 through 3-5, Appendix D). Sample SC03WP was a six-point composite sample collected from the top of each fluorescent light fixture in an area not regularly cleaned (see photographs 3-6 through 3-11, Appendix D).

7.4.4.2 Sample Results

Sample results are reported in Table 7-8. No PAHs, PCP or other target SVOCs were detected in any of the wipe samples. Several phthalates were detected in all wipe samples, including the field blank. These results are not discussed in this report as phthalates are common laboratory contaminants and are not known to be related to operations at the PI facility. The wipe samples were not analyzed for Pesticides/PCBs, TAL inorganics or VOCs. Based on these results, it does not appear that contamination from the PI facility is migrating to the interior of the School.

Table 7-1

GROUNDWATER DRINKING INTAKE
POPULATION WITHIN A 4-MILE RADIUS
POLES INCORPORATED SITE
OLDTOWN, IDAHO

Distance Ring (Miles)	Well Identification	Number of Wells	Well Population[a]
0 - ¼	None	0	0
¼ - ½	Municipal Wells	4	390
	Domestic Wells	29	72.5
½ - 1	Municipal Wells	9	2,100
	Domestic Wells	17	42.5
1 - 2	Municipal Wells	2	240
	Domestic Wells	29	72.5
2 - 3	Municipal Wells	4	690
	Domestic Wells	178	445
3 - 4	Municipal Wells	2	50
	Domestic Wells	277	692.5
Total		554	4,795

[a] Domestic well population is estimated from the average number of persons per household for Bonner and Pend Oreille Counties (2.5; USCB 2000a and 2000b). Municipal well population (includes the spring near Oldtown) was obtained from the Ray King, City of Newport Acting Administrator, 2001 and from the EPA Geographic Information Query System, July 2001.

Table 7-2

PHASE 1 GROUNDWATER SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	01354094	01354069	01354073	1354077	01354085		
CLP Inorganic Number	MJOKA4	MJOK79	MJOK83	MJOK87	MJOK95		
CLP Organic Number	JOKA4	JOK79	JOK83	JOK87	JOK95		
Location ID	TP09GW	TP04GW	TP05GW	TP06GW	TP08GW		
Depth to Water	79 feet	78.7 feet	78.6 feet	78 feet	76.9 feet		
Description	Background-15' West of Treatment Building	15' North of Treatment Building	15' South of Treatment Building	10' East of Treatment Building	40' South of Treatment Building within Pole Yard	EPA Region 9 Tap Water PRGs	EPA MCLs
Inorganics (µg/L)							
Aluminum	**50,200**	**294,000**	**144,000**	**117,000**	**112,000**	36,000	--
Antimony	6.5 JBK (60 U)	9.8 JBK	11.2 JBK	9.8 JBK	8.3 JBK	15	6
Arsenic	**116**	**796**	**374**	**348**	**348**	0.045	10
Barium	**1,050**	**5,210**	**2,370**	**2,080**	**2,100**	2,600	2,000
Beryllium	3.5 JBK (5 U)	**18.5**	**8.4**	**7.6**	**6.6**	73	4
Cadmium	1.5 UJK (5 U AC)	**12.6 JK (8.9 AC)**	4.5 UJK	3.0 UJK	3.9 UJK	18	5
Calcium	**179,000**	**711,000**	**348,000**	**292,000**	**311,000**	--	--
Chromium	**70.7**	**493**	**262**	**191**	**178**	55,000	100
Cobalt	**83.7**	**496**	**239**	**224**	**205**	2,200	--
Copper	**135**	**1,040**	**418**	**405**	**384**	1,400	1,300[TT]
Iron	**91,200**	**612,000**	**307,000**	**254,000**	**247,000**	11,000	--
Lead	**105**	**1,160**	**335**	**330**	**292**	--	15[TT]
Magnesium	**50,200**	**236,000**	**118,000**	**100,000**	**98,300**	--	--
Manganese	**4,580**	**25,700**	**14,700**	**12,900**	**13,300**	880	--
Nickel	**71.0**	**493**	**226**	**212**	**190**	730	--
Potassium	**16,600 JK**	**96,900 JK**	**49,300 JK**	**36,300 JK**	**36,800 JK**	--	--
Selenium	3.6 JBK (5 U)	3.3 JBK	2.2 UJK	2.2 UJK	2.2 UJK	180	50
Silver	4.0 U	7.7 JBK	5.3 JBK	5.2 JBK	4.0 JBK	180	--
Sodium	**8,680**	**9,650**	**11,300**	**9,060**	**10,400**	--	--
Thallium	5.7 U	5.7 U	5.7 U	5.7 U	5.7 U	2.4	--
Vanadium	**110**	**659**	**365**	**282**	**285**	260	--
Zinc	**363**	**2,810**	**1,040**	**910**	**853**	11,000	--
Chlorinated Pesticides (µg/L)							
4,4'-DDD	0.10 U	**0.15**	**0.12 JK (0.01 AC)**	0.10 U	**0.24**	0.28	--
4,4'-DDE	0.10 U	0.10 U	0.10 U	0.10 U	0.14 JNK	0.20	--
Dieldrin	0.10 U	**0.26**	0.10 U	0.10 U	**0.35**	0.0042	--
Endosulfan I	0.050 U	0.050 U	0.050 U	0.050 U	**0.090 JK (0.01 AC)**	--	--
Endrin aldehyde	0.10 U	**0.47**	**0.31**	**0.91**	**0.12**	--	--
gamma-Chlordane	0.050 U	0.051 JNK	0.050 U	0.050 U	0.050 U	--	--
Methoxychlor	0.50 U	1.7 JNK	1.2 JNK	0.50 U	0.75 JNK	180	40
Semivolatile Organic Compounds (µg/L)							
2-Methylnaphthalene	10 U	10 U	10 U	10 U	**28**	--	--
Acenaphthene	10 U	10 U	10 U	10 U	4 JQK	370	--
Acenaphthylene	10 U	10 U	10 U	10 U	2 JQK	--	--
bis(2-Ethylhexyl)phthalate	3 JQK (10 U)	10 U	10 U	10 U	2 JQK	4.8	6
Caprolactam	10 U	10 U	10 U	10 U	10 U	18,000	--
Diethylphthalate	10 U	10 U	1 JQK	10 U	10 U	29,000	--
Di-n-butylphthalate	1 JQK (10 U)	10 U	10 U	10 U	1 JQK	3,600	--
Fluoranthene	10 U	10 U	10 U	10 U	1 JQK	1,500	--
Fluorene	10 U	10 U	4 JQK	10 U	7 JQK	240	--
Pentachlorophenol	**41**	**1,300**	**260**	**41**	**970**	0.56	1
Phenanthrene	10 U	10 U	9 JQK	10 U	7 JQK	--	--
Volatile Organic Compounds (µg/L)							
Acetone	10 U	**11**	10 U	NA	10 U	610	--
Methylene Chloride	3 JQK (10 U)	10 U	3 JQK	NA	2 JQK	4.3	--

Key is on the next page.

Table 7-2

GROUNDWATER SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

Note: Only results for compounds which were detected in at least one sample were reported.
Bold type indicates definitive concentrations above the Contract Required Detection Limit (CRDL) or Contact Required Quantitation Limit (CRQL).
Underlined type indicates result is elevated as defined in Section 5.
Highlighted cells indicate results greater than one or more regulatory limits listed in the Table.
The CRQL/CRDL is provided in parentheses for background results that are qualified because they
are below the CRQL/CRDL when the analyte is detected in target samples.

Key:

AC = Adjusted concentration.
B = Analyte detected below the adjusted Contract Required Detection Limit, but at or above the Instrument Detection Limit.
CLP = Contract Laboratory Program.
DDD = Dichlorodiphenyldichlorethane.
DDE = Dichlorodiphenyldichloroethylene.
EPA = United States Environmental Protection Agency.
GW = Groundwater.
ID = Identification.
J = The analyte was positively identified. The associated numerical result is an estimate.
K = Unknown bias.
MCL = Maximum Contaminant Level.
µg/L = Micrograms per liter.
N = Tentatively identified.
NA = Not analyzed.
Q = Analyte detected below the adjusted Contract Required Quantitation Limit.
TP = Treatment plant.
TT = Treatment technique-based MCL.
U = The analyte was not detected. The associated numerical result is the sample detection/quanititation limit.
UJ = The analyte was not detected. The associated numerical result is the estimated sample detection/quantitation limit.

Table 7-3

PHASE 2 GROUNDWATER SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	01354094	02014000	02014001	2014002		
CLP Inorganic Number	MJOKA4	MJO7N5	MJO7N6	MJO7N7		
CLP Organic Number	JOKA4	JO7N5	JO7N6	JO7N7		
Location ID	TP09GW	MW01GW	MW02GW	MW03GW		
Depth to Water	79 feet	77.9 feet	77.7 feet	77.6 feet		
Description	Background-15' West of Treatment Building	15' North of Treatment Building	15' South of Treatment Building	10' East of Treatment Building	EPA Region 9 Tap Water PRGs	EPA MCLs
Inorganics (µg/L)						
Aluminum	**50,200**	**65,000**	**115,000**	**146,000**	36,000	--
Antimony	6.5 JBK (60 U)	10.7 JBK	13.7 JBK	12.2 JBK	15	6
Arsenic	**116**	**148**	**245**	**344**	0.045	10
Barium	**1,050**	**1,680**	**1,650**	**1,970**	2,600	2,000
Beryllium	3.5 JBK (5 U)	3.6 JBK	**6.4**	**8.9**	73	4
Calcium	**179,000**	**300,000**	**183,000**	**241,000**	--	--
Chromium	**70.7**	**97.8 JL**	**164 JL**	**214 JL**	55,000	100
Cobalt	**83.7**	**86.5**	**151**	**199**	2,200	--
Copper	**135**	**165 JL**	**289 JL**	**381 JL**	1,400	1,300[TT]
Iron	**91,200**	**131,000**	**231,000**	**298,000**	11,000	--
Lead	**105**	**156**	**255**	**327**	--	15[TT]
Magnesium	**50,200**	**72,500**	**86,100**	**113,000**	--	--
Manganese	**4,580**	**4,710**	**7,900**	**9,580**	880	--
Nickel	**71.0**	**0.25 JL**	**174**	**0.31 JL**	730	--
Potassium	**16,600 JK**	**21,200**	**24,500**	**29,500**	--	--
Sodium	**8,680**	**160,000**	**12,200 JK**	**12,800 JK**	--	--
Thallium	5.7 U	4.0 UJL	8.7 JBK	**17.2 JL**	2.4	--
Vanadium	**110**	**145**	**243**	**297**	260	--
Zinc	**363**	**566 JL**	**1,790 JL**	**1,530 JL**	11,000	--
Semivolatile Organic Compounds (µg/L)						
bis(2-Ethylhexyl)phthalate	3 JQK (10 U)	1 JQK	10 U	10 U	4.8	6
Caprolactam	10 U	10 U	**70**	**130**	18,000	--
Pentachlorophenol	**41**	25 UJK	25 UJK	**46 JH (4.55 AC)**	0.56	1
Volatile Organic Compounds (µg/L)						
Acetone	10 U	10 U	10 U	**43**	610	--

Note:
Only results for compounds which were detected in at least one sample were reported.
Bold type indicates definitive concentrations above the Contract Required Detection Limit (CRDL) or Contact Required Quantitation Limit (CRQL).
Underlined type indicates result is elevated as defined in Section 5.
Highlighted cells indicate results greater than one or more regulatory limits listed in the Table.
The CRQL/CRDL is provided in parentheses for background results that are qualified because they are below the CRQL/CRDL when the analyte is detected in target samples.

Key:

AC = Adjusted concentration.
B = Analyte detected below the adjusted Contract Required Detection Limit, but at or above the Instrument Detection Limit.
CLP = Contract Laboratory Program.
EPA = United States Environmental Protection Agency.
GW = Groundwater.
ID = Identification.
J = The analyte was positively identified. The associated numerical result is an estimate.
K = Unknown bias.
MCL = Maximum Contaminant Level.
µg/L = Micrograms per liter.
N = Tentatively identified.
NA = Not analyzed.
Q = Analyte detected below the adjusted Contract Required Quantitation Limit.
TP = Treatment plant.
TT = Treatment technique-based MCL.
U = The analyte was not detected. The associated numerical result is the sample detection/quanititation limit.
UJ = The analyte was not detected. The associated numerical result is the estimated sample detection/quantitation limit.

Table 7-4

PEND OREILLE RIVER SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	**01354061**	**01354060**	**01354062**
CLP Organic Number	**JOK71**	**JOK70**	**JOK72**
CLP Inorganic Number	**MJOK71**	**MJOK70**	**MJOK72**
Location ID	**PO02SD**	**PO01SD**	**PO03SD**
Depth	**0 - 6 inches**	**0 - 6 inches**	**0 - 6 inches**
Description	**Background - 350' Upstream (West) of PPE**	**PPE Sample at end of Dirt Road**	**Upgradient Sample 100' East of PPE**
Inorganics (mg/kg)			
Aluminum	**5,590**	**3,540**	**3,330**
Antimony	0.88 U	0.79 U	1.6 JBK
Arsenic	**5.3**	**5.2**	**5.7**
Barium	**95.7**	**47.6**	38.5 JBK
Beryllium	0.40 JBK (1.19 U)	0.24 U	0.21 U
Cadmium	0.21 JBK (1.19 U)	0.15 U	0.15 U
Calcium	**3,510**	**1,500**	**1,550**
Chromium	**8.1**	**5.0**	**5.1**
Cobalt	4.4 JBK (11.9 U)	3.3 JBK	3.4 JBK
Copper	**37.6**	**8.1**	**8.1**
Iron	**8,640**	**7,310**	**7,890**
Lead	**14.5**	**7.9**	**73.2**
Magnesium	**2,860**	**2,130**	**2,050**
Manganese	**94.1**	**207**	**169**
Nickel	7.2 JBK (9.5 U)	6.1 JBK	3.5 JBK
Potassium	1,020 JBK	588 JBK	494 JBK
Selenium	0.80 JBK (1.19 U)	0.59 JBK	0.58 JBK
Sodium	122 JBK	105 U	103 U
Vanadium	**12.2**	7.9 JBK	8.4 JBK
Zinc	**68.0**	**25.8**	**31.0**
Chlorinated Pesticide (µg/kg)			
beta-BHC	2.2 JNK	1.9 U	1.8 U
Semivolatile Organic Compounds (µg/kg)			
bis(2-Ethylhexyl)phthalate	420 U	40 JQK	350 U
Pentachlorophenol	1,100 U	97 JQK	880 U
Volatile Organic Compounds (µg/kg)			
1,1,2-Trichloroethane	13 U	3 JQK	11 U
Trichloroethene	7 JQK (13 U)	11 U	11 U

Key is on the next page.

Table 7-4

PEND OREILLE RIVER SEDIMENT SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

Note: Only results for compounds which were detected in at least one sample were reported.
Bold type indicates definitive concentrations above the Contract Required Detection Limit (CRDL) or Contract Required Quantitation Limit (CRQL).
Underlined type indicates result is elevated as defined in Section 5.
The CRQL/CRDL is provided in parentheses for background results that are qualified because they are below the CRQL/CRDL when the analyte is detected in target samples.

Key:

AC	= Adjusted concentration.
B	= Analyte detected below the adjusted Contract Required Detection Limit, but at or above the Instrument Detection Limit.
CLP	= Contract Laboratory Program.
EPA	= United States Environmental Protection Agency.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical result is an estimate.
K	= Unknown bias.
µg/kg	= Micrograms per kilogram.
mg/kg	= Milligrams per kilogram.
N	= Tentatively identified.
PO	= Pend Oreille River.
Q	= Analyte was dectected below the adjusted Contract Required Quantitation Limit.
SD	= Sediment.
U	= The analyte was not detected. The associated numerical result is the sample detection/quanititation limit.

Table 7-5

POPULATION AND WETLAND ACREAGE WITHIN A 4-MILE RADIUS
POLES INCORPORATED SITE
OLDTOWN, IDAHO

Distance Ring (Miles)	Residents	Wetland Acreage
On a source	0	0
0 - ¼	107	0
¼ - ½	662	3.1
½ - 1	1,329	45.7
1 - 2	657	115.5
2 - 3	542	106.6
3 - 4	425	110.8
Total	3,722	381.7

Source: USCB 2000a and 2000b; USFWS 1993; USGS 1996

Table 7-6

SCHOOL AND RESIDENTIAL SURFACE SOIL SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	01354059	01354050	013540501	01354052	01354053	01354054	01354058	
CLP Inorganic Number	MJOK69	MJOK60	MJOK61	MJOK62	MJOK63	MJOK64	MJOK68	
CLP Organic Number	JOK69	JOK60	JOK61	JOK62	JOK63	JOK64	JOK68	
Location ID	BG01SS	SC01SS	SC02SS	SC03SS	SC04SS	SC05SS	HO01SS	
Depth bgs	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	
Description/Location	Background	Northwest Area near School Door	North Bluff near trail	Northern Fenceline near Gate	Playground Area	East of Play Area near Trees	Masterman House	Residential Soil PRGs
Inorganics (mg/kg)								
Aluminum	**9,220**	**8,630**	**25,000**	**20,400**	**13,000**	**13,200**	**17,400**	--
Antimony	0.76 U	0.79 U	0.84 U	1.2 JBK	1.3 U	1.1 U	0.82 U	31
Arsenic	**9.7**	**6.0**	**8.0**	**7.3**	**5.7**	**5.9**	**8.8**	0.39
Barium	**143**	**88.8**	**238**	**253**	**227**	**185**	**229**	5,400
Beryllium	0.48 JBK (1.03 U)	0.42 JBK	0.82 JBK	0.69 JBK	0.54 JBK	0.51 JBK	0.60 JBK	150
Cadmium	0.14 U	0.15 U	0.16 U	0.19 JBK	0.47 JBK	0.20 U	0.94 JBK	37
Calcium	**1,570**	**5,960**	**3,000**	**4,460**	**5,420**	**2,910**	**4,930**	--
Chromium	**9.4**	**8.2**	**7.8**	**9.6**	**5.8**	**6.5**	**11.5**	100,000
Cobalt	6.2 JBK (10.3 U)	4.4 JBK	7.3 JBK	6.7 JBK	4.7 JBK	4.9 JBK	6.6 JBK	--
Copper	**13.8**	**15.2**	**17.7**	**18.5**	**15.5**	**11.9**	**26.2**	2,900
Iron	**12,800**	**9,620**	**15,000**	**13,100**	**8,430**	**10,300**	**14,300**	23,000
Lead	**12.3**	**24.2**	**14.1**	**39.7**	**33.0**	**15.2**	**188**	400
Magnesium	**3,320**	**2,650**	**2,560**	**2,540**	1,590 JBK	**2,280**	**2,800**	--
Manganese	**375**	**241**	**614**	**607**	**500**	**482**	**519**	1,800
Mercury	0.10 U	0.10 U	0.11 U	0.12 U	0.18 U	0.14 U	**0.12**	23
Nickel	6.5 JBK (8.2 U)	**12.5**	**14.1**	**14.4**	**16.9**	**15.7**	7.9 JBK	1,600
Potassium	**1,770 JH**	**1,150 JK**	**1,300 JK**	**1,420 JK**	1,100 JBK	1,060 JBK	**1,410 JH**	--
Seleniuim	0.45 UJK	0.47 UJK	0.72 JBK	0.93 JBK	0.82 JBK	0.63 UJK	0.48 UJK	390
Vanadium	**15.6**	**13.6**	**22.2**	**19.8**	11.8 JBK	14.3 JBK	**21.2**	550
Zinc	**49.9**	**61.2**	**49.7**	**156**	**168**	**56.6**	**238**	23,000
Chlorinated Pesticides (µg/kg)								
4,4'-DDE	3.4 U	3.5 U	3.8 U	3.7 U	3.8 U	3.6 U	**7.4**	1,700
4,4'-DDD	3.4 U	3.5 U	3.8 U	3.7 U	3.8 U	3.6 U	**6.3**	2,400
4,4'-DDT	3.4 U	3.5 U	3.8 U	3.7 U	3.8 U	3.6 U	**22**	1,700

Key is at the end of the table.

Table 7-6

SCHOOL AND RESIDENTIAL SURFACE SOIL SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	01354059	01354050	013540501	01354052	01354053	01354054	01354058	
CLP Inorganic Number	JOK69	MJOK60	MJOK61	MJOK62	MJOK63	MJOK64	MJOK68	
CLP Organic Number	MJOK69	JOK60	JOK61	JOK62	JOK63	JOK64	JOK68	
Location ID	BG01SS	SC01SS	SC02SS	SC03SS	SC04SS	SC05SS	HO01SS	
Depth bgs	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	0 - 6 inches	
Description/Location	Background	Northwest Area near School Door	North Bluff near trail	Northern Fenceline near Gate	Playground Area	East of Play Area near Trees	Masterman House	Residential Soil PRGs
Semivolatile Organic Compounds (µg/kg)								
Acetophenone	340 U	67 JQK	380 U	370 U	380 U	93 JQK	380 U	490
Benzaldehyde	340 U	48 JQK	380 U	370 U	380 U	44 JQK	380 UJK	6,100,000
Benzo(a)anthracene	340 U	350 U	380 U	370 U	380 U	360 U	63 JQK	620
Benzo(a)pyrene	340 U	350 U	380 U	370 U	380 U	360 U	75 JQK	62
Benzo(b)fluoranthene	340 U	350 U	380 U	56 JQK	380 U	360 U	99 JQK	620
Benzo(g,h,i)perylene	340 U	350 U	380 U	370 U	380 U	360 U	84 JQK	--
Benzo(k)fluoranthene	340 U	350 U	380 U	50 JQK	380 U	360 U	61 JQK	6,200
bis(2-Ethylhexyl)phthalate	340 U	300 JQK	67 JQK	84 JQK	**650**	43 JQK	380 U	35,000
Butylbenzylphthalate	340 U	350 U	380 U	370 U	380 U	360 U	49 JQK	12,000,000
Chrysene	340 U	350 U	380 U	42 JQK	380 U	360 U	100 JQK	62,000
di-n-Butylphthalate	340 U	350 U	380 U	370 U	380 U	360 U	74 JQK	--
Fluoranthene	340 U	350 U	380 U	37 JQK	380 U	360 U	83 JQK	2,300,000
Indeno(1,2,3-cd)pyrene	340 U	350 U	380 U	370 U	380 U	360 U	59 JQK	620
Pentachlorophenol	75 JQK (850 U)	R	950 U	920 U	950 U	96 JQK	59 JQK	3,000
Pyrene	340 U	350 U	380 U	41 JQK	380 U	360 U	120 JQK	2,300,000
Volatile Organic Compounds (µg/kg)								
1,1,2-Trichloroethane	7 JQK (10 U)	11 U	11 U	11 U	**21**	**17**	9 JQK	840
1,1,2,2-Tetrachloroethane	5 JQK (10 U)	11 U	11 U	11 U	6 JQK	3 JQK	6 JQK	380
1,2-Dichloroethane	10 U	11 U	11 U	11 U	3 JQK	3 JQK	11 U	350
Benzene	10 U	11 U	11 U	11 U	2 JQK	1 JQK	11 U	650
cis-1,2-Dichloroethene	10 U	11 U	11 U	11 U	5 JQK	5 JQK	1 JQK	43,000
Ethylbenzene	10 U	11 U	11 U	11 U	1 JQK	11 UJK	11 U	23,000
Tetrachloroethene	10 U	11 U	11 U	11 U	5 JQK	4 JQK	1 JQK	5,700
Trichloroethene	1 JQK (10 U)	11 U	11 U	11 U	10 JQK	8 JQK	3 JQK	2,800
Toluene	2 JQK (10 U)	11 U	11 U	11 U	6 JQK	3 JQK	11 U	520,000
Xylenes	3 JQK (10 U)	11 U	11 U	11 U	2 JQK	11 UJK	11 U	210,000

Key is on the next page.

Table 7-6

SCHOOL AND RESIDENTIAL SURFACE SOIL SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

Note: Only compounds which were detected in at least one sample were reported.
Bold type indicates definitive concentrations above the Contract Required Detection Limit or Contract Required Quantitation Limit.
Underlined type indicates result is elevated as defined in Section 6.
Highlighted cells indicate results greater than one or more regulatory limits listed in the Table.

Key:

B	= Analyte detected below the adjusted Contract Required Detection Limit, but at or above the Instrument Detection Limit.
BG	= Background.
bgs	= below ground surface.
CLP	= Contract Laboratory Program.
DDD	= dichlorodiphenyldichlorethane.
DDE	= dichlorodiphenyldichloroethylene.
DDT	= dichlorodiphenyltrichlorethane.
EPA	= United States Environmental Protection Agency.
H	= High bias.
HO	= House.
ID	= Identification.
J	= The analyte was positively identified. The associated numerical result is an estimate.
K	= Unknown bias.
µg/kg	= Micrograms per kilogram.
mg/kg	= Milligrams per kilogram.
PRG	= EPA Region 9 Preliminary Remediation Goal.
Q	= Analyte detected below the adjusted Contract Required Quantitation Limit.
SC	= School.
SS	= Surface soil.
U	= The analyte was not detected. The associated numerical result is the sample detection/quanititation limit.
UJ	= The analyte was not detected. The associated numerical result is the estimated sample detection/quantitation limit.

Table 7-7

AIR SAMPLES SVOC ANALYTICAL RESULTS (µg/m^3)
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	01344104	01344101	01344102	01344103	01344105	01344106	01344107	01344108		
CLP Inorganic Number	NA	NA	NA	NA	NA	NA	NA	NA		
CLP Organic Number	NA	NA	NA	NA	NA	NA	NA	NA		
Location ID	PY04AM	PY01AM	PY02AM	PY03AM	PY05AM	PY06AM	PY07AM	PY08AM		
Description/Location	Background / North of School	1,000' East of Treatment Plant near Metstation	Near River Bluff 120' NE of Treatment Plant	Masterman Residence 800' West of Treatment Plant	50' East of Dip Tank	Inside School Hallway	2,000' NE of Treatment Plant near Boat Launch	Downwind / 2,520' East of Poles	Ambient Air PRGs	IAAC*
August 22-23, 2001										
2-Methylnaphthalene	**0.40**	**0.11 JK**	**1.16**	**35.48 JL**	**0.22**	**0.11**	**0.26**	**0.19 JL**	3.1[a nc]	--
Acenaphthene	0.04 U	0.01 JQK	0.03 U	0.81 U	0.02 JQK	0.04 U	**0.03**	R	220[ca]	--
Benzoic Acid	0.17 JQK (0.18 U)	**1.15**	0.16 U	4.05 U	**0.16**	0.17 JQK	**0.84**	R	15,000[nc]	--
Dibenzofuran	0.04 U	0.03 U	0.02 JQK	0.81 U	0.03 U	0.04 U	0.02 JQK	R	15[nc]	--
Fluoranthene	0.04 U	0.03 U	0.03 U	0.81 U	0.03 U	0.04 U	0.01 JQK	R	150[nc]	--
Fluorene	0.01 JQK (0.04 U)	0.01 JQK	0.03 U	0.48 JQK	0.01 JQK	0.04 U	0.03 JQK	R	150[nc]	--
Naphthalene	**0.11**	**0.06**	**0.22**	**1.90**	**0.10**	**0.06**	**0.11**	**0.21 JL**	3.1[nc]	2,500
Pentachlorophenol	0.18 U	0.16 U	0.10 JQK	**1.48 JQK**	0.01 JQK	0.18 U	0.05 JQK	R	0.056[ca]	25
Phenanthrene	0.02 JQK (0.04 U)	0.01 JQK	**0.03**	0.36 JQK	0.02 JQK	0.01 JQK	**0.05**	**0.04 JL**	1,100[b ca]	--
Phenol	0.18 U	0.03 JQK	0.16 U	4.05 U	0.16 U	0.18 U	0.16 U	R	2,200[nc]	950

EPA Sample Number	01344114	01344111	01344112	01344113	01344115	01344116	01344117	01344118		
CLP Inorganic Number	NA	NA	NA	NA	NA	NA	NA	NA		
CLP Organic Number	NA	NA	NA	NA	NA	NA	NA	NA		
Location ID	PY04AM	PY01AM	PY02AM	PY03AM	PY05AM	PY06AM	PY07AM	PY08AM		
Description/Location	Background / North of School	1,000' East of Treatment Plant near Metstation	Near River Bluff 120' NE of Treatment Building	Masterman Residence 800' West of Treatment Building	50' East of Dip Tank	Inside School Hallway	2,000' NE of Treatment Building near Boat Launch	Downwind / 2,520' East of Poles	Ambient Air PRGs	IAAC*
August 23-24, 2001										
2-Methylnaphthalene	**0.07**	**0.08**	**0.82**	**0.07**	**25.30 JL**	**0.14**	**0.07**	**0.04**	3.1[a nc]	--
Acenaphthene	0.04 U	0.04 U	0.03 U	0.03 U	R	0.03 U	0.03 U	0.01 JQK	220[ca]	--
Anthracene	0.04 U	0.04 U	0.03 U	0.03 U	0.01 JQK	0.03 U	0.03 U	0.03 U	1,100[ca]	--
Benzoic Acid	0.18 U	**1.14**	0.10 JQK	**1.07**	0.16 U	0.16 U	**0.09**	**1.189**	15,000[nc]	--
Dibenzofuran	0.04 U	0.04 U	0.03 U	0.03 U	**0.10 JL**	0.02 JQK	0.03 U	0.03 U	15[nc]	--
Fluoranthene	0.04 U	0.04 U	0.03 U	0.03 U	R	**0.26**	0.03 U	0.03 U	150[nc]	--
Fluorene	0.04 U	0.01 JQK	0.02 JQK	0.03 U	**0.22 JL**	0.03 U	0.003 JQK	0.03 U	150[nc]	--
Naphthalene	**0.06**	**0.08**	**0.15**	**0.08**	R	**0.21**	**0.04**	**0.05**	3.1[nc]	2,500
Pentachlorophenol	0.18 U	0.18 U	0.03 JQK	0.16 U	**0.63 JL**	0.16 U	0.16 U	0.16 U	0.056[ca]	25
Phenanthrene	0.01 JQK (0.04 U)	0.02 JQK	0.03 JQK	0.01 JQK	**0.18 JL**	0.03 JQK	0.01 JQK	0.01 JQK	1,100[b ca]	--

EPA Sample Number	01344124	01344121	01344122	01344123	01344125	01344126	01344127	01344128		
CLP Inorganic Number	NA	NA	NA	NA	NA	NA	NA	NA		
CLP Organic Number	NA	NA	NA	NA	NA	NA	NA	NA		
Location ID	PY04AM	PY01AM	PY02AM	PY03AM	PY05AM	PY06AM	PY07AM	PY08AM		
Description/Location	Background / North of School	1,000' East of Treatment Plant near Metstation	Near River Bluff 120' NE of Treatment Building	Masterman Residence 800' West of Treatment Building	50' East of Dip Tank	Inside School Hallway	2,000' NE of Treatment Building near Boat Launch	Downwind / 2,520' East of Poles	Ambient Air PRGs	IAAC*
August 24-25, 2001										
2-Methylnaphthalene	**0.08**	**0.12**	**2.05**	**0.12**	**23.71 JL**	**0.17**	**0.10**	**0.06**	3.1[a nc]	--
Acenaphthene	0.03 U	0.01 JQK	0.03 U	0.03 U	R	0.03 U	0.03 U	0.01 JQK	220[ca]	--
Acenaphthylene	0.03 U	0.03 U	0.03 U	0.03 U	R	0.03 U	0.01 JQK	0.03 U	220[c]	--
Benzoic Acid	0.16 U	**0.94**	0.16 U	0.16 U	0.16 U	0.16 U	0.15 U	0.14 U	15,000[nc]	--
Dibenzofuran	0.03 U	0.03 U	**0.03**	0.03 U	**0.69 JL**	0.02 JQK	0.03 U	0.03 U	15[nc]	--
Fluorene	0.01 JQK (0.03 U)	0.01 JQK	**0.05**	0.01 JQK	**0.21 JL**	0.02 JQK	0.01 JQK	0.01 JQK	150[nc]	--
Naphthalene	**0.06**	**0.09**	**0.24**	**0.12**	R	**0.22**	**0.07**	**0.07**	3.1[nc]	2,500
Pentachlorophenol	0.16 U	0.03 JQK	0.06 JQK	0.16 U	**0.49 JL**	0.16 U	0.15 U	0.14 U	0.056[ca]	25
Phenanthrene	0.01 JQK (0.03 U)	0.03 JQK	**0.04**	0.01 JQK	**0.19 JL**	0.03 JQK	0.01 JQK	0.01 JQK	1,100[b ca]	--

* IDAPA 58.01.01.585 and 58.01.01.586.
a PRG for naphthalene used as a surrogate value.
b PRG for anthracene used as a surrogate value.
c PRG for acenaphthene used as a surrogate value.
ca Cancer PRG.
nc Noncancer PRG.

Note: Only results for compounds which were detected in at least one sample were reported.
Bold type indicates concentrations above sample quantitation limits or detection limits.
Underlined type indicates result is elevated as defined in Section 5.
Positive phthalate results were not reported as phthalates are common laboratory contaminants.

Key:

AM = Ambient air.
CLP = Contract laboratory program.
EPA = United States Environmental Protection Agency.
IAAC = Idaho Ambient Air Criteria.
ID = Identification.
J = The analyte was positively identified. The associated numerical result is an estimate.
K = Unknown bias.
L = Low bias.
NA = Not applicable.
NE = Northeast
µg/m^3 = Micrograms per cubic meter.
PRGs = EPA Region 9 Preliminary Remediation Goals.
PY = Pole yard.
Q = Analyte detected below the adjusted sample quantitation limit.
R = Rejected.
SVOCs = Semivolatile organic compounds.
U = The analyte was not detected. The associated numerical result is the sample quantitation limit.

Table 7-8

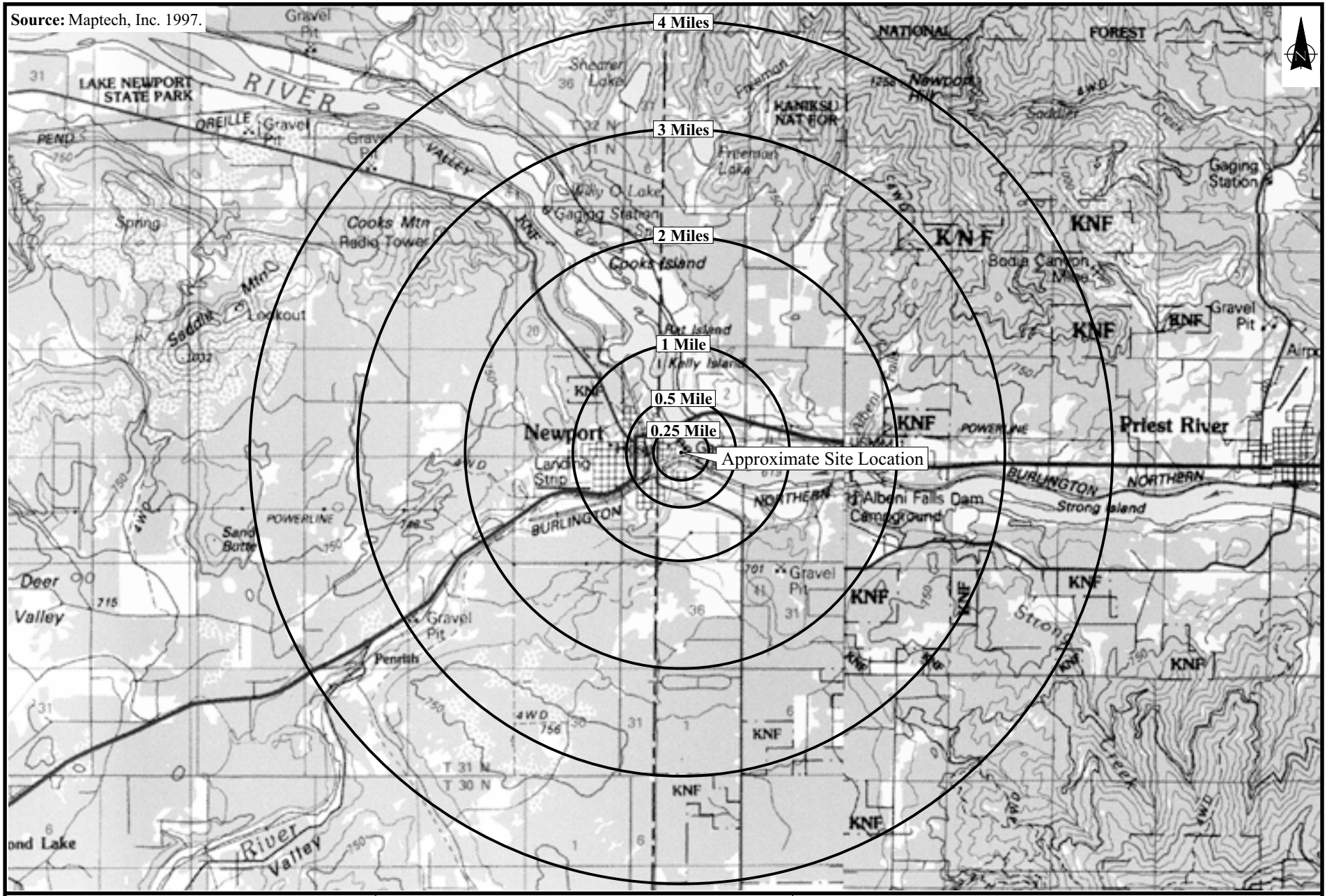
WIPE SAMPLES
ANALYTICAL RESULTS SUMMARY
POLES INCORPORATED
OLDTOWN, IDAHO

EPA Sample Number	**01344136**	**01344133**	**01344134**	**01344135**
CLP Inorganic Number	**NA**	**NA**	**NA**	**NA**
CLP Organic Number	**NA**	**NA**	**NA**	**NA**
Location ID	**SC04WP**	**SC01WP**	**SC02WP**	**SC03WP**
Description/Location	**Field Blank**	**Wall Composite 1 from all four walls of Classroom 1**	**Wall Composite 2 from all four walls of Classroom 1**	**Fluorescent Light Composite from Classroom 1**
Semivolatile Organic Compound (ng/cm^2)				
2,4-Dinitrotoluene	2.0 JQK	2.9 U	3.5 U	1.7 U

Note:
Only results for compounds which were detected in at least one sample were reported.
Bold type indicates concentrations above adjusted sample quantitation limits or detection limits.
Positive phthalate results were not reported as phthalates are common laboratory contaminants.
Sample results less than five times the field blank result were qualified as not detected (U).

Key:

CLP = Contract laboratory program.
EPA = United States Environmental Protection Agency.
ID = Identification.
J = The analyte was positively identified. The associated numerical result is an estimate.
K = Unknown bias.
NA = Not applicable.
ng/cm^2 = Nanograms per square centimeter.
Q = Analyte detected below the adjusted sample quantitation limit.
SC = School.
U = The analyte was not detected. The associated numerical result is the sample quantitation limit.
WP = Wipe sample.



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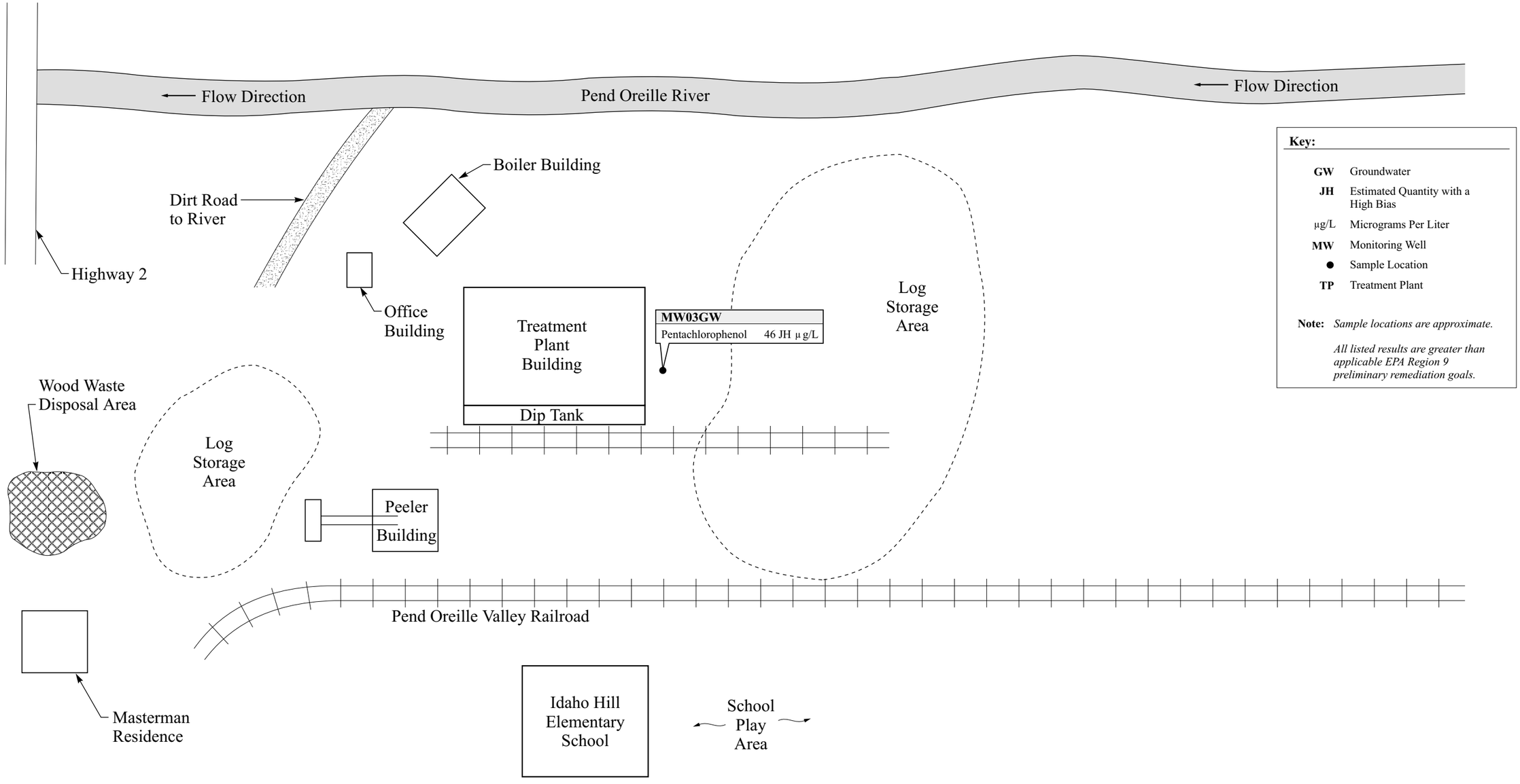
POLES INCORPORATED
Oldtown, Idaho

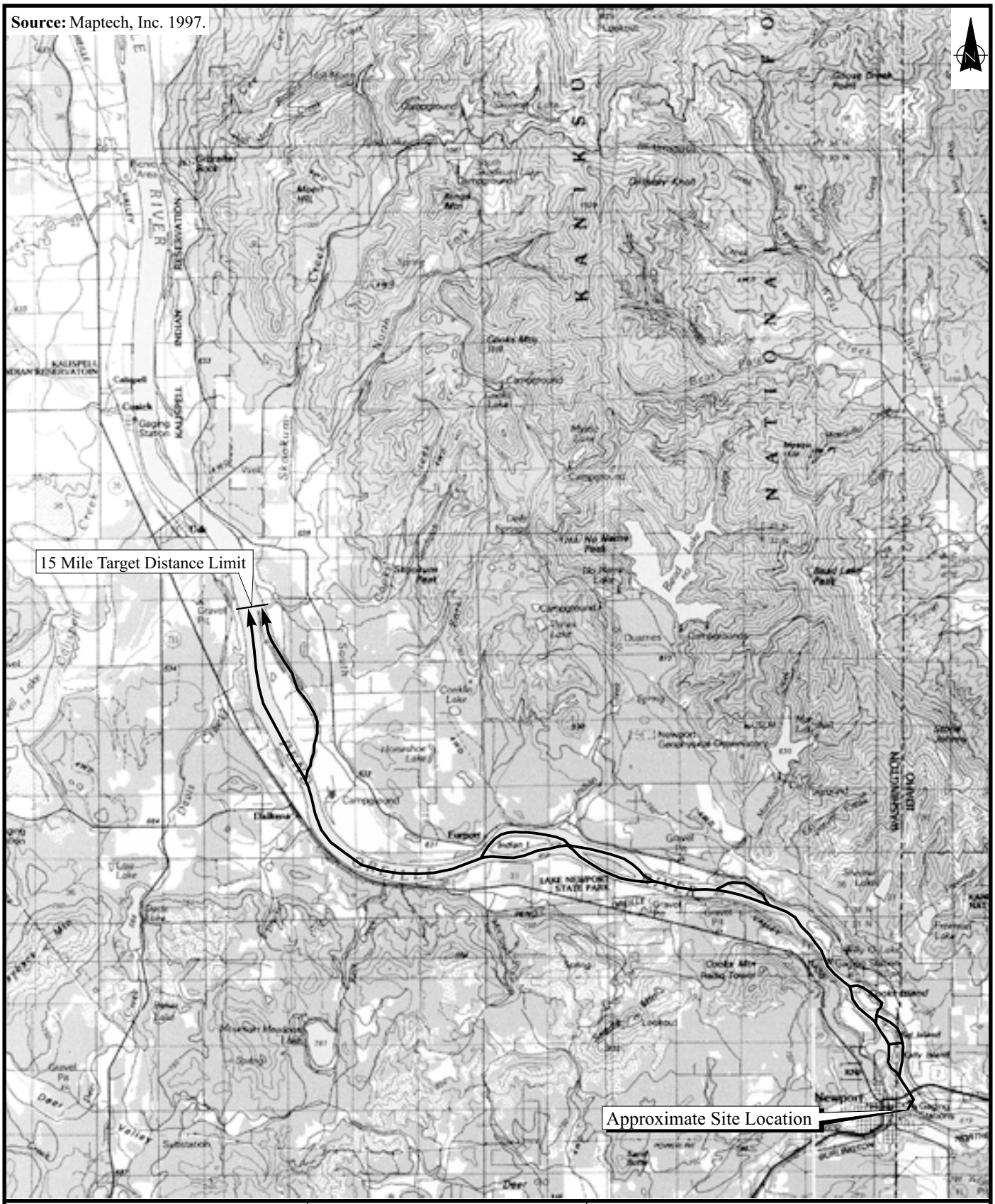
0 1 2
Approximate Scale in Miles

Figure 7-1
4-MILE MAP

Date:	Drawn by:	
1/25/02	AES	10:START-2\01070007\S669\fig 7-1



ecology and environment, inc. International Specialists in the Environment Seattle, Washington	N	Not to Scale	POLES INCORPORATED Oldtown, Idaho	Figure 7-2 SELECTED GROUNDWATER SAMPLE RESULTS	
				Date: 2/1/02	Drawn by: AES	10:START-2\01070007\S669\fig 7-2



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Seattle, Washington

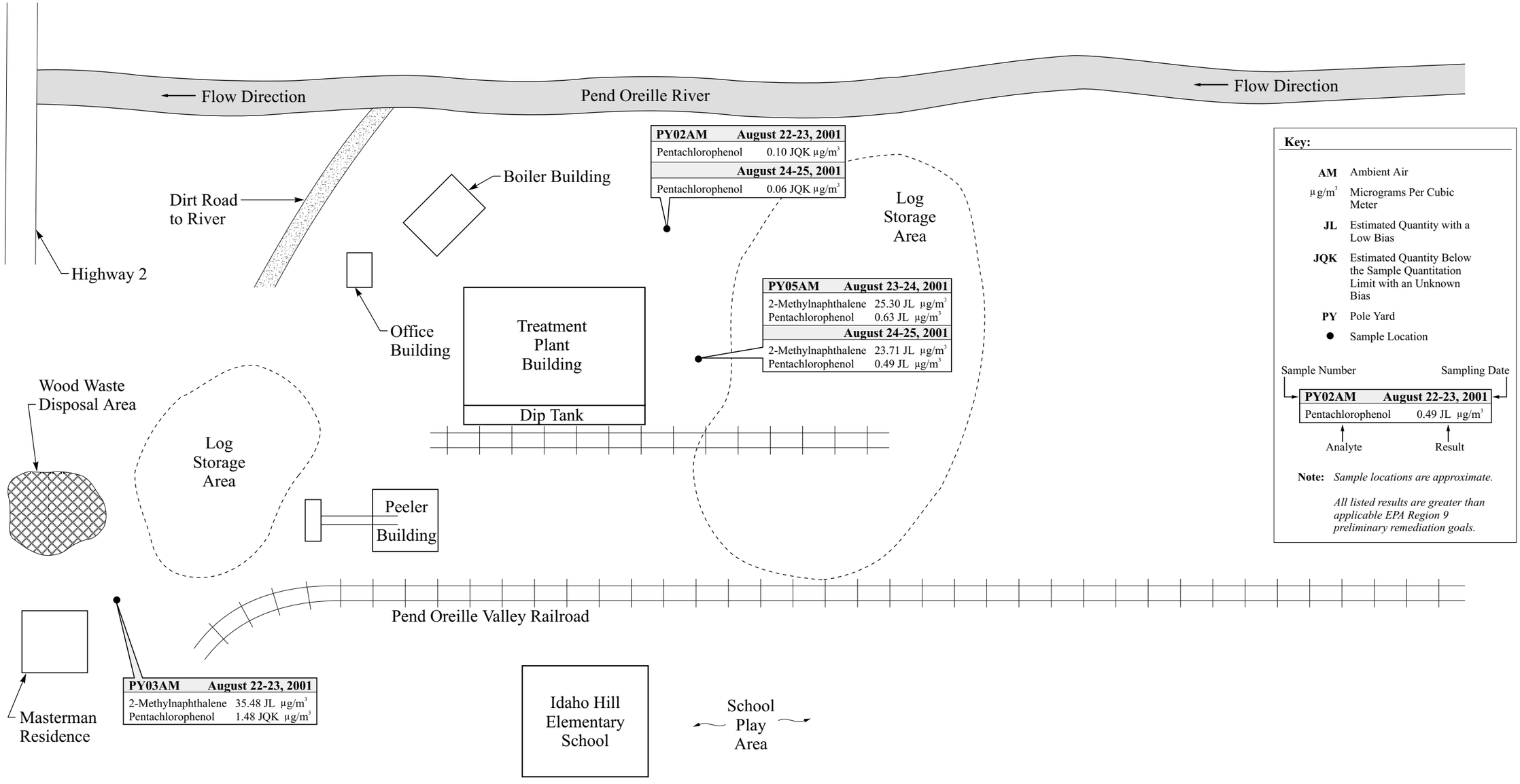
POLES INCORPORATED
Oldtown, Idaho

Figure 7-3

15-MILE MAP

0 2 4
Approximate Scale in Miles

Date:	Drawn by:	
1-25-02	AES	10:START-2\01070007\S669\fig 7-3



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Seattle, Washington

Not to Scale

POLES INCORPORATED
Oldtown, Idaho

Figure 7-4
SELECTED AMBIENT AIR SAMPLE RESULTS
AUGUST 22-25, 2001

Date:	Drawn by:	
2/1/02	AES	10:START-2\01070007\S669\fig 7-4

8. REMOVAL ASSESSMENT DISCUSSION

The following sections describe the removal assessment of on-site surface soils and airborne contamination (Section 8.1) and on-site subsurface soils and groundwater (Section 8.2).

8.1 ON-SITE SURFACE SOILS AND AIRBORNE CONTAMINATION

8.1.1 Surface Soils

A total of 11 surface soil samples were collected from three potential contamination source areas at the PI site, including the TP, pole yard and PCP bag disposal areas. Surface soil sample results are presented in Tables 6-2, 6-6 and 6-7 and are discussed in greater detail in Section 6.2. Surface soil sample results were compared to PRGs for industrial soils (Appendix J). The results indicated that PCP exceeded the industrial soil PRG at three locations in the TP area and at four locations in the treated pole storage area. None of the detected Pesticides/PCBs, TAL inorganics or VOCs are known to be associated with PI wood-treating operations, therefore these contaminants will not be considered attributable to site activities.

8.1.2 Air

During the field event, occasional clouds of dust, generated both by heavy machinery and by wind gusts, were observed to be blowing off-site from the PI facility. Contaminants from these on-site surface soils may migrate as airborne particulates to off-site targets such as the School, nearby residential populations and sensitive environments in the Pend Oreille River.

Twenty four air samples were collected at on- and off-site locations over three consecutive 24-hour sampling periods between August 22 and 25, 2001. A discussion of sample results is presented in Section 7.4 and the results are provided in Table 7-7. Analytical results for air samples were compared to ambient air PRGs and Idaho ambient air criteria. None of the air samplers were sited over sampled soils with elevated concentrations of SVOCs. Concentrations of 2-methylnaphthalene (using the PRG for naphthalene as a surrogate value) and PCP exceeded the PRGs in air samples on each day of sample collection. The exceedances occurred on two of three days near the bluff (location PY02AM) and dip

tank (location PY05AM) and on one day at the Masterman Residence (location PY03AM). Location PY05AM was the closest air sampling station to the dip tank and each of these locations were downwind of the dip tank during portions of each day of PRG exceedances.

8.2 ON-SITE SUBSURFACE SOILS AND GROUNDWATER

Wood-treating oil stains (samples TP05SB1 and TP08SB1) and/or petroleum odors were observed in five subsurface soil samples collected from three boreholes near the TP (TP04, TP05 and TP08) at depths ranging from 10 to 52 feet bgs. The extent of oil stains in subsurface soils appears to encompass an area of approximately 3,200 ft^2 (80 feet by 40 feet) with an approximate thickness of 42 feet. The estimated total volume of oil-impacted subsurface soil is approximately 4,978 cubic yards. These area and volume values are estimates due to limited surface and subsurface soil sample collection activities in the TP area.

Fourteen subsurface soil samples were collected from the TP area at depths ranging from 10 and 79.5 feet bgs. A discussion of sample results is presented in Section 6.2.1.2 and in Tables 6-3 and 6-4. Analytical results for subsurface soil samples were compared to industrial soil PRGs. All PRG exceedances occurred in samples collected within 40 feet south of the dip tank at locations TP05, TP07 and TP08. Five PCP sample results and one benzo(a)anthracene result exceeded PRGs. The highest PCP subsurface soil concentrations were found between 78 and 80 feet bgs (the approximate soil/groundwater interface) at sample locations TP05 and TP07, with exceedances greater than 100 times the associated PRG.

Eight groundwater samples were collected during the IA. The five samples collected in Phase 1 were used to screen for the presence of contaminants prior to well completion and development. Results for these samples may be biased high due to dissolved solids in the water, therefore the Phase 1 groundwater results are used for screening purposes only. The three Phase 2 groundwater samples were collected from developed wells. Analytical results for the Phase 2 groundwater samples were compared to EPA MCLs and tap water PRGs for informational purposes. Pesticides/PCBs, TAL inorganics and VOCs detected above regulatory limits are not known to be used in the wood-treating process at PI and therefore will not be considered attributable to site activities. Two SVOCs were detected at elevated concentrations in three of four Phase 1 groundwater samples at concentrations between 28 µg/L and 1,300 µg/L. PRGs were exceeded by PCP in all five Phase 1 samples. The SVOC caprolactam was

detected at an elevated concentration in two of three Phase 2 groundwater samples at concentrations between 70 µg/L and 130 µg/L. This contaminant is not known to be associated with operations at the PI facility and is not considered attributable to site activities. SVOC PRGs were exceeded by PCP in one Phase 2 sample. Inorganic MCLs were exceeded in all Phase 1 and 2 groundwater samples, however none of these TAL inorganics are known to be associated with PI operations, therefore these contaminants will not be considered attributable to site activities. The MCL for PCP was exceeded in all five Phase 1 groundwater samples but in only one of three Phase 2 groundwater samples. PCP results were significantly lower in two of three Phase 2 samples and the results were similar for both phases in the third sample. No Pesticides/PCBs or VOCs exceeded MCLs in any Phase 1 or Phase 2 sample.

9. SUMMARY AND CONCLUSIONS

Operations at the PI facility located in Oldtown, Idaho, include the conditioning of wood utility poles with an oil-based PCP preservative. The approximately 5 % PCP in wood-treating oil solution is stored in four ASTs with 70,000 gallons of capacity. The wood-treating oil solution is pumped into the dip tank as needed for the treatment process. The poles are treated by either placing the entire length of the pole in the tank or by standing the pole in the tank to treat only the butt-end of the pole. After treatment, the wood-treating oil solution is drained from the dip tank back into the ASTs. The treated poles are allowed to drip the excess oil in the dip tank for several hours. Once dry, Pettibones and a crane are used to move poles to the treated pole storage area until shipment. The facility typically treats approximately 150 poles per batch once a week and is in operation 8 hours per day, five days per week, with an annual plant closure in December, January and February.

Several investigations have occurred at the PI facility since the Fall of 2000 regarding air emissions from the dip tank. IDEQ surface soil sample results indicated PAH and PCP contamination greater than industrial soil PRGs at the PI facility. The IDHW used a computer modeling technique to prepare a draft report which recommended air monitoring to address health concerns in the area.

In August 2001, the START-2 conducted Phase 1 IA sampling events at the PI facility. Eighty seven samples were collected, including on-site surface and subsurface soils, dip tank oil and sludge, Pend Oreille River sediments, on-site groundwater, residential and School surface soils, wall and light fixture wipe samples from the School, on- and off-site ambient air and QA samples. Seep samples were not collected as no seeps were found along the Pend Oreille River bluff north of the PI facility. Due to the proximity of the oil storage tanks to the Pend Oreille River, a SPCC inspection was conducted. Secondary containment walls for the ASTs consisted of treated poles placed lengthwise around the perimeter of the storage area. Soil mounded next to the poles on the inside of the containment may assist in preventing oil from going under the poles, but breaches noted between the secondary containment wall poles significantly reduce the capacity of the secondary containment area. These walls and the native soil floor inside the containment area did not appear to be sufficiently impervious to oil, therefore the AST area has inadequate secondary containment. The dip tank does not have any secondary containment.

The facility also does not have a complete SPCC plan.

In September 2001, a dip tank integrity study was performed by MCS on behalf of PI. Tests indicated several cracks that penetrated through the tank floor and walls. All weld and wall cracks were repaired by MCS after the inspection.

9.1 SOURCES

Samples were collected from the dip tank and three on-site soil source areas. Analytical data for the dip tank product samples indicate that this wood-treating oil is a source of SVOCs. Ten PAHs were detected in the two dip tank product samples at concentrations between 150 mg/kg and 11,000 mg/kg. PCP was detected in the two dip tank product samples at concentrations between 39,000 mg/kg and 72,000 mg/kg. The most notable constituents of the oil samples include percent concentrations of PCP and the PAHs 1-methylnaphthalene, 2-methylnaphthalene, fluorene and phenanthrene.

The on-site soil sources, including the TP area, pole yard and PCP bag disposal area, contained significant concentrations of SVOCs, TAL inorganic elements and/or VOCs. The TAL inorganic elements and VOCs are not known to be associated with operations at the PI facility, therefore these contaminants will not be considered attributable to site activities. PCP was detected at significant concentrations in four of five TP surface soil samples at concentrations between 75 µg/kg and 270,000 µg/kg. Eleven PAHs were detected in seven of fourteen TP subsurface soil samples at concentrations between 41 µg/kg and 550,000 µg/kg. PCP was detected in nine of fourteen TP subsurface soil samples at concentrations between 2,100 µg/kg and 1,700,000 µg/kg. Thirteen PAHs were detected in four of six pole yard area surface soil samples at concentrations between 37 µg/kg and 6,400 µg/kg. PCP was detected in five of six pole yard area surface soil samples at concentrations between 8,000 µg/kg and 600,000 µg/kg. Six PAHs were detected in the PCP sack area surface soil sample at concentrations between 44 µg/kg and 130 µg/kg. PCP was detected in the PCP sack area surface soil sample at a concentration of 4,000 µg/kg.

Oil stains and/or petroleum odors were observed in one surface and five subsurface soil samples collected from the TP area at depths ranging from 0 to 52 feet bgs. No samples were collected between 6 inches and 35 feet bgs, therefore contaminants in this depth range (if any) were not determined. Samples were not collected immediately below the partially buried dip tank where the potential for significant contamination exists. Several TAL inorganics were detected in subsurface soils in the TP area, but none of these contaminants are considered attributable to site activities as there is no known historical use at the PI facility. PCP was the most prevalent significant contaminant in subsurface soils at

the TP facility. In the TP area, the highest SVOC surface and subsurface soil contamination generally occurred in the closest samples to the dip tank. Visibly contaminated soil, odors and elevated organic vapors were not noted in Pole Yard surface soils, but five of six pole yard surface soil samples contained elevated concentrations of PCP.

9.2 TARGETS

This section addresses the sample results as they relate to the groundwater, surface water, soil exposure and air pathways.

9.2.1 Groundwater Migration Pathway

Phase 1 groundwater samples collected from on-site monitoring wells and boreholes contained elevated concentrations of Pesticides, SVOCs, TAL inorganic elements and VOCs. Off-site groundwater samples were not collected and none of the boreholes were developed as monitoring wells prior to sample collection, therefore these results are for informational purposes only. Six PAHs were detected in two of five Phase 1 groundwater samples at concentrations between 1 µg/L and 25 µg/L. PCP was detected in five of five Phase 1 groundwater samples at concentrations between 41 µg/L and 1,300 µg/L. PAHs were not detected in any of the three Phase 2 groundwater monitoring well samples. PCP was detected in one of three Phase 2 groundwater samples at a concentration of 46 µg/L. Results from the Phase 2 wells were generally significantly lower than the same Phase 1 boreholes, likely due to the removal of dissolved solids in the water from well development and purging prior to Phase 2 sample collection. Pesticides, TAL inorganics and VOCs detected in groundwater samples are not known to be associated with operations at the PI facility and therefore will not be considered attributable to site activities. The most notable constituent in the groundwater samples was PCP which exceeded PRGs in all five Phase 1 groundwater samples and in one of three Phase 2 groundwater samples. Groundwater flow was to the east-northeast (towards the Pend Oreille River) based on IDEQ well measurements in October 2001. The TP is approximately 400 feet south of the Pend Oreille River. Based on these groundwater sample results, the groundwater flow direction and the relatively short distance from the TP to the Pend Oreille River, it is possible that contamination from the PI facility could migrate through the groundwater pathway to the Pend Oreille River.

9.2.2 Surface Water Migration Pathway

Lead was the only contaminant detected at an elevated concentration in the Pend Oreille River sediment samples. Pesticides, TAL inorganics and VOCs detected in the sediment samples are not

known to be associated with operations at the PI facility, therefore these contaminants will not be considered attributable to site activities. PCP was detected in one of three Pend Oreille River sediment samples at a concentration of 97 µg/kg. PAHs were not detected in any of the three Pend Oreille River samples.

No SVOCs were detected at elevated concentrations in the Pend Oreille River sediment samples, therefore it does not appear that contamination is migrating to the Pend Oreille River overland from the PI facility based on these sample results. Surface water samples were not collected for the IA at the direction of the EPA site assessment manager.

9.2.3 Soil Exposure Pathway

On-site surface soil samples contained significant concentrations of PCP and the TAL inorganic elements lead and nickel. The on-site nickel and lead surface soil sample results are not known to be associated with operations at the PI facility, therefore these contaminants will not be considered attributable to site activities. Ten people employed at the PI Facility, in addition to trespassers with access to the unsecured PI property, are potentially exposed to the PCP contamination.

Off-site surface soil samples contained elevated concentrations of Pesticides, TAL inorganic elements and VOCs. These contaminants are not known to be associated with operations at the PI facility and therefore will not be considered attributable to site activities. No SVOCs, including PCP and PAHs, were detected at elevated concentrations in the off-site surface soil samples. Based on surface soil sample results from the nearby residence and the School, the PI facility did not contribute to off-site surface soil contamination. The surface soil sample collected from the yard of the nearest resident (approximately 0.1 mile west of the facility sources) contained elevated concentrations of Pesticides and the TAL inorganic element mercury. The Pesticide results are likely related to the personal use of these Pesticides at the residence and are not related to business practices at the PI facility. The mercury result was slightly above the adjusted CRDL and is not known to be related to operations at the PI facility. PCP and other contaminants of concern from the PCP/oil-treating solution were not detected above the CRQL in the surface soil samples from the nearby residence or from the School.

9.2.4 Air Migration Pathway

Ambient air samples were collected for three consecutive 24-hour sampling periods during facility treatment operations and contained elevated concentrations of SVOCs including PCP. All of these detected analytes were also detected in on-site source surface soils except benzoic acid, which is not a

CLP analyte. Significant concentrations of SVOCs were observed in downwind samples during all three sampling periods and up to 0.3 mile downwind of the site. Maximum ambient air concentrations were observed at the TP area and at the adjacent residence. Concentrations of PCP in ambient air samples exceeded PRGs in on-site locations each day of sampling in the area near the TP and 2-methylnaphthalene concentrations exceeded PRGs at the adjacent residence on the first day of sampling and near the TP on the second and third days of sample collection. A total of six PAHs were detected in all 24 ambient air samples at concentrations between 0.01 $\mu g/m^3$ and 35.48 $\mu g/m^3$. PCP was detected in nine of the 24 ambient air samples at concentrations between 0.01 $\mu g/m^3$ and 1.48 $\mu g/m^3$. SVOCs were detected at elevated concentrations in five of nine off-site ambient air samples, therefore it appears that contamination is migrating off-site via the air migration pathway.

No PAHs or PCP were detected in any of the four wipe samples collected from the walls and light fixtures of Classroom 1 at the School, therefore it does not appear that contamination is migrating to the School interior via the air pathway.

9.3 CONCLUSIONS

Results from the IA indicate that PCP and other SVOCs have been released to on-site surface and subsurface soils. Based on three sediment sample results, contaminants do not appear to have been released to the Pend Oreille River through surface water runoff. The contaminants detected in the visually stained subsurface soil may leach and migrate to groundwater and toward the Pend Oreille River. The IA further documented that on-site workers are likely being exposed to on-site surface soil contaminants. Based on off-site surface soil and wipe sample results, it does not appear that soil contamination is migrating from the site through wind deposition. However, the ambient air sample results indicate some migration of SVOCs including PCP. A possible explanation for this inconsistency is that contaminants from the wood-treating process may be migrating in a vapor or gaseous form.

10. REFERENCES

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