US EPA RECORDS CENTER REGION 5
1000708

CURRENT CONDITIONS REPORT

Prepared for

Keystone Steel & Wire

KEYSTONE STEEL & WIRE COMPANY
PEORIA, ILLINOIS

USEPA Facility ID Number: ILD 000 714 881

For submission to:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 5
ENFORCEMENT & COMPLIANCE ASSURANCE BRANCH
WASTE, PESTICIDES, & TOXICS DIVISION

February 2001

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CURRENT CONDITIONS REPORT

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In Association with

Administrative Order on Consent

For submission to:

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1.0 INTRODUCTION

This Current Conditions Report (Report) has been prepared in accordance with Condition 15.a of the Administrative Order on Consent (AOC) between Keystone Consolidated Industries, Inc. (Keystone) and the United States Environmental Protection Agency (USEPA), Region 5 (effective date December 20, 2000). The Report provides a brief summary of the history and current status of operations, potential areas of concern, and corrective actions at Keystone's Peoria, Illinois facility.

This Report includes a summary and discussion of all areas of concern noted during the 1987 visual site inspection by USEPA that were included in the1989 RCRA Facility Assessment (RFA) Report. Analytical data that have been collected at the facility since the 1987 RFA sampling event are also presented and summarized herein. Note that for brevity, constituent concentrations cited in the following sections represent the maximum concentration observed in the area at the time of the sampling.

Data presented in the1989 RFA included background sample results and tables of medium range soil concentrations reproduced from *Median Elemental Composition of Soils* (McClanahan, 1984) for various elements and cyanide. The analytical data have been compared to these benchmarks when summarizing the findings presented in the RFA report. Where applicable, the data are also compared to the risk-based screening levels published in the USEPA Region 9 Preliminary Remediation Goals (revised 11/01/00), as an alternative measure of potential constituent impact.

Several corrective actions have been undertaken at the facility since the 1989 RFA, and several areas of the plant are currently in various stages of closure in association with a 1993 Consent Order with the State of Illinois. The history and current status of these activities (and the units or areas that they address) are presented as a separate section of this Report.

2.0 PHYSICAL SETTING AND HISTORICAL OPERATIONS

The subject site is a Keystone facility located just south of the City of Peoria, Illinois in the township of Limestone, village of Bartonville, approximately one-half mile west of the Illinois River (see **Figure 2-1**). Keystone's property lies within Illinois Sections 25 and 36 of Township 8 North, Range 7 East and Sections 30 and 31 of Township 8 North, Range 8 East.

The plant is located in the floodplain of the Illinois River and Kickapoo Creek. A series of flood and railroad levees surround and pass through the facility, protecting the plant areas from flooding. Keystone's property is roughly bounded by Interstate 474 to the northeast, Illinois State Route 24 (Adams Street) to the west, and the Illinois River to the southeast.

The flood and railroad levees divide Keystone's plant into three main areas, which are designated as the Steel Works, Mid Mill, and Wire Mill. Three portions of Keystone's property are leased to and occupied by industrial tenants. The leased areas are a scrap yard (operated by Scrap Products Incorporated until1999, and Alter Recycling Corporation to present) and a wire coating & aluminizing facility (Page II from 1989 to 2001, presently MMI Products Inc.) located north of the Steel Works complex; a copper and grey iron foundry (Illini Foundry Company) and a welder manufacturer (Sommers Products) located south of the Mid Mill; and a slag processing area (previously leased by International Mill Services and Cullinan, currently leased to Levy Company/ Midwest Mill Services) located southeast of the Steel Works. The plant and tenant areas are identified on **Figure 2-2**. A plan-sized facility map of the entire site, upon which the specific areas described in later sections of this Report are identified, is included as **Figure A-1** in **Appendix A**.

The facility produces steel rod and wire products from scrap metal (SIC Codes 3312 and 3315). Scrap metal is purchased and delivered to the site by rail, barge, or truck, where it is sorted, sheared, and baled as necessary. Prepared scrap material is brought to the Steel Works where it is melted in an electric arc furnace and cast into 5-inch by 5-inch by 50-foot long steel billets. These billets are then reheated and processed through a rolling mill, which forms the steel into rod coils.

The steel rod produced in the Steel Works can be sold directly to other steel wire product manufacturers, or taken to the Mid Mill or Wire Mill on site for further processing. In the Mid Mill, the steel rod is drawn into wire and can be galvanized. The Mid Mill industrial wire is produced to meet buyer specifications and are sold wholesale to off-site manufacturers and resellers. Steel rod taken to the Wire Mill is drawn into wire for use in on-site manufacturing processes. The wire may be coated or galvanized and is used to make Keystone brand name consumer products. Keystone's manufactured product lines include: wire panels, agricultural and consumer fencing, welded wire fabrics, netting, barbed wire, and nails.

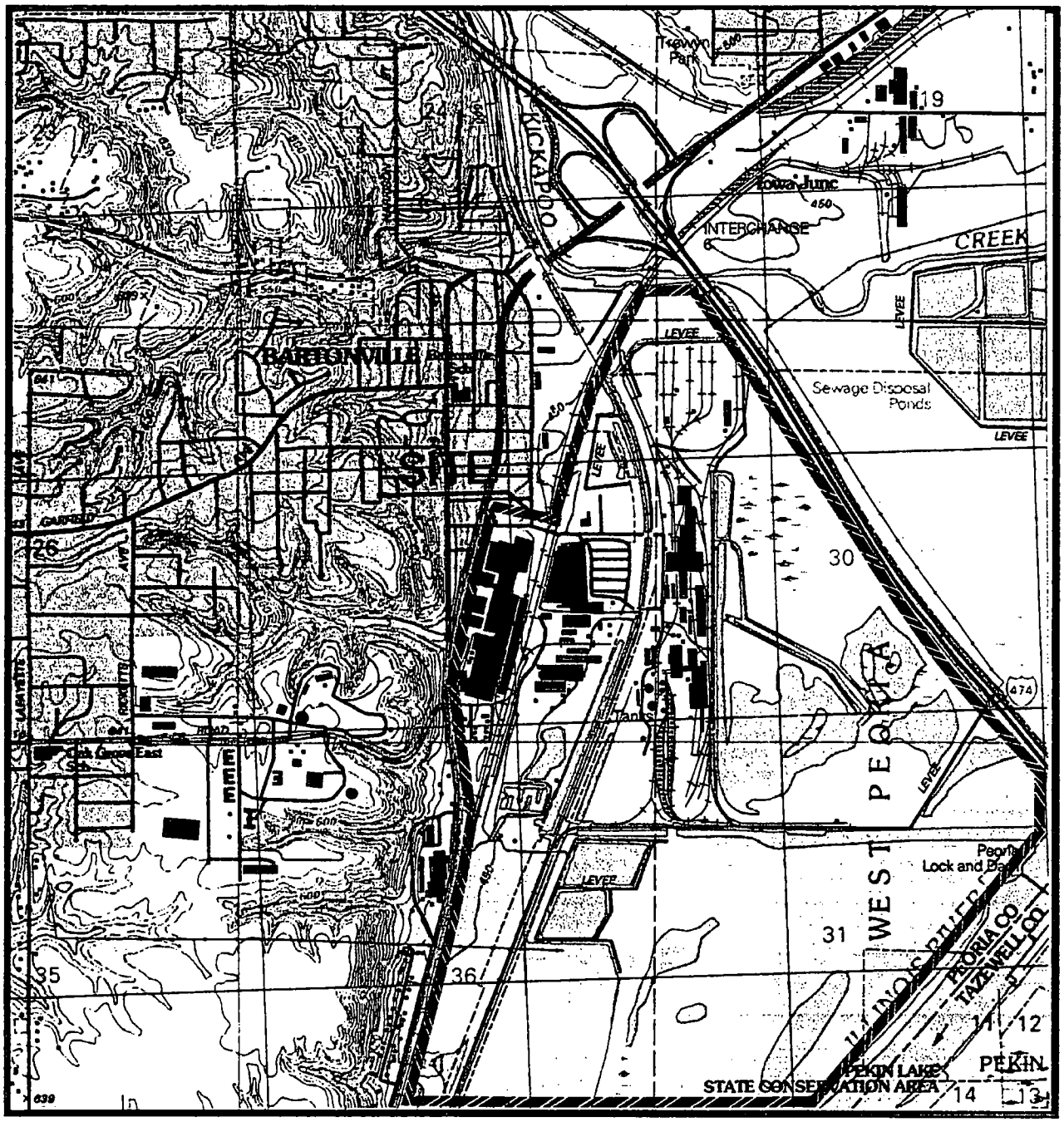
The Keystone Steel Works and Wire Mill were constructed in the early 1900s to produce steel rod and wire products. Steel melting was originally conducted in open-hearth furnaces. The plant was a major supplier of steel products during World Wars I and II. In the 1950s, the Mid Mill was constructed, adding wire production capacity. In the late 1960s, two electric arc furnaces and a vertical continuous caster were installed in order to phase-out operation of the more expensive and time-consuming open-hearth furnaces and ingot teeming/billet rolling

processes. A wastewater treatment plant and several sludge settling/drying lagoons were constructed at this time to treat process water from the Wire Mill and Mid Mill.

In the 1970s, all but one steam boiler was converted to natural gas use. The remaining oil-fired boiler was kept for use when natural gas curtailments are imposed or during maintenance of the natural gas boiler. In the early 1990s, one electric scrap melting furnace was removed and converted into a smaller electric arc ladle furnace. In 1996-1997, several large volume oil storage tanks were decommissioned, closed, and removed from the site. Only one large volume tank remains, which is used to store No. 2 fuel oil for the backup steam boiler. A new continuous caster was installed in 1998 to replace the 1967 vertical continuous caster.

Keystone submitted a RCRA Part A permit application in 1980 in which it proposed the permitting of five units. These units were a 300,000 cubic yard K061 waste pile, a 180 acre-foot K061 landfill, a 20,000 gallon per day discharge of K062 to on-site surface impoundments, a 20,000 gallon per day treatment of K062 in a surface impoundment, and a 36,500,000 gallon surface impoundment. In 1982, Keystone submitted a petition to withdraw the RCRA Part A Permit Application since it had decided not to implement the K061 waste pile and K061 landfill. In addition, the other three units were considered to be in–process components of the K062 wastewater treatment system; the effluent of which was regulated under the facility's NPDES permit, and the by-product of which had been delisted (formerly K063). In February 1983, USEPA approved Keystone's petition to withdraw its Part A Permit Application.

In August 1983, representatives of the Illinois Environmental Protection Agency (IEPA) conducted a site investigation and concluded that Keystone was managing hazardous waste in unpermitted surface impoundments. In 1985, USEPA filed a complaint against Keystone for having used a series of surface impoundments to manage spent pickle liquor (K062) without a RCRA Permit. In June1988, Keystone entered a Consent Decree with USEPA to close the unpermitted surface impoundments and other units as required by RCRA, in coordination with IEPA (the agency with RCRA implementation authority in Illinois). In July 1993, Keystone entered a Consent Decree with the State of Illinois to close nine units and establish a groundwater management zone (GMZ).



SCALE 1:24000

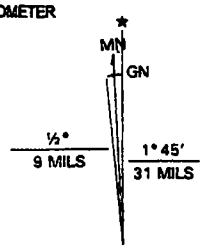
1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

QUADRANGLE LOCATION

Contour interval: 10 feet
Source: Peoria West Quadrangle
Illinois, 7.5 Minute Series
U.S.G.S. Topographic Map



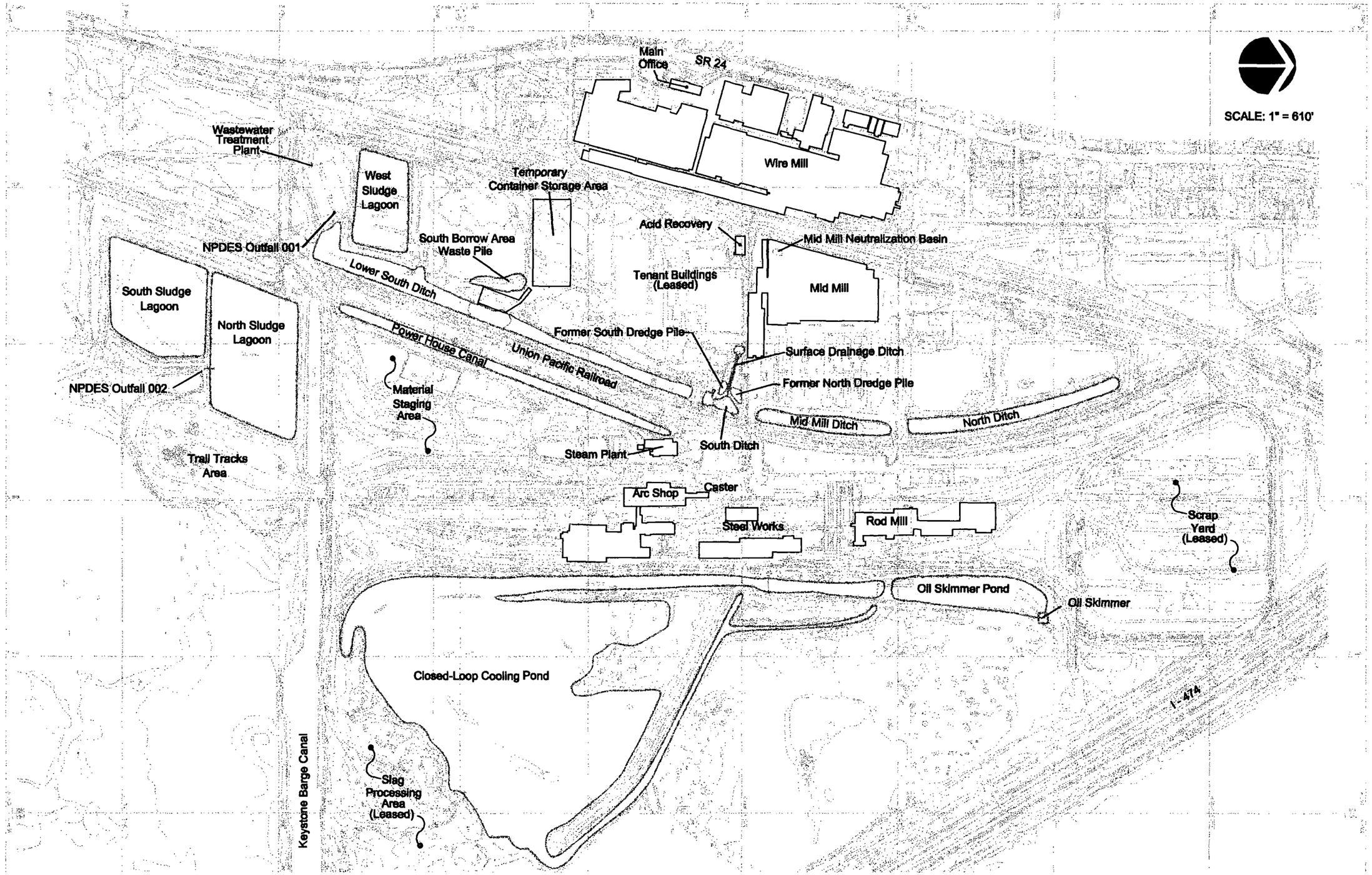
UTM GRID AND 1997 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Keystone Steel & Wire — Peoria, Illinois

SITE MAP

FIGURE 2-1

1670-012 1=1 12-21-98 RCW 20010



1670-076 1=610 colregen 02-16-01 RCW 1670.40007 MTP

Keystone Steel & Wire Company - Peoria, Illinois

FACILITY SITE PLAN

FIGURE 2-2

3.0 AREAS IDENTIFIED IN USEPA'S 2000 ORDER ON CONSENT

Based upon the November 1999 USEPA site visit to Keystone, five of the units noted in the 1989 RFA that were not already undergoing closure under a 1993 Consent Order with IEPA were itemized in the AOC for further assessment. These five units are identified as the Sheen Pond, F-Pond, Tail Tracks Landfill, East Pond, and Oil Skimming Basin. The locations of these units at the Keystone facility are indicated on the site plan drawing (**Figure A-1**) included at **Appendix A** of this Report.

3.1 Sheen Pond

The "Sheen Pond" (as referenced in the USEPA RFA) is a borrow area created during the construction of the Union Pacific railroad levee around 1917. This area is located in the northern portion of the plant. Rainfall run-off from the adjacent railroad tracks and plant driveways is the only source of water to the area.

Two soil samples were collected from this location during the 1987 RFA sampling event. The following metals were found in the 1987 Sheen Pond area soil samples at levels above the background concentrations observed during that sampling visit: arsenic (17 mg/kg), cadmium (13 mg/kg), calcium (32,500 mg/kg), chromium (54 mg/kg), copper (56 mg/kg), lead (232 mg/kg), magnesium (12,800 mg/kg), and zinc (1,490 mg/kg). A polychlorinated biphenyl (PCB), Aroclor-1254, was also observed in both samples, with a maximum concentration of 0.47 mg/kg.

The RFA states that the area was a "depression identified on aerial photos as a pond with a sheen." However, there was no liquid present in the depression during the 1987 RFA sampling, and the area remains dry and is overgrown with trees and brush. It was also noted in the RFA Sampling Report that the area was "surrounded by large amounts of construction/ demolition debris." Some concrete debris is visible among the overgrowth of vegetation in the area.

Cadmium was the only metal found in the RFA samples above the medium range soil concentrations (MRSCs) as cited in Table 1 of the RFA Data Evaluation Report (reproduced herein at **Appendix B**). However, the observed cadmium concentration is well below the EPA Region 9 Preliminary Remediation Goal (PRG) of 210 mg/kg. The maximum concentration of the PCB compound detected in the soil samples (Aroclor-1254) was slightly above the residential PRG of 0.22 mg/kg but below the industrial level of 1.0 mg/kg.

The status of the Sheen Pond has remained relatively unchanged since the RFA sampling activities in 1987. It is a natural area bounded by the railroad levee and a plant driveway. Keystone is not aware of any past industrial activity in this part of the facility, nor is any such activity depicted in the historical aerial photographs of the site. However, the presence of cadmium and Aroclor-1254 in the 1987 RFA samples indicates that some impact has occurred at this location. The source and extent of the impact is not known at this time, but the comparison of the detected concentrations to the EPA-established PRGs indicates that they do not pose an unacceptable risk for industrial land use.

3.2 F-Pond

The F-Pond is located on the southern portion of the property, south of the North Sludge Lagoon and between the South Sludge Lagoon and the Tail Tracks Area. The capacity of this pond is unknown. The F-Pond is part of a natural depression that predates Keystone. The eastern border of the pond is the edge of the fill area upon which the bed for the railroad spur in the Tail Tracks Area was constructed. Review of historical information shows that no known industrial activities have occurred at this pond.

Keystone's wastewater treatment plant (WWTP) and sludge lagoons were constructed in the late 1960s, began operating in 1968-1969. The sludge lagoons were constructed east of the Union Pacific Railroad, adjacent to the F-Pond and the Tail Tracks Area. The facility's discharge permit (IEPA NPDES Permit No. IL 0002526) imposes effluent limits on the WWTP and the sludge lagoons for pH, ammonia, total suspended solids (TSS), oil and grease, lead, zinc, iron, fluoride, boron, copper, cyanide, and total dissolved solids (TDS). The discharges from the wastewater treatment plant sedimentation basin, the West Sludge Lagoon, and the South Sludge Lagoon were routed through an earthen channel around the west and south of the levee surrounding the new lagoons to Mud Lake, which empties into the Illinois River. The effluent from the North Sludge Lagoon flows through another channel that directs the discharge around the west side of the F-Pond to Mud Lake. The outfall from the South Sludge Lagoon was closed in 1998 when the lagoon was taken out of service. The area has otherwise remained unchanged since the RFA sampling activities were conducted in 1987.

One sediment sample and three surface water samples were collected from the F-Pond during the 1987 RFA sampling visit. The sediment sample was observed to contain the following volatile organic compounds: trans-1,2-dichloroethene (58 µg/kg), trichloroethene (420 µg/kg), and total xylenes (60 µg/kg). The metals detected in the sediment sample above those observed in the background soil samples included: barium (371 mg/kg), cadmium (14 mg/kg), calcium (170,000 mg/kg), chromium (59 mg/kg), copper (64 mg/kg), lead (12,700 mg/kg), mercury (0.93 mg/kg), sodium (721 mg/kg), and zinc (1,930 mg/kg).

The results for the three surface water samples collected from the F-Pond indicated the presence of volatile organic compounds and metals. The organic compounds detected in these samples were 1,1-dichloroethane (5 µg/L), trans-1,2-dichloroethene (8 µg/L), trichloroethene (38 µg/L), and total xylenes (5 µg/L). Trichlorethene (TCE) was detected in all three samples, the other compounds were only observed in one sample. TCE and 1,1-dichloroethane were observed at concentrations that are slightly above their current tap water PRGs for these compounds (1.6 µg/L and 2 µg/L, respectively). Metals detected in the aqueous samples included: aluminum (10,300 µg/L), barium (91 µg/L), cadmium (5.3 µg/L), calcium (336,000 µg/L), chromium (31 µg/L), iron (12,900 µg/L), lead (1,890 µg/L), magnesium (50,700 µg/L), manganese (1,120 µg/L), potassium (24,200 µg/L), sodium (99,600 µg/L), and zinc (380 µg/L).

The RFA sediment sample from the F-Pond contained cadmium and lead at concentrations above the MRSCs and industrial PRGs for these metals. The concentrations of all three of the organic compounds that were detected in the soil sample (trans-1,2-dichloroethene, TCE, and total xylenes) are several orders of magnitude below the residential PRGs. Aqueous iron and manganese concentrations were slightly above the tap water PRGs (11,000 µg/L and

880 µg/L, respectively). No tap water PRGs are listed for calcium, magnesium, potassium, sodium, or lead. There are no drinking water standards for calcium, magnesium, potassium, or sodium (although there is a secondary standard for total dissolved solids), but the observed aqueous concentration of lead was above the current federal drinking water action level of 15 µg/L.

3.3 Tail Tracks Landfill (Land Treatment Area, K061 Landfill)

The Tail Tracks Area is located on the southernmost end of the developed portion of Keystone's property (south of Steel Works). The Tail Tracks Landfill is located along the southeastern and southern edges of the Tail Tracks Area. The landfill was originally used by Keystone for construction debris, and from 1970 until 1976 it also received electric arc furnace (EAF) dust. Arc Shop dust was later listed as a hazardous waste by USEPA in 1981 (K061). In December 1977, the U.S. Army Corps of Engineers (ACOE) required Keystone to apply for an after-the-fact permit for the existing landfill, and to cover the landfill area with a minimum of two feet of compacted clay. Keystone subsequently submitted a permit application in January 1978 to the ACOE and IEPA to close the landfill.

In January 1978, the U.S. Department of the Army granted a permit for Keystone to implement the closure plan at the Tail Tracks Landfill (Permit No. I3407802). The IEPA Division of Land/Noise Pollution Control approved the closure plan in June 1978. The approved closure plan required the installation of a clay cap over the EAF dust landfill, followed by groundwater monitoring in the area. Capping of the landfill was completed in October 1978 (the cap was approved by ACOE on October 13, 1978). Subsequently, water samples were collected quarterly at four monitoring locations (two surface water and two groundwater) for three years. Annually during this monitoring period, IEPA split samples with Keystone for independent analysis.

IEPA required that the aqueous samples be analyzed for total iron, chloride, sulfate, chemical oxygen demand, ammonia, and residue on evaporation (total solids). Keystone also procured analyses for boron, alkalinity, hardness, pH, and the following metals (dissolved): copper, chromium, calcium, lead, magnesium, manganese, potassium, and zinc. The results of each sampling event were reported to IEPA. The last quarterly monitoring report was submitted on January 18, 1982, and all of the data indicated that no release of hazardous waste or hazardous materials to the environment had occurred. In December 1979, IEPA required Keystone to file a plat recording location of the landfill on the facility's property deed. Keystone also submitted a Notification of Hazardous Waste Site to USEPA in May 1981 for the landfill.

Two soil samples were collected from the Tail Tracks Landfill Area during the 1987 RFA sampling visit. The analytical results for these samples indicated that no contaminants were present at levels significantly above those found in the background samples collected at the time. This finding is consistent with the fact that a clay cover had been placed on the landfill during its closure in 1978, especially considering that the RFA samples were collected from the top one-foot of soil. The available data indicate that the landfill closure activities completed in 1978 appear to have effectively excluded human exposure to, and release into the environment of the capped material. This area has remained unchanged since the RFA sampling event in 1987.

The clay cover could have prevented exposure contact but there is no detailed gw study to demonstrate that the LF is not leaking

3.4 East Pond (Pond, Green Bottom Pond)

The East Pond was identified in the 1989 RFA as a small depression located east of the Tail Tracks Area. It is located just south of the Keystone Barge Canal, at the northern end of the Tail Tracks Area. The capacity of the Pond is unknown. The F-Pond is part of a natural depression that predates Keystone. The western border of the pond is the edge of the fill area upon which the bed for the railroad spur in the Tail Tracks Area was constructed. Review of historical information shows that no known industrial activities have occurred at this pond. The East Pond has remained unchanged since the RFA activities in 1987.

One sediment sample was collected from the pond as part of the 1987 RFA sampling visit. The following were detected in this sample at concentrations above those observed in the RFA background samples: calcium (164,000 mg/kg), chromium (56 mg/kg), copper (42 mg/kg), lead (569 mg/kg), sodium (513 mg/kg), and zinc (1,140 mg/kg). However, the concentrations of all of these metals are within the MRSC and are below the available residential soil PRGs (except for lead, which is slightly above the residential PRG of 400 mg/kg but below the industrial PRG of 750 mg/kg).

3.5 Oil Skimming Basin (Northern Cooling Pond, Skimming Pond)

The Skimming Basin was constructed in 1991 when the northernmost section of the Closed-Loop Cooling Pond channel (running parallel to the Steel Works) was isolated from the rest of the system. The entire cooling pond encompasses about 92 acres, and is separated from its surroundings by a flood levee. The cooling pond is operated in a recirculating mode that provides (and recycles) approximately 16 million gallons per day (MGD) of contact cooling water to the Steel Works. The pond also serves as the water source for the Steel Works fire protection system.

Used cooling water is discharged into the Oil Skimming Basin and then returned back to the inlet of the Cooling Pond. Blowdown from the cycle is directed to the Keystone's on-site WWTP and discharged under the NPDES Permit to the Illinois River. The estimated capacity of the Cooling Pond is 5,800,000 cubic feet (43,384,000 gallons), which provides about three days hydraulic retention time for environmental cooling to take place. The water level in the Cooling Pond is maintained using the water recycled from the Steel Works contact cooling systems, well water from an on-site production well, water pumped from the Illinois River, storm water run-off from the scrap processing yard (Alter Recycling), and storm water run-off from the Steel Works.

During an IEPA inspection of the facility on August 25, 1988, it was noted that the Closed-Loop Cooling Pond was receiving contact cooling water without a wastewater permit. IEPA requested that Keystone submit an application for a permit. Keystone prepared and submitted a wastewater permit application for the Cooling Pond to IEPA on September 28, 1990. The Closed-loop Cooling Pond is currently operated under IEPA Permit No. 2000-EB-0862.

On September 13, 1991, IEPA granted a supplemental permit to construct two dikes across the Cooling Pond channel to create an oil-skimming basin (7,113,000-gallon capacity). The permit allowed Keystone to: (1) re-route discharge pipes from Scale Pit 1 and the contact cooling water return system to the southern end of the newly created skimming basin, (2) install

a concrete intake structure at the far north end of the basin, and (3) install a 48-inch gravity flow pipe to carry discharge from the northeast corner of the new basin to the inlet of the Closed-Loop Cooling Pond.

A belt skimmer at the northeast corner of the Oil Skimmer Basin is used to collect residual oil and grease that is transferred to the water during the contact cooling process. The skimmer is located near the outfall for the basin (a concrete weir and catch basin) that empties through a gravity-flow pipe to the Closed-Loop Cooling Pond inlet channel. In 1998, the Oil Skimming Basin also began receiving the water discharged from an oil water separator that was installed in the scrap yard (the tenant area occupied at the time by Scrap Products Incorporated – see **Section 5.4** for further discussion).

Several groundwater monitoring wells (CL-1 through CL-5) were installed on the eastern (downgradient) edge of the Cooling Pond in early 1991. As a condition of the original NPDES Permit for the basin, Keystone was required to conduct quarterly groundwater monitoring at these wells for TDS, pH, boron, copper, chromium, nickel, manganese, iron, and zinc. The sampling results were used to assess whether the Cooling Pond (including the skimming basin) was having any impact on the surrounding groundwater.

From June 1991 through June 1995, groundwater samples were collected quarterly, and concentrations of dissolved copper, chromium, and nickel were consistently below the analytical detection limit. The quarterly sampling data also indicated that manganese appeared to be the only constituent of concern since it exceeded the secondary federal drinking water standard of 50 µg/l. Based upon these sampling results, IEPA modified the groundwater monitoring parameters to include only TDS, manganese, iron, and boron in the June 4, 1998 permit renewal. The current permit (issued July 17, 2000) requires a year of quarterly sampling for total manganese, total iron, TDS, temperature, pH, Eh, and specific conductance.

A review of available literature has inidicated that the concentration of manganese in groundwater can be influenced by recharge through organic-rich sediment, such as that present in a swamp, bog, backwater, lake, or river. Analytical data published by the Illinois Department of Energy and Natural Resources indicates that sediment from backwater lakes associated with the Illinois River characteristically contain an average of 800 ± 200 mg/kg of manganese (as manganese oxide). Manganese continues to be observed in the groundwater samples, but the observed concentrations have remained below the tap water PRG of 880 µ/L. The presence of manganese in these samples is currently thought to be due to leaching from the sediment in the area (a historical backwater of the Illinois River), and not related to operation of the Cooling Pond. All of the groundwater sample results collected since 1991 indicate that the Oil Skimming Basin and Closed-Loop Cooling Pond are not impacting the surrounding groundwater.

At the time of the RFA in 1989, the berms isolating the Oil Skimming Basin from the rest of the Cooling Pond had not yet been constructed. Two surface water samples were obtained from the Cooling Pond during the 1987 RFA sampling visit. One sample was obtained from the southern portion of the main cooling pond area (identified as the "Southern Pond"), the other sample was obtained from an area that is assumed to be in the general vicinity of what is now the Oil Skimming Basin (identified as the "Northern Pond"). Neither sample showed any evidence of contaminants.

4.0 ADDITIONAL AREAS IDENTIFIED IN USEPA'S 1989 RFA

4.1 East Sludge/Waste Pond

The natural depression identified as the East Sludge/Waste Pond in the 1989 RFA is located east of the Closed-Loop Cooling Pond, west of I-474, and north of the Keystone Barge Canal. It is adjacent to the tenant area that is used for slag processing, which is currently operated by Levy Company. Levy processes the non-hazardous slag generated by Keystone's electric arc furnace (EAF) into aggregate. The so-called East Sludge/Waste Pond receives some surface run-off from the slag processing area, and has in the past received overflow from the Closed-Loop Cooling Pond during heavy storm events. This area is not used for the deposition of sludge or solid wastes from the facility, and is simply part of the historical flood plain of the Illinois River that has been isolated by the construction of I-474 and various plant levees.

Two samples, one surface water and one sediment, were collected from the East Sludge/Waste Pond area during the 1987 RFA sampling visit. The surface water sample was taken from the north side of the Pond and found to contain the following metals: aluminum (38 µg/L), barium (56 µg/L), calcium (58,600 µg/L), chromium (78 µg/L), iron (22 µg/L), magnesium (6,540 µg/L), manganese (3.2 µg/L), potassium (17,300 µg/L), sodium (46,500 µg/L), and vanadium (12 µg/L).

None of the metals detected in the surface water sample were present at concentrations above the respective tap water PRGs. Quarterly groundwater sampling conducted since 1991 at wells located between the Closed-loop Cooling Pond and the East Sludge/Waste Pond indicated manganese as a possible groundwater constituent of concern in the area, exceeding the secondary drinking water standard of 50 µg/l but not the tap water PRG of 880 µg/L. The presence of manganese in these groundwater samples, however, may be due to leaching from the natural sediment in the Illinois River floodplain (see the discussion in **Sections 3.5** above).

The RFA sediment sample was collected from the southwest corner of the Pond. The following metals were found in this sediment sample at levels greater than the background sample concentrations: antimony (16 mg/kg), barium (279 mg/kg), cadmium (48 mg/kg), calcium (288,000 mg/kg), chromium (529 mg/kg), copper (174 mg/kg), iron (40,400 mg/kg), lead (1,810 mg/kg), magnesium (22,400 mg/kg), manganese (5,870 mg/kg), silver (2.4 mg/kg), sodium (540 mg/kg), vanadium (95 mg/kg), and zinc (10,100 mg/kg).

The soil concentrations of cadmium, lead, magnesium, and zinc were above the MRSCs identified in the RFA. In addition the concentrations of cadmium, iron, and manganese were above the PRGs for residential soil but below those for industrial soil; and lead and chromium concentrations were slightly above the industrial PRGs for those metals (750 and 450 mg/kg, respectively).

4.2 North and South Sludge Lagoons

The North and South Sludge Lagoons are located on the southernmost portion of the developed area of Keystone's property. The Lagoons receive sludge produced in the sedimentation basin of the on-site WWTP. The WWTP uses lime addition to stabilize and

precipitate metals and suspended solids from Keystone's process wastewater (including spent pickle liquor – listed hazardous waste K062) and collected storm water run-off. The North Sludge Lagoon and South Sludge Lagoon are each approximately 22 feet deep and occupy areas of 12 acres and 10 acres, respectively. Keystone constructed the lagoons in 1968.

The sediment in these basins consists of thickened sludge that has accumulated since they were placed in service. The interim-final rule promulgated by USEPA in May 1980 regarding the identification and listing of hazardous wastes, included the sludge from the treatment of spent pickle liquor from steel manufacturing as a hazardous waste (K063). However, on November 12, 1980, USEPA issued a national generic delisting of this material. Discharges from the North and South Sludge Lagoons are regulated in accordance with Keystone's NPDES permit (No. IL0002526). The South Sludge Lagoon no longer has an outfall, as it has been taken out of service.

Two samples were collected from the Sludge Lagoons during the 1987 RFA sampling visit. A surface water sample was collected from the North Sludge Lagoon and was found to contain barium (13 µg/L), calcium (336,000 µg/L), iron (2,170 µg/L), lead (10 µg/L), magnesium (33,100 µg/L), manganese (182 µg/L), potassium (5,160 µg/L), sodium (148,000 µg/L), and zinc (168 µg/L). A sediment sample was collected from the South Sludge Lagoon and was found to contain antimony (100 mg/kg), cadmium (96 mg/kg), calcium (118,000 mg/kg), chromium (230 mg/kg), cobalt (31, mg/kg), copper (82 mg/kg), iron (399,000 mg/kg), lead (4,000 mg/kg), manganese (2,140 mg/kg), nickel (204 mg/kg), sodium (311 mg/kg), and zinc (286,000 mg/kg).

May no longer be hz waste but it might releasing hz constituents approximately

None of the constituents in the water sample exceed tap water PRGs. The sediment sample collected from the South Sludge Lagoon contained antimony, cadmium, chromium, and manganese at levels above residential PRGs but below industrial PRGs. Iron, lead, and zinc were observed in the sediment sample at concentrations above industrial PRGs.

4.3 Mud Lake

Mud Lake is located on the southernmost portion of Keystone's property, on land that has remained undeveloped. It is a backwater lake that lies in a natural depression on the floodplain of the Illinois River. No industrial activities are known to have occurred in this area. The NPDES permitted discharges from the on-site WWTP and Sludge Lagoons flow through Mud Lake to the Illinois River.

Keystone's NPDES permit requires weekly sampling of the facility's three outfalls (the WWTP sedimentation basin effluent, West Sludge Lagoon overflow, and North Sludge Lagoon overflow). Monthly discharge monitoring reports are submitted to the IEPA to present the required sampling results. The sampling parameters vary by outfall and include pH, ammonia, TSS, oil and grease, lead, zinc, iron, fluoride, boron, copper, cyanide, and TDS. Historically, Keystone's monitoring data shows regular compliance with the permit limits. A recent excursion involving ammonia was traced to a specific process in the Wire Mill, and has been resolved. IEPA was notified of the excursion and was kept fully abreast of the situation and its resolution.

One surface water sample was collected from Mud Lake during the 1987 RFA sampling visit. The sample was found to contain aluminum (267 µg/L), barium (25 µg/L), calcium (133,000 µg/L), iron (1,900 µg/L), magnesium (21,900 µg/L), manganese (306 µg/L), potassium (9,630 µg/L), and sodium (57,400 µg/L). All constituents were found at levels below the applicable tap water PRGs, which indicates that there would be no significant risks from exposure to surface water from this area.

4.4 Hazardous Waste Drum Storage Area

The Hazardous Waste Drum Storage Area is a RCRA less-than-90-day storage area used by Keystone to manage plant-generated wastes (including waste paint, solvent, adsorbents and other hazardous wastes). The container storage area is located at the northeast corner of the Wire Mill complex. This designated container storage area is on a concrete slab measuring 25 feet by 40 feet, under cover, and protected from precipitation. No samples were collected in this area during the 1987 RFA sampling visit and no other samples are known to have been collected from this location. The Hazardous Waste Drum Storage Area is inspected by Keystone personnel on a weekly basis, and no spills or releases of hazardous materials are known to have occurred.

4.5 River Water Storage Pond (Pump House #4 Canal or Powerhouse Canal)

The River Water Storage Pond is located east of the Union Pacific Railroad tracks and west of the former Vertical Tank Area (only one of the former six tanks remains) and the Steam Plant Building (formerly known as the Powerhouse). This canal is used to supply water to the Steam Plant boilers. The canal receives some storm water run-off from the area immediately surrounding it, but mainly draws Illinois River water from the Keystone Barge Canal. The River Water Storage Pond was not sampled during the 1987 RFA sampling visit. It currently does not, and has not historically received any process water, hazardous waste, or hazardous material as had the ditches on the opposite (western) side of the Union Pacific Railroad line. For a further discussion of those on-site ditches (undergoing RCRA closure), see **Section 5.2** below.

4.6 Discarded Drum Storage Area (Material Staging Area)

The area described in the RFA as the "Discarded Drum Storage Area" is located north of the Tail Tracks area and south of the Steel Works Arc Shop. This area has been, and continues to be, used by the plant as a scrap steel management, sorting, and staging area. Scrap steel (that could include empty and/or crushed 55-gallon drums as noted in the RFA) is staged in this area before being processed in the electric arc furnace. There were no samples collected in this area during the 1987 RFA sampling visit. Keystone does not consider this area a hazardous material storage location and does not have knowledge of any past releases of hazardous waste or material in this part of the plant.

4.7 PCB/Asbestos Storage Area

Need some sampling to confirm no PCB spills prior to 1977 retrofitting of building

The PCB/Asbestos Storage Building is located south of the Steel Works Arc Shop. Keystone maintains the building to manage PCB transformer oil and asbestos generated at the facility during maintenance and renovation activities. Keystone retrofitted the Building for PCB storage in 1977. The Building is locked except during loading and unloading of material, and is

inspected monthly. Keystone stores asbestos waste in 55-gallon drums prior to transferring the material for off-site stabilization and disposal at the Tazewell County Landfill. The facility maintains an inventory of its PCB and PCB-containing transformers, which are being converted to non-PCB units. As PCB oil is generated, it is stored in this Building prior to being transferred off site for disposal by thermal destruction. There have been no known spills or releases of asbestos or PCB-contaminated oil at the facility. No samples have been collected in this area.

4.8 Waste Solvents Area

Historical contamination was noted in the RFA in an area "at the southern end of the facility." Peoria Disposal Company (PDC) was contracted to remove, analyze, and dispose of waste solvents and odorous oily waste that were present in the area. Three drums containing waste toluene and xylene, and ten drums of solidified paint/tar sludge were removed. In addition, 20 cubic yards of contaminated soil were removed for disposal

The above information regarding the cleanup of the waste solvents area was presented in the 1989 RFA report. No additional information was found regarding this event in files at Keystone or PDC. The exact location of the excavation within the southern portion of the facility is not currently known.

Find this location and provide all necessary info the investigate the area to determine whether there is still contamination also could this be the source of the g.w contamination at the site

4.9 Current K061 Material Handling Areas

Dust generated in Keystone's electric arc furnace (EAF) is collected in the baghouse at the Arc Shop. The dust is transferred from the hopper at the base of the baghouse to lined roll-off containers at the K061 loading area. Roll-off boxes awaiting transport off site are covered and staged at the K061 staging area. The boxes are manifested as hazardous waste to the PDC Hazardous Waste Landfill facility in Peoria, Illinois. At the landfill, the material is treated using a PDC proprietary stabilization process, tested to ensure that it meets the applicable land disposal restrictions (LDR), and then deposited in the hazardous waste landfill.

How clean is the soil around the baghouse? provide proposal to investigate the soil and g.w

4.10 Current K062 Material Handling Areas

Acid bath cleaning of steel rod and wire (steel pickling) prior to use in other manufacturing steps is performed in the Mid Mill and in the Wire Mill. Sulfuric pickling acid is reclaimed at Keystone's Acid Recovery Building. In this acid recovery process, the high-iron content process acid is refrigerated to induce precipitation of ferrous sulfate crystals. The crystals are separated from the acid solution in a centrifuge, and the low-iron acid solution that results is regenerated with virgin sulfuric acid and returned to the pickling baths. Blowdown from the acid recovery process and unrecoverable acid is pumped to the Mid-Mill Neutralization Basin (discussed below).

Spent hydrochloric pickling acid is directed to a 500,000-gallon concrete neutralization basin in the Mid-Mill. In this basin, preliminary pH adjustment is performed to raise the pH of the waste acid to at least five using concentrated sodium hydroxide. The pre-neutralized acid is then pumped to the on-site WWTP. Any acid spills related to steel pickling processes or acid recovery operations would flow to the Mid-Mill Catchment Basin, a 60-mil HDPE-lined impoundment that was constructed at the southern end of the Mid-Mill Ditch in 1999. The

primary function of this basin is the collection of storm water run-off from plant storm sewer pipelines that used to flow into the South Ditch and Mid-Mill Ditch. Water entering the Mid-Mill Catchment Basin is pumped directly to the on-site WWTP for treatment.

At the WWTP, wastewater is treated with lime addition for neutralization and to cause precipitation and removal of dissolved metals and suspended solids. Lime sludge is directed to the West (former 24-Hour Retention Reservoir) or North Sludge Lagoons for dewatering. Effluent from the WWTP sedimentation basin and the Sludge Lagoons is regulated and monitored as per the facility's NPDES permit.

4.11 K061 Waste Pile and K061 Landfill on Part A (North and South Borrow Areas)

Two borrow areas, known as the North Borrow Area and the South Borrow Area, are located on Keystone's property. These areas were historically used to provide low permeability clay fill for constructing various levees and berms at the facility. In 1980, Keystone proposed permitting these two areas as possible future K061 waste piles and landfills on its RCRA Part A Permit Application. Keystone withdrew this proposal in 1982, and the areas have never been used in facility operations, as storage or disposal units, or for management of waste or hazardous material. A waste pile on the edge of the South Borrow Area is undergoing closure as part of the 1993 IEPA Consent Decree, and is discussed in more detail in **Section 5.2.6** below. The borrow areas are not developed, and simply collect rainfall and surface run-off from their immediate surroundings.

5.0 HISTORICAL CORRECTIVE ACTION LOCATIONS

5.1 Steel Works Oil Storage Tanks (Vertical Tanks)

The facility historically maintained a number of aboveground storage tanks in the area of the plant cited in the 1989 RFA as the Vertical Tanks Area. The tanks were sequentially numbered 1 through 6. Currently, only one of the vertical tanks remains at the facility (Tank 5). Tanks 4 and 6 historically stored fuel oil that was used to fire the original open-hearth furnaces. These two tanks were removed shortly after their use for the temporary storage of cesium-137 contaminated EAF dust that resulted from the accidental melting of a cesium-137 source in 1992. (See **Section 5.3** for further detailed discussion of this incident and the related closure of tanks 4 and 6.) The removal of Steel Woks Oil Tanks 1, 2, and 3 was initiated in June 1997 and completed in October 1997. Tanks 1 and 2 contained #6 Bunker C fuel oil and Tank 3 contained #2 diesel fuel. Tank 5 is still in service, and is used to store several thousand gallons of #2 fuel oil for the backup steam boiler in the Steam Plant.

Tanks 1, 2 and 3 were cleaned, cut-up in place, and transferred to the scrap yard (at the time leased by SPI), at the north end of Keystone's property. The steel was then recovered through Keystone's production process. The oil remaining in the tanks was removed and shipped off-site for disposal by Heritage Environmental Services, Indianapolis, Indiana. Oil-contaminated water and soil in the tank containment area and contaminated soil beneath the concrete floor and footings of the removed tanks were excavated and properly disposed of by Peoria Disposal Company (PDC), Peoria, Illinois. After removal of the tanks, concrete floor systems, piping, and contaminated soil was complete, the area was backfilled and graded flush with the adjacent railroad beds and used for a new rail spur and plant driveway.

Two soil samples were collected from within the former secondary containment areas around Tanks 1, 2, and 3 during the 1987 RFA sampling visit. One sample was collected from the southern end of the bermed area around Tanks 1 and 2, and the other was collected at the northern end of the bermed area around Tank 3. The following analytes were detected in the sample from the former Tanks 1 and 2 containment area at concentrations above those observed in the background samples: arsenic (12 mg/kg), beryllium (0.5 mg/kg), cadmium (26 mg/kg), calcium (29900 mg/kg), chromium (115 mg/kg), copper (111 mg/kg), lead (847 mg/kg), sodium (396 mg/kg), and zinc (2080 mg/kg). Cadmium and zinc were found in the sample above the MRSCs, but neither metal was present at concentrations above the residential PRGs. Although it fell within the MRSC, lead content in the sample was greater than the industrial PRG of 750 mg/kg. The observed arsenic concentration was within the MRSC and below the residential noncarcinogenic PRG of 22 mg/kg, but was above the industrial lifetime exposure carcinogenic endpoint PRG of 2.7 mg/kg.

Analysis for the sample from the containment area for Tank 3 indicated the presence of ethylbenzene (78 µg/kg), total xylenes (250 µg/kg), arsenic (14 mg/kg), chromium (78 mg/kg), copper (46 mg/kg), lead (142 mg/kg), and zinc (474 mg/kg). All metals found in this sample were within the reported MRSC. All of the metals were also below the applicable residential PRGs, except for carcinogenic exposure to arsenic. Arsenic content in this sample was below the noncarcinogenic residential PRG of 22 mg/kg, but above the carcinogenic industrial lifetime

Although closed, There are some arsenic issues in soils in the above ground tank areas

exposure endpoint PRG of 2.7 mg/kg. The measured total xylenes concentration was just above the residential PRG of 210 mg/kg.

This area no longer resembles its condition as reported in the 1989 RFA. Five of the six storage tanks have been removed, and closure of the tanks involved excavation of soil in secondary containment areas from which the 1987 samples were taken. Regrading and new construction in the vicinity have also resulted in significant physical changes to this part of the plant. Data for additional samples collected from the areas around Tanks 4 and 6 (associated with their closure after the cesium-137 incident in 1992) are discussed in **Section 5.3**.

5.2 Onsite Ditches and Waste Piles (1993 IEPA Consent Order Areas)

5.2.1 Introduction

A system of ditches at the Keystone facility is associated with the construction of the railroad levees that surround and subdivide the property. The ditches represent borrow pits from which the fill used to construct the adjacent levees was excavated. The levees raise the railroad beds out of the 100-year floodplain, and also protect the facility's manufacturing areas from 500-year flood levels on the nearby Illinois River and Kickapoo Creek. The longitudinal series of ditches running along the western side of the Union Pacific railroad levee (between the railroad tracks and the Mid Mill), were used by Keystone in the past to manage spent pickle liquor (K062) generated at the plant.

During construction of the treatment plant and Sludge Lagoons during 1968-1969, the Lower South Ditch was closed off with berms that were constructed at both ends. The South Ditch and Mid-Mill Ditch were used to collect spent pickle liquor, wastewater, and storm water discharges from the plant. A pump station was installed at the South Ditch, along with a pipeline that connected it to the WWTP. The new system allowed wastewater to collect and be pumped directly to the WWTP for treatment. Treated wastewater was then discharged in accordance with the facility's NPDES permit (No. IL 0002526).

On August 19, 1983, representatives from the IEPA conducted a site inspection and determined that Keystone was managing hazardous waste (K062) in unpermitted surface impoundments. On June 28, 1985, a Complaint and Compliance Order (CCO) was filed by USEPA against the Keystone facility (based upon the site inspections conducted by IEPA), for the treatment, storage, and disposal of hazardous waste (K062) at a facility that was not RCRA permitted. Keystone entered into a Consent Decree with USEPA in June 1988 that required the payment of fines and the closure of the unpermitted surface impoundments and other structures as required by RCRA. The closures were to be performed under a formal closure plan to be approved by and implemented with oversight from IEPA.

Between 1988 and 1992, Keystone worked with IEPA to formulate and obtain approval of a Phase 2 Closure Plan. In July 1993, Keystone entered into a Consent Order with the State of Illinois to perform closure of the following units: (1) North Ditch; (2) Mid Mill Ditch; (3) South Ditch (north half); (4) South Ditch (south half); (5) Surface Drainage Ditch; (6) 24-Hour Retention Reservoir; (7) North Dredge Pile; (8) South Dredge Pile; and (9) Lower South Ditch. In addition, Keystone agreed to establish a Groundwater Monitoring Zone (GMZ) that included,

at a minimum, the following elements: (1) implement groundwater corrective action; (2) determine the horizontal and vertical extent of contamination; (3) provide adequate monitor well installations to detect groundwater contamination above the Illinois Class I standards; and (4) conduct post-closure groundwater monitoring to verify that Illinois Class I Standards are met. In addition, Keystone was required to submit a delisting petition for the treated sediment and contaminated soil from the surface impoundments based upon treatability studies conducted as part of the cleanup of the Retention Reservoir. The delisting criteria would then be used to govern treatment and disposal of contaminated soil removed from the other units.

The Consent Decree required two central tasks: (1) implement the Closure Plan attached to the Consent Order with regard to the ditches and dredge piles at the site; and (2) create a Groundwater Management Zone (GMZ) with regard to the groundwater contamination and achieve either Class I groundwater quality standards within that zone, or seek alternate groundwater quality standards consistent with the Illinois Pollution Control Board's (IPCB) Groundwater Quality Regulations.

A Delisting Plan was prepared as part of the *Revised Phase 2 Closure Plan*, dated June 15, 1992. The Delisting Plan presented a lime/portland cement treatment/stabilization methodology that would be used to allow the sediment from various surface impoundments at the Keystone facility to be delisted (and disposed of as nonhazardous waste). Since the sediment was previously in contact with spent pickle liquor (K062 listed hazardous waste from Keystone's steel finishing operations), they were also considered K062 hazardous waste. A final Delisting Petition was filed on August 2, 1993 and the IPCB granted the petition on February 17, 1994. The granted Delisting Petition stipulated that treated waste would be considered nonhazardous (delisted) if it met minimum alkalinity requirements and fell below the following maximum TCLP concentrations: cadmium at 0.082 mg/L, chromium at 1.64 mg/L, lead at 0.246 mg/L, and zinc at 115 mg/L.

Keystone has made significant modifications to the management practice for the K062 generated in the Mid Mill and Wire Mill since the 1989 RFA was conducted. Prior to entering into the 1993 Consent Order with IEPA, an acid recovery system was implemented. The sulfuric acid used for pickling in the Mid and Wire Mills is now pumped from the wire cleaning tanks to a closed-loop acid recovery system. When the pickling acid reaches an iron content sufficient to grow ferrous sulfate crystals, it is transferred from the acid cleaning tank into a 40,000-gallon process acid tank to initiate the acid recovery process. The process acid is pumped from the high-iron acid tank to a 10,000-gallon refrigeration tank where it is chilled to 32°F. From the refrigerant tank, the chilled acid is pumped into a centrifuge where the ferrous sulfate heptahydrate crystals are separated from the acid. The reclaimed low-iron acid is transferred to a 30,000-gallon recovered acid tank prior to being refreshed with virgin acid, and returned to the pickling tanks. The ferrous sulfate crystals are sold to Crown Technology as a byproduct.

Spent hydrochloric acid pickling solutions and sulfuric acid that can no longer be refreshed (spent pickle liquor) is transferred to a concrete holding tank in the Mid Mill building (the Mid-Mill Neutralization Basin). In this basin, the pH is controlled (the acid is partially neutralized) through the addition of liquid caustic (sodium hydroxide solution) to achieve a pH of at least 5. This neutralization is performed to optimize operation of the WWTP through stabilization/equalization of the influent wastewater stream.

From the holding tank, the spent pickle liquor is piped directly to the on-site WWTP for final treatment. The effluent from the treatment plant is discharged to the Illinois River under a permit from the IEPA Division of Water Pollution Control (NPDES Permit No. IL 00002526). The sludge from the treatment of Keystone's wastewater is dewatered and stored in the surface impoundments (North, West, and South (closed) Sludge Lagoons). This sludge (formerly K063) has been delisted.

5.2.2 Retention Reservoir

The Retention Reservoir (also known as the 24-Hour Retention Reservoir) is one of the nine RCRA units at the Keystone facility listed in the 1993 IEPA Consent Order. The former sediment in the Retention Reservoir had been in contact with spent pickle liquor (a listed hazardous waste – K062), generated during steel finishing operations at the site. An in-situ treatment study was performed between July 15, 1992 and February 25, 1993 to evaluate the efficacy of lime/portland cement stabilization, and included the collection and analysis of 1,963 sediment samples to evaluate treatment performance. The results of this performance sampling confirmed that the sediments within the Retention Reservoir could be, and had been adequately treated to meet Land Disposal Restrictions (LDRs).

Based upon the success of the in-situ treatment demonstration project, Keystone submitted a delisting petition to the IPCB and the IEPA on August 2, 1993 for the lime/portland cement stabilized sediment. The petition was approved by the IPCB on February 17, 1994, with the granting of: (1) a "one-time" Standard Exclusion from regulations under 35 IAC Parts 720 through 728 for the lime-stabilized and portland cement-solidified sediment present in the Retention Reservoir; and (2) an "up-front" exclusion from the regulations for the sediment within the remaining units to be remediated under the Consent Order.

Closure activities at the Retention Reservoir began with preliminary bottom soil sampling to determine areas of untreated bottom soil that did not meet the delisting requirements as established in IPCB's approval of the delisting petition before the startup of excavation activities. A total of 111 samples were collected from the top six inches of untreated bottom soil. The gathered data was used to prepare a final Excavation Plan for the unit.

ITEX Enterprises, Inc. (ITEX) of Addison, Texas began excavation activities on March 5, 1994. The excavation objective was to remove the treated sediment, baffle and sidewall material, and bottom soil to a level such that clean closure could be achieved. The excavated sediment was stockpiled within the Retention Reservoir, drained, then moved to a centralized loading pad and loaded into roll-off containers.

All drainage water was containerized and transferred to Keystone's on-site WWTP for treatment. On May 3, 1994, ITEX completed the excavation of 35,950 cubic yards of treated sediment from the Retention Reservoir. By May 26, 1994, 14,005 cubic yards of contaminated bottom soil was excavated and loaded from the Retention Reservoir. The total amount of material removed from the Retention Reservoir was 49,955 cubic yards.

Verification sampling was conducted after batches of excavated soil were loaded into boxes in order to confirm that the excavated sediment from the Retention Reservoir met the delisting requirements in accordance with the conditions stipulated in the Standard Exclusion awarded by the IPCB. Soil that met these criteria could be disposed off site as a nonhazardous special waste. Verification sampling was performed in accordance with the Removal Verification Sampling Plan submitted to the IEPA on January 21, 1994. Verification Sampling began on March 5, 1994. All samples were analyzed for free liquids by the paint filter test, and specified samples were also analyzed for alkalinity and TCLP metals.

A waste stream permit was granted by the IEPA on February 28, 1994 for the treated sediment and bottom soil within the Retention Reservoir. Waste Management, Inc. transported roll-off containers containing soil that met the delisting criteria to the Tazewell Recycling and Disposal Facility in East Peoria, Illinois for disposal as a nonhazardous special waste. Soil that did not meet the delisting criteria was deposited in the North Ditch, Mid Mill Ditch, or Lower South Ditch and staged for future treatment during the closure of those units. About 6,235 cubic yards of soil were transferred to the North Ditch, 1,605 cubic yards were transferred to the Mid Mill Ditch, and 2,324 cubic yards were transferred to the Lower South Ditch from the Retention Reservoir.

Clean closure sampling was performed between May 5 and June 2, 1994 in accordance with the Clean Closure Sampling Plan submitted to the IEPA on March 1, 1994. The clean-closure confirmation sampling, consisting of 173 samples, confirmed that remediation efforts at the Retention Reservoir had been successful at achieving the Clean-up Objectives (CUOs) established in the approved 1992 *Revised Phase 2 Closure Plan*. A Closure Documentation Report was submitted to IEPA for the unit on July 29, 1994. Clean closure certification for the Retention Reservoir was accepted by IEPA on March 24, 1995. Confirmation that the former presence of contaminated sediments in the impoundment had no impact on groundwater quality in the vicinity of the unit has also been verified by groundwater monitoring conducted (and reported to IEPA) by Earth Tech from 1986 to the present. The clean closed excavation of the former 24-Hour Retention Reservoir was later lined and converted into the West Sludge Lagoon for the WWTP.

5.2.3 North Ditch

Treatability studies were initiated during January 1995 to evaluate the performance of an ex-situ lime/portland cement treatment system for the sediment in the north half of the North Ditch. Results of the treatability study indicated that the soil could be successfully treated to meet the existing delisting criteria using a additive dosage level of 19.5% (the additive being a blend of agricultural lime and No. 1 portland cement) with a minimum mixing time of 1.5 minutes. IEPA approved the ex-situ treatment approach on July 7, 1995.

ITEX began excavation activities in the north half of the North Ditch on July 5, 1995. The sediment and bottom soil were transferred from the North Ditch to the treatment system using long-reach excavators. The ITEX treatment system consisted of a two-stage batch processing unit comprised of a homogenizer and weight batcher arranged in series. Water was thoroughly mixed with the sediment in the homogenizer to obtain a flowable slurry. The homogenized sediment then entered the weight batcher where the lime and portland cement were

added. Treatment activities were temporarily stopped in October 1995 to replace the treatment system with a larger unit. Treatment activities were then temporarily stopped on December 15, 1995 due to winter conditions and difficulty processing large pieces of slag and debris. The ITEX treatment system had successfully treated 25,854 tons of material by the time the system was shut down for the winter on December 15, 1995.

Due to the large pieces of slag and debris, Keystone implemented performance trials for a new treatment and screening process (provided by Sound-epic of Carrollton, Texas) in April 1996. The former ITEX treatment unit was replaced with the Sound-epic pug mill treatment system between May-June 1996.

The Sound-epic pugmill system became fully operational on June 29, 1996 and ran through August 7, 1996 when removal of all contaminated sediment and bottom soil from the south half of the North Ditch had been completed. The large pieces of slag and debris were collected in containers and then transported off site for disposal as a hazardous waste (K062). About 22,673 tons of material was processed from the south half of the North Ditch through the Sound-epic pug mill system.

Confirmation sampling was conducted during excavation, transportation, and disposal of the contaminated ditch sediment and soil as per the Performance/Verification Sampling Plan submitted to the IEPA on May 5, 1995. This sampling was performed to ensure that the treated sediment and bottom soil from the North Ditch met the delisting criteria and could be disposed off site as a nonhazardous special waste. Analysis of the confirmation samples included alkalinity and TCLP metals (cadmium, chromium, lead, and zinc). During remediation of this unit, treated soil that did not meet the delisting criteria was deposited back into the ditch for retreatment.

Excavation and treatment/stabilization activities produced a total of 47,655 tons of special waste that was transferred to the Peoria City County and Clinton County Landfills for disposal (25,855 tons between June and December 1995 and 21,800 tons between June and August 1996). In addition, a total of about 762 tons of contaminated debris screened from the excavated soil were accepted at PDC's hazardous waste landfill facility at Peoria, Illinois.

Clean closure sampling of the North Ditch was performed between August 12 and August 22, 1996 in accordance with the Clean Closure Sampling Plan for the unit, which was submitted to the IEPA on September 20, 1995. A Closure Documentation Report for the North Ditch remediation was submitted to the IEPA on November 11, 1996. The IEPA conducted a clean closure inspection at the North Ditch on June 22, 1998 and requested additional characterization of the groundwater in the vicinity of the unit. Keystone conducted additional groundwater sampling in the area to confirm that no migration of contaminants had occurred. IEPA approved clean closure of the North Ditch on April 23, 1999.

5.2.4 North Ditch Soil Treatment System Staging Area

As part of the North Ditch remediation, a lined work pad was constructed along the southwestern bank of the ditch. This pad was used for the treatment plant systems employed by ITEX and Sound-epic during the project (see **Section 5.2.3**). During the conversion from ITEX

to Sound-epic, a ramp that had been used during operation of the ITEX system was removed. The excavated ramp soil was transferred to the North Ditch for subsequent treatment. Prior to backfilling the area, soil samples were collected on May 29, 1996 from the soil under and adjacent to the former ramp to document that the treatment system had not impacted the underlying and surrounding soil. TCLP metals, total semi-volatiles, and total volatiles analyses were conducted on the samples taken from the ramp area. One sample was found to contain TCLP lead at a concentration (0.412 mg/L) above the CUO specified in the 1992 Closure Plan for this metal (0.1 mg/L).

Once the North Ditch project was complete, surface soil in the treatment pad area was removed and placed in the Mid Mill Ditch for treatment during the subsequent remediation of that unit. Following removal of the work pad, a series of soil samples was collected from the area on August 22, 1996 to document any impact caused by the treatment plant operations. Again, the samples were analyzed for TCLP metals, total semi-volatiles, and total volatiles. TCLP lead concentrations in three of the 15 samples were found to be above the CUO (at concentrations of 0.44, 1.2, and 20 mg/L). Tetrachloroethene was also detected in one sample at a concentration (0.043 mg/kg) above the CUO for this compound (0.025mg/kg).

Additional sampling was subsequently scheduled for the four points that exceeded the lead CUO during the May and August sampling events. Prior to obtaining the new soil samples, approximately one foot of surface soil in the area was removed and placed in the Mid Mill Ditch for subsequent treatment. The points were re-sampled on October 12 and 15, 1996, and analyzed for total lead, TCLP lead, and total zinc. The results for these surface samples ranged from 0.49 mg/L to 22.0 mg/L TCLP lead, 670 mg/kg to 12,000 mg/kg total lead, and 600 mg/kg to 3,600 mg/kg total zinc.

On October 21, 23 and 24, 1996, further samples were taken at various depths between one and five feet below ground surface in the same four locations sampled on October 12 and 15, 1996. TCLP lead results ranged from non-detect to 20.0 mg/L. Total lead results ranged from 380 mg/kg to 3,800 mg/kg. Total zinc results ranged from 1,400 mg/kg to 1,700 mg/kg. It was also discovered through the borings that the original terrain (native soil) in the area is about three to four feet below current grade. The dense black silty clay (native) soil acts as a barrier to the vertical migration of contaminants. The TCLP lead concentrations observed in the area were consistently above the CUO. Keystone will continue to work with IEPA to complete closure of the North Ditch treatment system staging area.

5.2.5 Mid-Mill Ditch, North Dredge Pile, South Dredge Pile, and Surface Drainage Ditch

Sound-epic performed lime/portland treatment trials at the Mid Mill Ditch between August 20-26, 1996 and began full-scale operations on August 28, 1996. Off-site transport and disposal of both nonhazardous special waste (to Peoria City County Landfill and the Clinton County Landfill) and hazardous waste (to PDC's hazardous waste landfill) began on September 3, 1996.

Sound-epic began removal of the contaminated material from the North Dredge Pile, South Dredge Pile, and the Surface Drainage Ditch on October 17, 1996. The material from

these areas that was excavated before November 21, 1996 was transferred to the Mid Mill Ditch and treated as part of the Mid Mill Ditch remediation. The material from these areas that was excavated after November 21, 1996 was transferred to the Lower South Ditch to facilitate completion of the Mid-Mill Ditch remedial activities prior to the onset of adverse winter conditions. The soil transferred to the Lower South Ditch was added to the pile of material placed there from the Retention Reservoir, to be treated at a later date.

During remedial activity at the Surface Drainage Ditch, excavation was performed around several underground and aboveground active plant pipelines. Excavation was terminated on November 25, 1996, when it was determined that additional excavation would undermine an existing wastewater pipeline. A disruption of this pipeline would have resulted in a complete shutdown of the entire Keystone plant. Due to this obstacle, approximately 37 cubic yards (an estimate based upon investigative borings made in the area at the time) of potentially impacted soil was left in place at the western end of the unit. In 1996, limited sampling of some of the stained soil left in place (exposed in the face of the excavation) indicated that it met the clean-closure objective for TCLP lead.

Treatment of the soil excavated from the four units was performed between August 28, 1996 and December 4, 1996. A total of 40,676 tons of treated sediment and bottom soil from the Mid-Mill Ditch, North Dredge Pile, South Dredge Pile, and Surface Drainage Ditch met the delisting criteria and were disposed of as delisted, nonhazardous special waste (38,109 tons were sent to Peoria City County Landfill and the remaining 2,567 tons were sent to the Clinton County Landfill).

Clean closure sampling of the Mid Mill Ditch, North Dredge Pile, South Dredge Pile, and Surface Drainage Ditch was performed between November 14 and December 17, 1996. In the spring of 1997, clean closure sampling was performed in the area of the treatment pad constructed adjacent to the Mid Mill Ditch. On February 27, 1998 a Clean Closure Sampling Report for these areas was submitted to IEPA for approval.

In December of 1998 (prior to a response from IEPA on closure of these areas), an acid spill in the Mid Mill was discharged into the Mid Mill Ditch (Illinois Incident No. 983018). At IEPA's request, Keystone re-sampled a portion of the unit to determine if any recontamination of the ditch occurred as a result of this spill. The results of the additional sampling confirmed that the acid spill did not adversely impact the ditch sediment. The results of this sampling effort were submitted to IEPA and the Illinois Office of the Attorney General on July 6, 1999.

IEPA notified Keystone on March 24, 2000 that additional clean-closure confirmation sampling would be required in the area of the Dredge Piles and the Surface Drainage Ditch before clean closure of these units could be approved. Additional sampling to characterize the stained soil left in place at the Surface Drainage Ditch was also requested by the Agency. Keystone submitted a new Clean Closure Soil Sampling Plan for the Surface Drainage Ditch, North Dredge Pile, and South Dredge Pile on May 22, 2000. This plan was approved by IEPA on July 7, 2000, and re-sampling for clean closure confirmation was implemented from September 13-21, 2000.

IEPA conducted a clean-closure inspection of the Mid Mill Ditch on September 28, 2000, and the Agency approved clean closure of the unit in al letter dated January 6, 2001. Keystone submitted a sampling report to IEPA on December 29, 2000 documenting the additional sampling conducted in the area of the Surface Drainage Ditch, North Dredge Pile, and South Dredge Pile in accordance with the July 7, 2000 sampling plan.

5.2.6 South Ditch, Lower South Ditch, and South Borrow Area Waste Pile

The South Borrow Area Waste Pile was discovered in 1994 during the construction of the temporary container storage area to be used for staging roll-off boxes during remediation activities at Keystone. Historical data (from aerial photographs of the facility) suggests that the waste was placed in the area located at the northwest edge of the South Borrow Area around 25-30 years ago. Characterization sampling of the waste pile indicates that its composition is very similar to dredge spoils found at the North and South Dredge Piles. This unit is being investigated and will be closed under modifications to the 1993 Consent Order between Keystone and IEPA.

The Tiered Approach to Corrective Action Objectives (TACO) regulations (35 IL Admin. Code 742) are being evaluated for use at the Keystone facility to address the units remaining under the IEPA Consent Order. Keystone prepared and submitted a Closure Plan Modification Request for the South Ditch, Lower South Ditch, and South Borrow Area Waste Pile using 35 IL Admin. Code 742 (TACO) to the IEPA on October 31, 1997. IEPA has stated that TACO can and does apply to RCRA corrective actions, and Keystone felt that these units were especially well suited for consideration under TACO.

IEPA responded to this submittal on May 6, 1999, and indicated that risk-based closure of these units would require additional information and consideration of issues not presented in Keystone's October 31, 1997 closure plan modification request. A meeting was held on June 7, 1999 between representatives of Keystone and IEPA to discuss how to proceed with the closure of these three units under the TACO program guidelines. The primary issue raised by IEPA was the lack of current and sufficient analytical data from these units upon which a determination of TACO applicability and subsequent risk-based determinations could be made. Another issue raised during this meeting was the need to remove the pile of partially treated waste soil material generated during the previous closure activities that was being stored in the Lower South Ditch. IEPA requested that this pile be removed prior to conducting further sampling and evaluating the potential risk for this unit.

In response to this meeting, Keystone prepared five work plans for IEPA approval. On August 5, 1999 the following four plans were submitted to the Agency: (1) South Ditch Area Investigation Plan, (2) South Borrow Area Waste Pile Area Investigation Plan, (3) Lower South Ditch Area Investigation Plan, and (4) Waste Soil Pile Removal Work Plan. On August 9, 1999 the Groundwater Characterization Sampling Plan for the South Ditch, Lower South Ditch, and South Borrow Area Waste Pile, was submitted for review. The plans were approved by IEPA on February 1, 2000 and March 24, 2000, and Keystone proceeded with their implementation. Sampling was conducted at the South Ditch and the South Borrow Area Waste Pile in April 2000. Preparations for and implementation of the waste soil pile removal at the Lower South Ditch occurred from May through August 2000. Excavation of this pile resulted in the transfer

of about 8,300 tons of contaminated soil to the PDC Hazardous Waste Landfill in Peoria, Illinois as hazardous waste. Sampling at the Lower South Ditch was conducted in September 2000. Three new monitoring wells were installed at the South Borrow Area Waste Pile and ground water characterization sampling around all three units was conducted in July and August 2000.

Keystone recently submitted reports to the IEPA for the sampling at the South Ditch and South Borrow Area Waste Pile (August 25, 2000), for the removal of the Lower South Ditch Waste Soil Pile (October 30, 2000), for the Lower South Ditch soil investigation (December 29, 2000), and for the groundwater sampling conducted in the vicinity of all three units (January 4, 2001). IEPA has completed its review of the data report for the South Ditch and South Borrow Area Waste Pile, and Keystone is beginning its calculation of risk-based remedial objectives for the facility. Keystone will work with IEPA to review the applicability of the TACO program, continue with the development of risk-based closure objectives, and will then prepare a final closure plan modification request for these three areas.

5.2.7 Groundwater Management Zone (GMZ)

The July 1993 Consent Order between IEPA and Keystone required the establishment of a groundwater management zone. Keystone's GMZ was established according to 35 IL Admin. Code 620.250 and was approved by IEPA on April 6, 1994. Two main groundwater contaminants (trichloroethylene and 1,1,1-trichloroethane) were identified in a plume that extended under most of the Mid Mill, part of the Steel Works, and a small section of the Wire Mill. The entire plume was, and continues to be contained on Keystone property. The groundwater remedial action plan for the facility includes groundwater capture using a network of recovery wells, treatment of recovered groundwater via air stripping, and discharge of the treated water as process water into the facility's steel wire production plant.

The groundwater capture and management system consists of four ground water recovery wells (designated PW-A, PW-B, PW-C, and PW-D) that operate simultaneously, and pump at the following approximate rates: 50, 100, 40, and 400 gpm, respectively. The water produced from the recovery wells is pumped through an air-stripping tower to remove volatile contaminants. The treated water is used as process water in the Wire Mill and is treated at Keystone's on-site WWTP along with the other wastewater streams prior to final discharge from the facility.

Quarterly groundwater monitoring is performed in accordance with the Keystone Groundwater Remediation Program Report submitted on June 15, 1992 and the Groundwater Management Zone Request submitted July 16, 1993. It is estimated that between 200 and 300 million gallons of groundwater are processed through the air stripper annually. Operation of the purge wells has stabilized, reduced, and continues to control the plume within the GMZ. There is no threat of further migration as the plume has been substantially reduced in size since 1994, and overall contaminant concentrations have decreased significantly. Keystone submitted a Groundwater Management Zone Status Report to IEPA on August 28, 2000 documenting the reduction in size of, and contaminant concentrations in the remaining plume. As a result of the reduction of the plume area, IEPA established a new, smaller boundary for the GMZ in its approval letter dated October 31, 2000. The current status of the GMZ (area, contaminant plume size, and well locations) is presented on **Figure 5-1**.

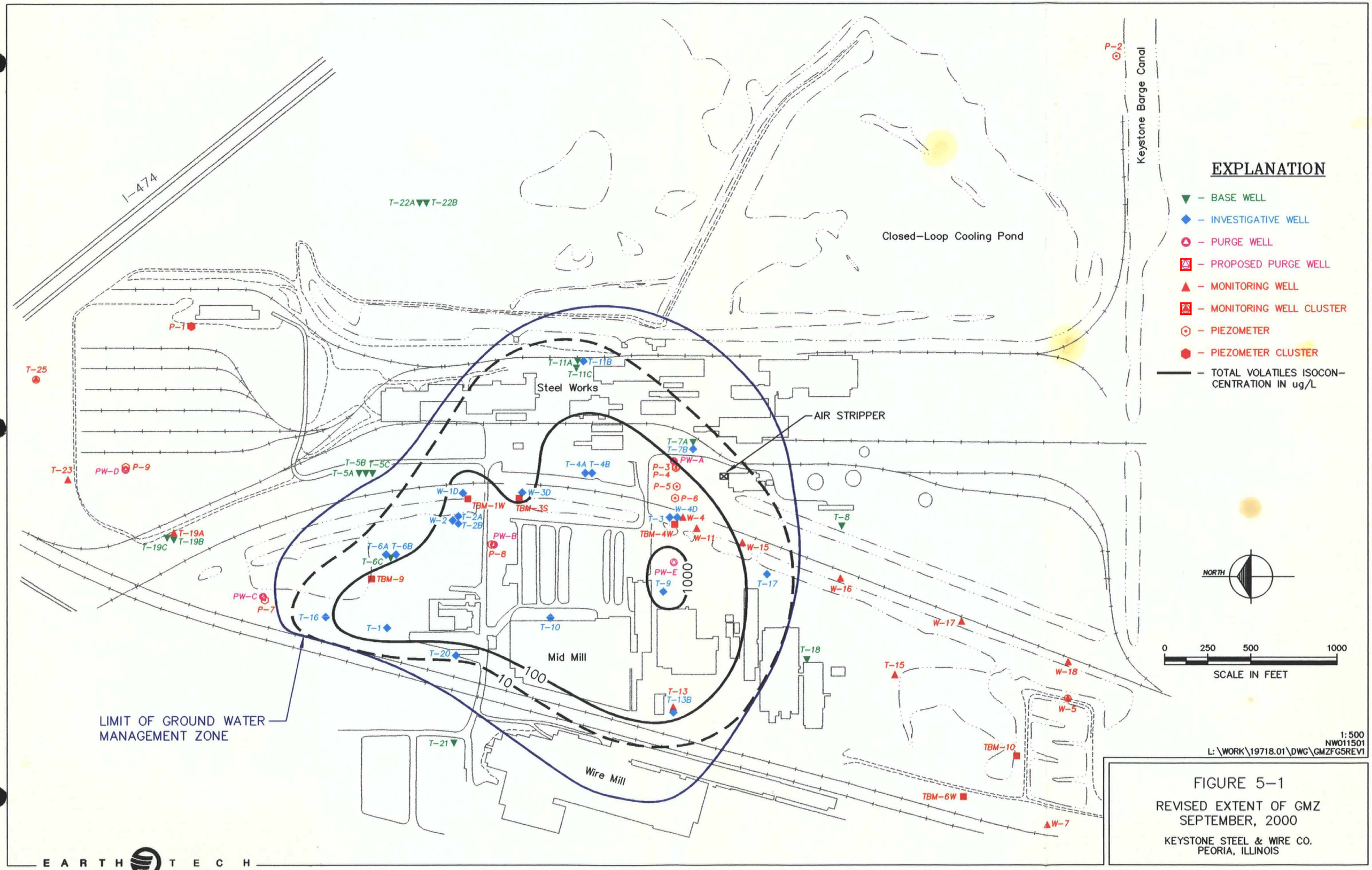


FIGURE 5-1

REVISED EXTENT OF GMZ
SEPTEMBER, 2000

KEYSTONE STEEL & WIRE CO.
PEORIA, ILLINOIS

5.3 Cesium Contaminated Electric Arc Furnace Materials

In December 1992, a cesium-137 source was unknowingly charged to the electric arc furnace. The event was brought to Keystone's attention by Horsehead Resource Development (HRD) of Calumet City, Illinois, which identified radioactivity in EAF dust (K061) received from Keystone on December 5, 1992. Keystone initiated interim measures to address the issue and notified the Illinois Department of Nuclear Safety (IDNS).

One load of radioactive-contaminated arc dust was returned to Keystone from HRD. Fort Transfer of Morton, Illinois also returned three loads of K061 that had been in transit when the shipment containing radioactive contamination was discovered by HRD. ITEX Environmental Services, Inc. of Addison, Texas was contracted to decontaminate the arc shop ductwork, baghouse, and dust handling equipment. The returned loads of arc dust and containers of contaminated equipment, material, and decontamination residue were stored at the facility in temporary radioactive mixed waste storage areas. These areas were situated in low-traffic, remote locations on site to isolate the material while Keystone was awaiting final analysis from IDNS to allow arrangements for transportation and ultimate disposition to be made.

Following consultations with IDNS and the decontamination of the Steel Works K061 handling equipment, newly generated K061 dust (less than 2 pCi/g) was temporarily staged in Vertical Tanks 4 and 6. IDNS required that the K061 material with readings less than 2 pCi/g be kept on site until their office could verify its classification as non-radioactive. Once the material was classified as non-radioactive by IDNS (on August 5, 1993), the process of transferring the dust from the tanks and shipping it to PDC's hazardous waste landfill facility began.

The areas of the facility associated with the temporary storage of wastes related to the cesium contamination abatement activities were identified as: Radioactive Mixed Waste Storage Regions 3-6, Areas A-D, Storage Tanks 4 and 6, and the Tank Cleanup Area. Regions 4-6, Areas A-D and the Tank Cleanup Area were all located on the perimeter of the current slag processing yard area. Storage Tanks 4 and 6 were located within the area referred to in the 1989 RFA as the Vertical Storage Tanks Area. Region 3 was located due south of the Storage Tanks, in the Steel Works Material Staging Area.

Keystone submitted a Partial Closure Plan to close the two oil tanks (SO2) and the nine hazardous waste container storage areas (SO1) associated with the radioactive contaminated material on June 30, 1995. This plan was approved by the IEPA on September 28, 1995 (subject to several conditions and modifications).

During implementation of the closure plan, the total amount of cesium-contaminated material removed from the Site consisted of 22,576 cubic feet of K061, 176 cubic feet of cleanup debris and PPE, and 6,300 cubic feet of soil. The radioactive mixed waste was transferred to Envirocare of Utah in Salt Lake City, Utah. Decontamination of the interiors of Tanks 4 and 6 was performed by PDC to remove any residual EAF dust. The tanks were rendered useless by the need to cut a large hole in the side of each during the dust removal process. Therefore, after decontamination, the tanks were decommissioned, cut up for scrap, and recovered in the electric arc furnace.

A closure certification documentation report was submitted to the IEPA on January 3, 1996. IEPA conducted an inspection of the former cesium impacted areas on September 28, 2000 and approved closure of these areas with respect to the radioactive waste management activities on October 4, 2000.

Closure soil sampling for total metals was conducted as part of the cesium contamination remedial actions. Closure sampling conducted in the Vertical Tank Area identified arsenic (37 mg/kg), barium (320 mg/kg), chromium (3,300 mg/kg), lead (300 mg/kg), nickel (46 mg/kg), silver (4.7 mg/kg), and zinc (4,000 mg/kg) at concentrations significantly above background levels established during the 1987 RFA sampling visit (significant defined as two times the maximum background value observed). Chromium and zinc were found at concentrations above the MRSC. The observed zinc concentration was well below the residential PRG, but chromium was found at a concentration above the industrial PRG of 450 mg/kg. Arsenic, while well within the MRSC, was found above the industrial lifetime exposure (carcinogenic endpoint) PRG of 2.7 mg/kg, but well below the industrial noncarcinogenic endpoint of 440 mg/kg.

Closure samples collected from Radioactive Mixed Waste Storage Region 3 (in the Steel Works Material Staging Area) identified arsenic (32 mg/kg), beryllium (0.68 mg/kg), chromium (2,200 mg/kg), lead (640 mg/kg), silver (3.2 mg/kg), and zinc (8,200 mg/kg) in concentrations significantly above background levels established during the 1987 RFA sampling visit. Cadmium and zinc were found in concentrations above the MRSC for this area, but below their respective PRGs. Arsenic was again within the MRSC but above the industrial lifetime exposure (carcinogenic endpoint) PRG of 2.7 mg/kg, and well below the industrial noncarcinogenic endpoint of 440 mg/kg. Chromium was found above the industrial PRG, within the MRSC for the area. The maximum total lead content of the soil was above the residential PRG (400 mg/kg) but below the industrial PRG (750 mg/kg) and within the MRSC.

In the closure samples collected in the slag processing area of the plant, antimony (15 mg/kg), arsenic (48 mg/kg), barium (570 mg/kg), beryllium (0.78 mg/kg), cadmium (18 mg/kg), chromium (5,000 mg/kg), lead (20,000 mg/kg), nickel (190 mg/kg), silver (11 mg/kg), and zinc (8,600 mg/kg) were observed at concentrations significantly above background levels established during the 1987 RFA sampling visit. Cadmium, chromium, lead, silver, and zinc were found at a concentration above the MRSC for this area. The detected arsenic concentration again fell between the industrial carcinogenic and noncarcinogenic PRGs. Silver and zinc were well below their respective PRGs. Chromium and lead were found in concentrations outside the MRSC and above their respective industrial PRGs.

5.4 Oil Pond (SPI Storm Water Basin)

The "Oil Pond" referenced in the USEPA RFA, is located in the scrap yard at the northeastern corner of the facility, on property owned by Keystone. At the time of the RFA sampling, this area was leased to Scrap Products Incorporated (SPI). In 1999, Keystone entered a joint venture with Alter Recycling Corporation to operate the scrap yard. Alter processes incoming steel scrap materials and sells recovered steel to Keystone as raw material for the electric arc furnace.

The scrap yard encompasses an area of about 40 acres. A Harris shear and a Harris bailer are used to process incoming steel scrap and to prepare feed material for sale to Keystone in a form suitable for charging to the furnace. The Oil Pond is located on the northern edge of an old borrow area that was excavated to supply fill for the construction of a nearby flood levee. Recent excavations within the area suggest that slag from Keystone was used to fill this borrow area some time after its creation. Between 1957 and 1963, the levee was partially removed and the storm water pond was constructed. The Oil Pond is situated in the southern portion of the scrap yard and received storm water run-off from SPI that contained residual oily waste from the loading area and hydraulic oil from the processing equipment.

During the 1987 RFA sampling visit two sediment samples were collected from the Oil Pond. The sample collected in the northeast corner contained nickel (56 mg/kg) above background sample concentrations. The sample collected in the northwest corner of the Pond contained aluminum (34,900 mg/kg), barium (365 mg/kg), calcium (10,400 mg/kg), chromium (76 mg/kg), iron (18,000 mg/kg), lead (129 mg/kg), magnesium (5,730 mg/kg), manganese (321 mg/kg), nickel (63 mg/kg), zinc (411 mg/kg), silicon (169,000 mg/kg), and titanium (2,650 mg/kg) above background levels. However, RFA sample constituents found were within the MRSC for the area and below applicable PRGs.

On July 18, 1997, IEPA issued a Violation Letter to Keystone based upon an inspection conducted on February 3, 1997. Keystone was cited for operating an unpermitted waste oil storage lagoon on the property. IEPA required the excavation of all oil-contaminated soil around the Harris bailer, the bailer pedestal crane, and the Harris shear press. In addition, the excavations were to be back-filled with clean dirt and an impervious barrier was to be placed over the area to facilitate cleanup of future oil spills.

On August 27, 1997, Keystone submitted a response to the Violation Letter in the form of a proposed Compliance Commitment Agreement (CCA). The CCA proposed the following remedial projects: (1) Harris bailer and shear area - excavate oil stained soil, replace the excavation with a barrier/liner, design and install a pad, new catch basin, and drain trench for the bailer, crane, and shear area; (2) New storm water basin - determine the extent of oil stained soil, remove oil stained soil, design and install a new storm water basin, construct a new lift station, and install an oil/water separator system; (3) Soil removal - pump and dispose of waste oil and remove oil stained soil; (4) Storm water run-off - connect the existing lagoon and new storm water basin and divert scrap yard drains to the new basin. The proposed CCA was accepted by IEPA on September 15, 1997.

In May 1998, four monitor wells were installed around the Oil Pond and sampled. Initially, five test pits were excavated through the upper soil and underlying slag fill material in areas around the Pond. Four of these test pits were subsequently used as insertion points for the monitoring wells. The test pits were necessary to penetrate the slag fill at the surface, since previous efforts to bore through the slag with a drill rig were unsuccessful. One test pit, located approximately 10 feet south of the southeast corner of the Pond, was found to contain oily water. The other four test pits excavated further from the Pond were not impacted by the presence of oil and monitoring wells were installed in these locations. The sampling results following the development of the four wells indicated the absence of volatile organic constituents (VOCs) and semi-volatile organic constituents (SVOCs). All RCRA metals analyses produced non-detect

results except in the cases of cadmium and selenium, which were both present at concentrations below Illinois Class I groundwater limits.

On June 4, 1998, Keystone received a supplemental permit to construct and operate a water pollution control facility. The supplemental permit provided for the construction of a 2,500 gallon coalescing plate oil/water separator (800-gallon oil storage capacity) to treat run-off from the Harris Shear Area, Scraps Products Area, and two storm water detention basins (existing Oil Pond/basin and new proposed storm water basin). The discharge from the separator was designated to flow to the Oil Skimmer Basin.

As of July 1, 1998, the oil stained areas around the shear and bailer had been cleaned up and the new storm water drainage and oil/water separator systems were installed. In addition, Keystone constructed a temporary staging area to manage oil coated steel cuttings received at the scrap yard. The concrete pad staging area drains collected oil and then piped it to the oil/water separator along with the oil from the bailer and shear.

The remediation of the Oil Pond (excavation and disposal of oily residue and soil) was halted due to the discovery of a unique perched groundwater table in the vicinity of the Pond that contained floating oil. Four recovery wells were installed in the Oil Pond area to recover the floating oil layer and impacted groundwater. Water and oil pumped from these wells is discharged into the new oil/water separator system. Control over the scrap yard operation changed in 1999 and Alter Recycling Corporation took over responsibility for, and maintenance of the oil recovery and cleanup effort.

5.5 K061 Waste Pile Area

Keystone halted the off site transport and disposal of EAF dust in 1988 due to the promulgation of new regulations pertaining to treatment of K061. It became necessary to construct a temporary K061 storage area to accommodate the waste stream until treatment meeting the new regulation could be procured. A RCRA management unit was constructed in the slag processing area of the facility. The unit consisted of a flat area about two-thirds of an acre in size covered with several feet of compacted slag (that served as the base to support the weight of the waste pile) with a perimeter berm and a synthetic liner.

As of August 7, 1989, approximately 8,000 tons of K061 EAF dust was being stored in the storage area. No additional waste was added to the unit after August 7, 1989. At no time were any other types of waste stored in the unit.

The stored K061 waste, berm, and liner material were removed from the site, treated and disposed of by PDC between August 7 and December 15, 1989. About 8,617 tons of material was transferred to PDC, including 8,000 tons of K061 and 617 tons of waste residue consisting of the berm material, the plastic lining, and scrapings from the underlying slag surface.

Keystone submitted a closure plan to IEPA for the K061 Waste Pile on June 1, 1990, which incorporated elements requested by IEPA in a March 12, 1990 letter and during a March 30, 1990 meeting between Keystone and the Agency. Final closure of the K061 Waste Pile was performed in accordance with the Closure Plan, which, with a condition concerning confirmation

that no impact to groundwater in the area had occurred during use or removal of the unit, was approved by IEPA on August 30, 1990.

All of the wastes removed were transported to PDC's permitted RCRA hazardous waste treatment facility in Peoria, Illinois, and treated to meet the TCLP standards specified in the Federal regulation promulgated under 40 CFR 268. The treatment process used by PDC consisted of chemical stabilization and solidification using a propriety reagent combination developed specifically for K061 waste to meet Best Demonstrated and Available Technology (BDAT) and maximum allowable TCLP leachate concentrations. Once the K061 waste was treated, it was disposed in PDC's hazardous waste landfill at Peoria, Illinois.

Soil sampling for clean closure was performed on July 26, 1990 as described in the K061 Waste Pile Closure Area Soil Sampling and Analysis Report. A groundwater monitoring system was completed on May 31, 1990. The groundwater investigation consisted of sampling at four monitoring wells installed around the perimeter of the K061 Waste Pile. All soil and groundwater samples met the cleanup objectives established by the IEPA in the letters dated March 12 and August 30, 1990. In addition, in the limited number samples where any analytes were present above detection limits, the results were below Illinois Class 1 groundwater quality standards (i.e., for potential potable resources). IEPA approved of closure of the temporary K061 Waste Pile on October 25, 1993.

6.0 CONCLUSIONS

The December 2000 AOC identifies five areas at Keystone's Peoria, Illinois facility as Solid Waste Management Units (SWMUs), and requires Keystone to determine the nature and extent of any releases of hazardous waste or hazardous constituents at or from these areas. Keystone has no current or historical evidence that three of these areas (the Sheen Pond, F-Pond, and East Pond) have ever been used to store, handle, or dispose of solid or hazardous material. In addition, none of these three units are known to have been associated with any industrial activity at the facility.

The Oil Skimming Basin is an NPDES-permitted unit, used for the settling of iron scale and removal of residual oil from cooling water used in the Steel Works prior to returning it to the Closed-Loop Cooling Pond. This permitted unit is part of Keystone's manufacturing process, and is not used to handle, treat, store, or dispose of hazardous waste or hazardous material. The Tail Tracks Landfill contains Keystone arc shop dust, which was deposited there between 1970 and 1976. The landfill was closed (under permits and approval from ACOE and IEPA) in 1978, prior to USEPA's 1981 listing of steel manufacturing EAF dust as a hazardous waste.

Historical soil samples, surface water samples, and groundwater monitoring data in the areas of the Sheen Pond, East Pond, Oil Skimming Basin, and Tail Tracks Landfill indicate that these areas do not appear to pose any risk to human health and the environment. No hazardous constituents were present in samples collected from the Oil Skimming Basin for the RFA or during groundwater monitoring conducted in this area in compliance with the NPDES permit. Groundwater monitoring in the area of the Tail Tracks Landfill following its closure indicated that there was no migration of hazardous constituents from the capped area or any impact to groundwater. None of the constituents observed in samples from the Sheen Pond or East Pond were above normal soil concentrations or EPA Region 9 Preliminary Remediation Goals (PRGs) for industrial land use (and most of the data were also below the residential land use risk screening levels). Moreover, Keystone has no knowledge of past industrial activities in these two areas, and therefore cannot correlate the sample findings with past practices at the facility.

Historical data for the other areas of the facility that were referenced in the 1989 RFA have been summarized in this report. None of this data indicates the release of hazardous waste at or from any of these areas, nor the presence of any hazardous constituents posing unacceptable risk to human health or the environment.

Since 1989, Keystone has closed and has been in the process of closing several units under oversight from IEPA. Information describing these corrective actions has also been included in this report. Sample data for the RCRA units whose closure is in progress under the IEPA Consent Order have not been detailed here, as the data is voluminous, and corrective action is being undertaken. Data for the other areas at which corrective action has been completed are summarized herein. These data indicate that the areas have been clean-closed for the purposes for which cleanup was performed. Data for one individual sample from the Slag Processing Area, however, indicated the presence of lead and chromium at levels that may require further evaluation with regard to potential risk under current industrial land use.

7.0 ABBREVIATION LIST

ACOE – US Army Corps of Engineers

AOC – Administrative Order on Consent

BDAT – Best Demonstrated and Available Technology

CCA – Compliance Commitment Agreement

CUO – Clean Up Objectives (as established under the 1993 IEPA Consent Order for ditch system closure)

EAF – Electric Arc Furnace

GMZ – Groundwater Management Zone

GPD – Gallons Per Day

HDPE – High Density Polyethylene

HRD – Horsehead Resource Development, Calument City, Illinois (former recycler of Keystone's EAF dust)

IAC – Illinois Administrative Code

IDNS – Illinois Department of Nuclear Safety

IEPA – Illinois Environmental Protection Agency

IMS – International Mill Services – Previous tenant operating the slag processing area.

IPCB – Illinois Pollution Control Board

LDR – Land Disposal Restriction

MGD – Million Gallons per Day

MRSC – Medium Range Soil Concentrations (as specified in Table 1 of the 1989 Keystone RFA Data Evaluation Report – this table has been reproduced in **Appendix B** of this Report)

NPDES – National Pollution Discharge Elimination System

PCB – Polychlorinated Biphenyl

PDC – Peoria Disposal Company

PPE – Personal Protective Equipment

PRG – EPA Region IX Preliminary Remediation Goal

RCRA – Resource Conservation and Recovery Act

RFA – RCRA Facility Assessment

SPI – Scrap Products Incorporated – Tenant operating the scrap yard area until late 1999.

SVOC – Semivolatile Organic Compound

TACO – Tiered Approach to Corrective Action Objectives (35 IL Admin. Code 742)

TCLP – Toxicity Characteristic Leaching Procedure

TDS – Total Dissolved Solids

TSS – Total Suspended Solids

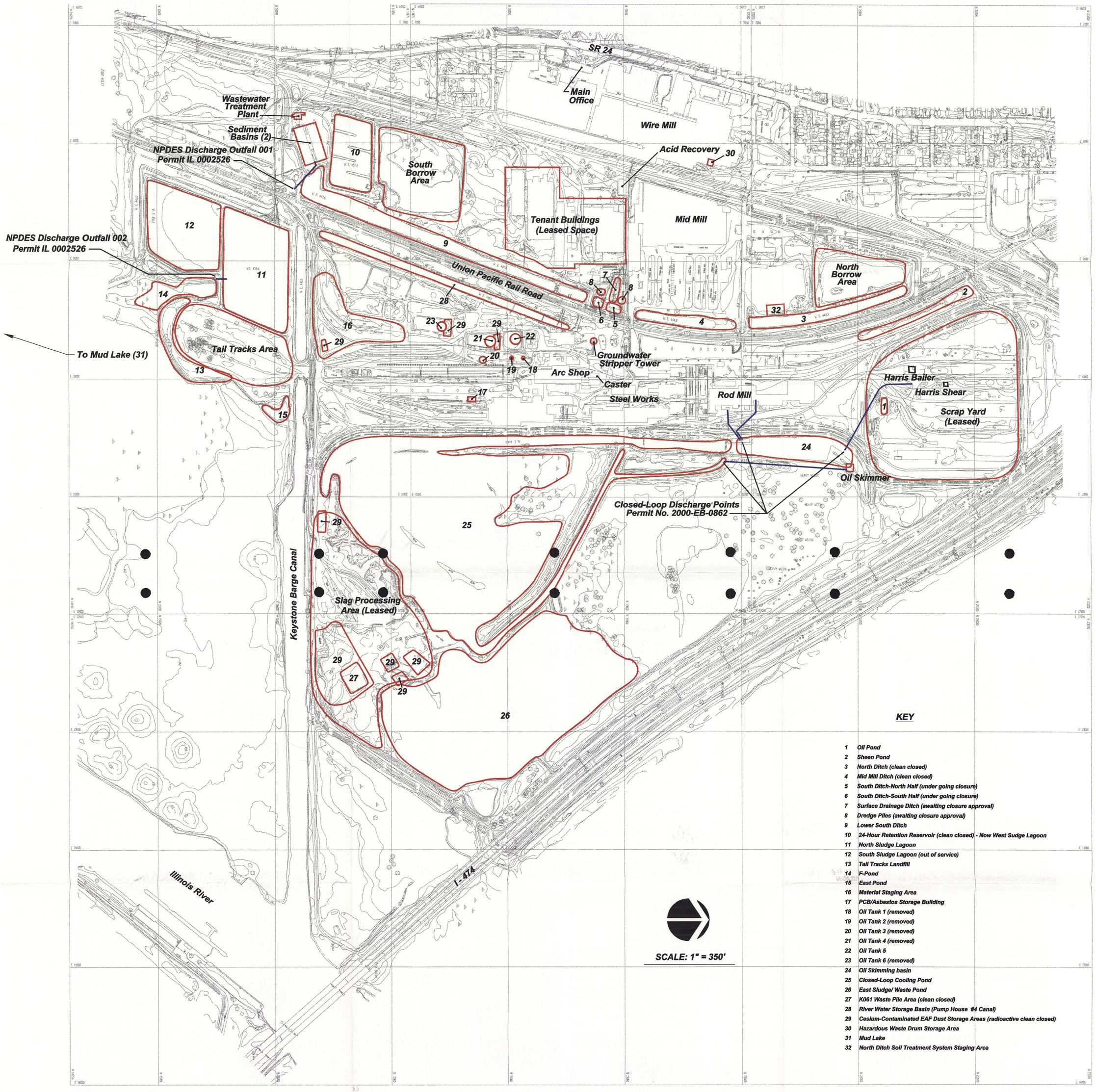
USEPA – United States Environmental Protection Agency

VOC – Volatile Organic Compound

WWTP – Wastewater Treatment Plant

APPENDIX A

KEYSTONE FACILITY MAP



KEY

1 Oil Pond
2 Sheen Pond
3 North Ditch (clean closed)
4 Mid Mill Ditch (clean closed)
5 South Ditch-North Half (under going closure)
6 South Ditch-South Half (under going closure)
7 Surface Drainage Ditch (awaiting closure approval)
8 Dredge Piles (awaiting closure approval)
9 Lower South Ditch
10 24-Hour Retention Reservoir (clean closed) - Now West Sudge Lagoon
11 North Sludge Lagoon
12 South Sludge Lagoon (out of service)
13 Tail Tracks Landfill
14 F-Pond
15 East Pond
16 Material Staging Area
17 PCB/Asbestos Storage Building
18 Oil Tank 1 (removed)
19 Oil Tank 2 (removed)
20 Oil Tank 3 (removed)
21 Oil Tank 4 (removed)
22 Oil Tank 5
23 Oil Tank 6 (removed)
24 Oil Skimming basin
25 Closed-Loop Cooling Pond
26 East Sludge/ Waste Pond
27 K061 Waste Pile Area (clean closed)
28 River Water Storage Basin (Pump House #4 Canal)
29 Cesium-Contaminated EAF Dust Storage Areas (radioactive clean closed)
30 Hazardous Waste Drum Storage Area
31 Mud Lake
32 North Ditch Soil Treatment System Staging Area

LAKE ENGINEERING, INC.
35 GLENLAKE PARKWAY, SUITE 500
ATLANTA, GEORGIA 30328
(770 395-0464

FACILITY MAP

Keystone Steel & Wire Company - Peoria, Illinois
Current Conditions Report - February, 2001

FIGURE A-1

APPENDIX B

MEDIUM RANGE SOIL CONCENTRATIONS

TABLE B-1
MEDIAN ELEMENTAL COMPOSITION OF SOIL
(McClanahan, 1984 – Reproduced from Table 1 of the 1989 RFA Data Evaluation Report)

Element	Abbreviation	Medium Range Soil Concentration (mg/kg)	Typical Concentration (mg/kg)
Silver	Ag	0.01 – 8	0.4
Aluminum	Al	10,000 – 300,000	71,000
Arsenic	As	0.1 – 194	11
Boron	B	2 – 270	20
Barium	Ba	100 – 3,000	500
Beryllium	Be	0.1 – 40	0.3
Bromine	Br	1 – 110	10
Calcium	Ca	LT 150 – 320,000	24,000
Calcium	Ca	700 – 500,000	15,000
Cadmium	Cd	0.01 – 7	0.5
Chlorine	Cl	8 – 1,800	100
Cobalt	Co	0.05 – 65	8
Chromium	Cr	5 – 3,000	100
Copper	Cu	2 – 250	30
Fluorine	F	6 – 7,070	270
Iron	Fe	100 – 550,000	40,000
Mercury	Hg	0.01 – 4.6	0.098
Potassium	K	80 – 37,000	14,000
Magnesium	Mg	400 – 9,000	5,000
Manganese	Mn	20 – 18,300	1,000
Molybdenum	Mo	0.1 – 40	2
Sodium	Na	150 – 25,000	5,000
Nickel	Ni	0.1 – 1,530	50
Phosphorus	P	35 – 5,300	800
Lead	Pb	LT 1 – 888	29
Sulfur	S	30 – 1,600	700
Antimony	Sb	0.2 – 150	6
Selenium	Se	0.1 – 38	0.4
Silicon	Si	250,000 – 410,000	330,000
Tin	Sn	1 – 200	10
Strontium	Sr	LT 3 – 3,500	278
Thorium	Th	2 – 13	9
Titanium	Ti	150 – 25,000	5,000
Thallium	Tl	0.1 – 0.8	0.2
Vanadium	V	3 – 500	100
Zinc	Zn	1 – 2,000	90
Zirconium	Zr	60 – 2,000	90
Cyanide	CN		0.09