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RCRA

Summary of SWMU/AOC Status
Former AK Steel Facility – December 2011

SWMU 1 - RCRA Landfill (post-closure permitted unit). SWMU 1 was used as a landfill for the disposal of bag house dust (BHD/KO61 waste code) from July 1980 to January 1983. The landfill consists of two trenches (one 1,300 feet long and one 650 feet long, both 10 feet deep and 50 feet wide) containing approximately 36,000 cubic yards of BHD. Extraction Procedure Toxicity Testing (EP Toxicity) from emission control dust (ECD) samples collected in June 1982 revealed concentrations of lead (up to 190,000 micrograms per liter [µg/L]), chromium (up to 710 µg/L), and cadmium (up to 7,890 µg/L). Selenium, arsenic, and mercury were also detected in the EP Toxicity Extract. Toxicity characteristic leaching procedure (TCLP) analysis was performed on samples collected in March 1990 and yielded a concentration of lead (123 mg/L) that was in excess of the 5 mg/L toxicity characteristic regulatory level. Concentrations of cadmium (0.029 mg/L) and chromium (not detected with a 0.250 mg/L reporting limit) were below their respective regulatory criteria of 1 mg/L and 5 mg/L. Though not a TCLP metal, one BHD sample also yielded a TCLP zinc concentration of 4.1 mg/L (Tetra Tech, Inc. 1992). Ten monitoring wells and 4 piezometers were installed around the landfill during the 1980s, and an existing monitoring well was incorporated into the monitoring program in 1984 (Burns & McDonnell, 2003). Interim Status groundwater monitoring was conducted from 1983 through 1993, and a detection monitoring program was conducted from 1994 through 1997. Cadmium, chromium, and lead were the primary constituents monitored (Burns & McDonnell, 2003). In 1983, monitoring wells 3 and 6 exceeded the maximum contaminant level (MCL) for gross alpha particles. In 1984, monitoring wells 2, 6, and 9 exceeded the MCL for gross alpha particles, and wells 2, 3, and 9 exceeded the MCL for radium. No information is present in the file regarding the source of the radioactivity (Tetra Tech, Inc. 1992). In 1995, AK's predecessor, Armco Steel applied for and was granted a release from surface water monitoring requirements by MDNR. Multiple groundwater monitoring events did not detect contaminants above MCLs, and in 1998 Armco was released from further groundwater monitoring requirements by MDNR. SWMU 1 requires that the monitoring wells be closed and that cap maintenance and institutional controls (no soil disturbance) be implemented as a part of the final remedy.

SWMU 2 - Old Blue River "W" Landfill (LF-2). SWMU 2 is an approximately 7.25-acre landfill created in an old channel of the Blue River. The landfill, which was used from 1965 to 1980, contains approximately 185,000 cubic yards of materials including emission control dust from the No.1 and No.2 Melt Shops mixed with general plant and office trash. The landfill was capped in 1980 with 3 feet of soil and vegetated. In 1984, the landfill was added to the Missouri Department of Natural Resources (MDNR) list of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites in Missouri. The site is classified as Class IV, which is defined as "sites that have been properly closed—require continued management" (MDNR, 2010). Groundwater samples were collected during the RFI (1997 and 1998) and Supplemental Investigation (2007). VOCs were detected in groundwater samples from eight direct-push locations, with concentrations of VOCs from five locations exceeding the MCL. Filtered lead was detected in groundwater samples from eight direct-push locations at concentrations above the MCL (Burns & McDonnell, 2010). SWMU 2 needs the addition of permanent monitoring wells, annual groundwater monitoring, cap maintenance, and ICs.

SWMU 3 - South of Bar Fab Landfill (LF-3). SWMU 3 is an approximately one-acre landfill created on a narrow strip of land between the Blue River and Interstate 435. The landfill, which was used from 1962 to 1965, contains approximately 14,000 cubic yards of BHD, mill scale and inert construction debris. In 1980, the landfill was capped with 3 feet of soil and vegetated. In 1988, ARMCO notified MDNR that U.S. Army Corps of Engineers channelization work along the Blue River had locally removed the soil cap and some waste. Remaining waste was exposed across an area approximately 440 feet long and averaging 100 feet wide. A concrete cap was applied to the west side of the landfill along the Blue River and to the east side along a drainage culvert. Additional modifications were made when a road was constructed over the landfill in 1998. Soil and fill samples collected during a 1988 investigation of the disposal area revealed total lead concentrations up to 21,000 milligrams per kilogram (mg/kg) in soil; EP Toxicity testing revealed lead (up to 14 mg/L) and cadmium (up to 8 mg/L). No contaminants of concern were detected at concentrations exceeding their MCLs in groundwater samples collected during the RFI (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Two additional direct-push groundwater samples were collected to verify results of the 1999 RFI data which were analyzed by ITS Richardson laboratory. The new data concurred with past sampling results, which indicated that dissolved lead and cadmium concentrations were below MCLs. SWMU 3 requires no further action other than cap maintenance and institutional controls as a part of the final remedy.

SWMU 4 - 1987 Waste Pile. SWMU 4 used to be a 1.5- to 2-acre pile of approximately 14,000 cubic yards of BHD discovered near SWMU 2 in 1987. AK has indicated the actual size of the foot print of the site to be approximately 16 acres. By November 1988, the waste had been removed and shipped to a recycling facility for zinc recovery. Analysis of the BHD at SWMU 1 indicated elevated concentrations of lead, chromium, and cadmium. No confirmatory sampling was conducted following the removal of the BHD waste pile at SWMU 4. During the RFI (1999), approximately half of the soil samples from the central portion of where the BHD waste pile was staged had cadmium or lead concentrations that exceeded the 20 dilution attenuation factor (DAF) soil screening levels, and approximately 30 percent of the samples exceeded the site-specific PRG for lead or 1,531 mg/kg. No samples exceeded the industrial, health-based soil concentration for cadmium (Burns & McDonnell, 2009). Dissolved lead was detected in three out of 16 groundwater samples at concentrations exceeding the MCL (Tetra Tech, Inc. 1992; Burns & McDonnell 2007b). Much of the data collected during the RFI was confirmed by field analytical results, so no new sampling was performed in 2007 to validate the ITS Richardson data collected at the SWMU. Corrective measures at SWMU 4 are needed, and should consist of soil remediation for lead and cadmium, groundwater monitoring, and institutional controls. The groundwater monitoring network for SWMU 2 will incorporate monitoring wells for SWMU 4. In addition, it is clear that the SWMU 4 boundary depicted in the 1996 RFI Work Plan and 1999 RFI Report does not accurately depict the extent of contamination, and this boundary should be updated to reflect investigation findings in subsequent reports. Furthermore, cadmium and lead action levels in soil may need to be established based on ecological risk rather than human industrial exposures due to the close proximity to the Big Blue River and likely ecological receptors at the site. The slag levee on the north side of SWMU 4 is approximately 14 feet (ft) above the grade of SWMU 4 and acts as a barrier to airborne migration to the north and to surface flow to the Blue River.

SWMU 5 - Plant Rubble Landfill (LF-1). SWMU 5 is an approximately 3-acre landfill established in 1980 for "non-putrescible rubble from plant operations" (that is, solid waste that does not contain decomposable organic matter, does not cause odors capable of attracting animals, and does not provide food for animals). The capped landfill is 1,350 feet long, 185 feet wide and 15 feet deep and contains over 120,000 cubic yards of waste. ARMCO indicated that the landfill contained only earth, rock, and similar materials, but inspection during the RFA revealed plastic, scrap metal, wood, and cloth as well. No detections of dissolved cadmium or lead were detected in groundwater samples collected during the RFI or during groundwater monitoring of SWMU 1, the adjacent RCRA Landfill, from 1983 to 1997 (Tetra Tech; Inc. 1992; Burns & McDonnell 2006b). Sufficient non-ITS Richardson data are available from historic groundwater sampling events so no new data collection was performed. SWMU 5 requires no further action other than cap maintenance and institutional controls as a part of the final remedy.

SWMU 6 - RCRA Permitted Baghouse Dust Storage Tanks. SWMU 6 consists of four former fuel oil storage tanks (Tank Nos. 1, 2, 3, and 5) at the tank farm that were used to store emissions control dust from 1983--when SWMU 1 stopped receiving emissions control dust--to 1986, when the facility began shipping the dust off site for zinc recovery. Tank No. 4 is referred to as AOC 4, and it never contained ECD. The tanks contained dust from the No.1 and No.2 Melt Shops. Tanks 2, 3, and 5 were approximately 100 feet in diameter with a height of approximately 40 feet; each had a capacity of about 2,350,000 gallons. Tank 1 was approximately 100 feet in diameter with a height of 30 feet and a capacity of about 1,750,000 gallons. The tanks were certified closed in 1990 and 1991. In 1998, the tanks and associated fuel oil piping were removed and demolished. During the RFI, material similar in appearance to emission control dust was encountered in soil and removed. Cadmium and lead were detected at concentrations above their respective 20 DAF soil screening levels in three confirmatory soils samples collected after the cleanup, and concentrations of lead in two confirmation samples exceeded the site-specific PRG for lead of 1,531 mg/kg. Paint-related materials also were encountered in soil. Soil samples revealed 20 DAF soil screening level exceedences, primarily of cadmium and lead, with fewer than five exceedences of arsenic, mercury, selenium, and silver. Two detections of benzo(a)anthracene, one of benzo(b)fluoranthene, and four detections of methylene chloride also exceeded their 20 DAF soil screening levels (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Additional soil sampling conducted in 2007 only correlated moderately with soil data collected during the RFI, but it should be noted that they were not co-located with RFI samples. Since the RFI, the tank footprints have been partially backfilled with facility-generated slag. There is sufficient data to conclude that corrective action will be necessary at SWMU 6 and AOC 4 to address soil contaminated with metals.

SWMU 7 - No. 1 Melt Shop Baghouse Dust Tanks (TS-1). SWMU 7 consists of two former tanks used for temporary storage of emission control dust from the No.1 Melt Shop between 1962 and 1988. The dust was trucked from temporary storage tanks to other SWMUs across the facility for management, except for a brief period in the 1980s when the facility experimented with pelletizing the dust for reintroduction to the furnaces. The temporary storage tanks were approximately 20 feet in diameter and 25.5 feet tall, with a total storage capacity of approximately 75 cubic yards. Prior to demolition in 1991, a remediation contractor removed the emissions control dust from the tanks and associated dust handling equipment. No visible evidence of the

former dust storage operation remains on SWMU 7, which covers approximately 0.05 acres. Toxicity analysis of dust samples collected from the No.1 Melt Shop in 1982 and 1983 revealed " lead (up to 112,000 µg/L), cadmium (up to 12,400 µg/L), and chromium (up to 30 µg/L), as well arsenic, barium, mercury, selenium, and silver. RFI sampling revealed basic soils with cadmium and lead detections exceeding soil screening levels throughout the area southeast of the No. 1 Melt Shop, primarily in the upper 4 feet of soil (Tetra Tech, Inc. 1992; Burns & McDonnell 2007b). In addition, lead concentrations for approximately 8 percent of the soil samples exceeded the site-specific PRG of 1,531 mg/kg, and no cadmium results exceeded the EPA RSL for industrial soil (Burns & McDonnell, 2009). Supplemental surface soil sampling conducted in 2007 correlated moderately with RFI data. Corrective action will be necessary at SWMU 7. Exposure units no greater than 0.5 acres should be considered when evaluating the risk of exposure to soil contamination.

SWMUs 8 and 11 - No. 2 Melt Shop Baghouse Dust Tank (TS-2)/Dust Railcar Loading Area-No. 2 Melt Shop. SWMUs 8 and 11 are an inactive emissions control dust tank and dust railcar loading area, respectively, located on less than 0.2 acre. ARMCO and AK Steel have not had control of this property since it was purchased by GST in 1993 and then by Compass Big Blue, LLC (Compass), in 2001. The SWMU 8 tank was constructed in 1977 and consists of a steel tank 12 feet in diameter by 17.33 feet high with a capacity of 50 cubic yards. Emissions control dust was temporarily stored in SWMU 8 until it was transferred to another SWMU for management. In 1988, the SWMU 11 loading area was constructed, and emissions control dust was then transferred from SWMU 8 to railcars and transported off site for recycling. During the RFI, cadmium (maximum 216 mg/kg, J coded data) and lead were detected at concentrations exceeding 20 DAF soil screening levels in soil samples near the center of the SWMU 8 and 11 areas (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). In 2003, Compass removed approximately 200 cubic yards of contaminated soils from SWMUs 8 & 11. Lead impacted soils were removed to levels less than 200 mg/kg. Post remediation confirmation samples for cadmium in soil were not collected. Therefore, there is a potential for cadmium to have remained in soil at concentrations exceeding the 20 DAF soil screening level. The cleanup is summarized in the Cleanup Completion Report, Compass Big Blue Site Investigation (Old GST Mill), Kansas City, Missouri (Compass, 2003). Groundwater samples have not been collected at SWMU 8 or 11, but sampling results for other SWMUs at the site indicate that lead and cadmium do not leach to the shallow groundwater. The exception to this is SWMU 2, but it is a 30-year old landfill constructed in an old river channel, likely resulting in the shallow groundwater surface elevation being above the depth to the waste material. Therefore, it is concluded that groundwater sampling is not necessary at SWMUs 8 and 11.

SWMU 9 - No. 1 Melt Shop Baghouse Dust Conveyor. SWMU 9 was a steel screw conveyor that operated from 1977 through 1988 as part of the Secondary Emissions Control System for the No. 1 Melt Shop. In 1990, ARMCO's contractor Remcor certified closure of SWMU 9, but no confirmation samples were collected. Six surface soil samples collected during the RFI revealed either no detections of lead and cadmium or detections below the 20 DAF soil screening levels (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Additional soil sampling conducted in 2007 indicated lead and cadmium concentrations consistent with the RFI results. Both data sets indicated levels below residential screening levels. No further action is necessary at SWMU 9.

SWMU 10 - Dust Railcar Loading Area - Bar Joist Building. SWMU 10 was a railcar loading area for emission control dust from the No. 1 and No. 2 Melt Shops. From 1986 to 1991, approximately 70,000 tons of emission control dust was loaded at the SWMU. When operations ceased in 1991, residual dust was removed from the SWMU and the Bar Joist Building (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Interim Measures consisting of the excavation and off-site disposal of 180 cubic yards of material were completed at SWMU 10 in 1997. One confirmation soil sample collected at a depth of 1.5 feet bgs detected lead at 1940 mg/kg, which exceeds the site-specific RSL for lead. 8 out of 11 soil confirmation samples exceeded the 20 DAF soil screening level for lead and cadmium of 8 mg/kg. Excavated areas were backfilled with gravel and a 4-inch asphalt cap. No groundwater sampling data for SWMU 10 has been provided to EPA. Sampling results for other SWMUs at the site indicate that lead and cadmium do not leach to the shallow groundwater. The exception to this is SWMU 2, but it is a 30-year old landfill constructed in an old river channel, likely resulting in the shallow groundwater surface elevation being above the depth to the waste material. Therefore, it is concluded that groundwater sampling is not necessary at SWMU 10. Minimum corrective measures will likely consist of cap maintenance and ICs restricting property to industrial use only. This SWMU is currently owned by Hansen Property Development, Inc., and a U-Pick-It salvage yard currently operates on the parcel.

SWMU 11- Dust Railcar Loading Area – No. 2 Melt Shop. Included with SWMU 8 discussion.

SWMU 12 - Amoco Landfarm. SWMU 12 is located on AK Steel property that was leased to Amoco from 1973 through 1980. Between 1975 and 1979, Amoco used the property as a landfarm for approximately 30,000 tons of petroleum refining waste generated at the Amoco Sugar Creek Refinery, located east of SWMU 12. Each year, an estimated 3 to 8 inches of waste was incorporated into the soil through spreading and disking. Additionally, a one-time application (less than 10,000 gallons) of liquid and sludge from cleaning of the No. 2 fuel oil tank occurred in 1976 or 1977. A dike with two culverts surrounded the SWMU and controlled runoff and sludge water. The culvert gates appeared closed during the RFI; however, no information regarding the quantity or quality of water discharged through the culverts is available. During the 1993 flood, SMWU 12 was covered with floodwaters. Additionally, in 1998, an approximately 140-foot-long by 40-foot-deep slope failure was noted on the Rock Creek side of the dike; however, the dike was not breached, and no release of SWMU contents occurred. During the RFI, lead was detected at concentrations above its 20 DAF soil screening level in six of the 14 soil samples; trivalent chromium also was detected but has no 20 DAF soil screening level for comparison. Historic soil data reveal oil and grease and total petroleum hydrocarbons (TPH) at depths to 13 feet below ground surface (bgs). During the RFI, six groundwater samples were collected from four newly installed monitoring wells and two existing wells. The compound bis(2-ethylhexyl)phthalate (BEHP) was the only SVOC detected at a concentration above its MCL; no VOCs or metals were detected. The RFI results confirm historical groundwater results (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Additional soil sampling was conducted in 2007 that confirmed the RFI data for metals concentrations. Comparability of SVOC data was not well correlated. Lead in the upper 2-foot soil horizon is the primary concern, with concentrations as high as 4,400 ppm. The Supplemental Investigation Report alleges that 6 inches of sediment was

deposited on SWMU 12 during the 1993 flood. SWMU 12 is covered with thick vegetation. The site-specific PRG for the AK Steel Site is 1,531 ppm. Regardless of sediment deposition and vegetation, corrective measures will be necessary to address contaminated soil at SWMU 12.

SWMU 13 - Pickle Liquor Tanks (STA-2). SWMU 13 consists of spent pickle liquor tanks operated from 1971 to 1989. The pickle liquor consisted of sulfuric acid used to clean iron oxide from the steel rods. Over the operational life of the SWMU, spent pickle liquor was stored in three different tanks of varying dimensions and capacities located on less than 0.1 acre on the east side of the Rod Cleaning Building (Cleaning House). Between 1981 and 1989; a recycling system was in place for the spent pickle liquor. The ferrous sulfate that precipitated out during recycling or regeneration was sold as flocculant product. Spent pickle liquor also was used by the City of Kansas City, Missouri, to promote coagulation in its Blue River Sewage Treatment Plant. The tanks were closed in 1992.

During the RFI, subsurface soil samples were collected from 13 direct-push borings, and eight of these borings were added due to elevated photoionization detector (PID) readings near the water table. While the original RFI scope was for analysis of soil pH to monitor potential impact of acid operations at this SWMU, analysis for VOCs and SVOCs (2 samples) was also performed. VOCs (primarily ketones) and SVOCs were detected in soil, but not at concentrations exceeding their 20 DAF soil screening levels. Soil pH ranged from acid to neutral near the former tank locations and from neutral to basic in perimeter samples. The RFI did not sample for metals in soils, even though the RFI identified metals as contaminants of potential concern. During the RFI, groundwater samples were collected from direct-push borings and wells associated with the SWMU 33 monitoring network (i.e., Well Clusters 33MW5S/5I/5D, 33MW11S/11D, 33MW12S/12D, and 33MW13S/13D). Analyses were conducted for RCRA metals (15 direct-push borings and 9 wells), VOCs (11 direct-push borings and 9 wells), and SVOCs (5 direct-push borings). Chloroform (2 samples) was the only VOC detected, and PAHs were detected in groundwater from one location. Groundwater pH ranged from 3.9 to 5.9 toward the center of the sampling area, and pH values (pH 6.1 to 8.2) were more neutral toward the perimeter of the sampling area. Metals were the primary constituents detected in groundwater at SWMU 13 during the RFI. Results for dissolved arsenic, cadmium, lead, and selenium exceeded MCLs for various groundwater samples collected from direct-push borings. It was noted that metals concentrations were lower in groundwater samples collected from Monitoring Well Cluster 33MW13S/13D, which was placed inside the SWMU 13 boundary, as compared to samples from the direct-push borings.

The 2007 Supplemental Investigation consisted of sampling soil at only one location, (13B09A). Samples from 4 depth horizons were sampled at this location and analyzed for metals. Arsenic was the only metal in soil exceeding industrial RSLs, and its concentration was below the 20 DAF SSL. 2007 Supplemental Investigation groundwater samples were collected for metals analysis from wells associated with the SWMU 33 monitoring network (i.e., Well Clusters 33MW5S/5I/5D, 33MW11S/11D, 33MW12S/12D, and 33MW13S/13D. Metals concentrations were below MCLs in the groundwater sample collected from Well Cluster 33MW13S/13D, and slight exceedance of the arsenic MCL were noted in the groundwater samples collected from Monitoring Wells 33MW5I and 33MW5D. 2007 Supplemental Investigation groundwater data

from monitoring wells was compared to 1998 RFI monitoring well sampling, and results for dissolved metals were comparable between the two events. Groundwater results did not correlate with the RFI direct-push borings, most likely due to differences in sampling techniques and the inherent problems with elevated turbidity in samples collected using direct-push methods. The only 2 monitoring wells at SWMU 13 were sampled during the 2007 Supplemental Investigation, and results indicated that all detections of metals and VOCs were below MCLs in groundwater. The RFI and the Supplemental Investigation did not adequately characterize SWMU 13 for metals in soil. Additional soil sampling is needed at SWMU 13.

SWMU 14: SWMU 14 – Etch Lab Mixing Tank (EN-1). SWMU 14 was a 350-gallon polyethylene tank located inside the Etch Lab. The tank was used to store hydrochloric acid, sodium hydroxide, and rinse water. It was active at the time of the 1992 RFA, and underwent closure in 1993. Sampling of groundwater and soil was not recommended at the time of the RFA. There are no records to indicate there was a release from the tank. A 1994 closure report indicated that the tank was washed and disposed of at the Laidlaw Landfill. A sample of the wash water was non-detect for metals contamination. No further action is required for SWMU 14.

SWMU 15 – Etch Lab Holding Tank (STA-3). SWMU 15 was a 1,500-gallon fiberglass tank located above ground, outside, on the west side of the Etch Lab. It was used to contain used etch solutions consisting of hydrochloric acid, sodium hydroxide, and rinse water. The tank was decommissioned in 1993. A 1994 closure report indicated that the tank was washed and disposed of at the Laidlaw Landfill. A sample of the wash water was non-detect for metals contamination. No further action is required for SWMU 15. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 15 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 16 – Roll Shop Roll Cleaning Tank (STA-4). SWMU 16 was a 75-gallon stainless steel tank located at the Roll Shop and used to hold spent phosphoric acid cleaning solution. The spent acid was transferred to the portable storage tank (SWMU 15) where it was ultimately disposed of in the Mill Ponds. There are no records of releases from this tank. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 16 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 17 - Wire Mill Rinsewater Neutralization Tank (STU-5). SWMU 17 consisted of an open-topped, 18,000-gallon underground storage tank (UST) constructed of concrete with an acid-proof brick lining. The UST was used until 1991 to collect acid rinse waters from hydrochloric acid wire cleaning operations and sulfuric acid rod cleaning operations. In 1991, the tank was cleaned and closed in place during closure of the Wire Mill. During the RFI, VOCs were detected in soil, with trichloroethene (TCE) exceeding its 20 DAF soil screening level in three out of three soil samples. In groundwater, lead exceeded its MCL in one out of eight samples. VOCs in groundwater are discussed with SWMU 33. Additional sampling of SWMU 13, 17, and 33 was performed in 2007. Sampling results indicated the presence of VOCs in groundwater exceeding PRGs. The predominant VOCs detected were TCE and its related degradation products. The EPA and MDNR have approved a pilot study for interim measures that consists of soil vapor extraction (SVE). A CMS and final corrective measures should be implemented once SVE

interim measures have been completed or the pilot study indicates SVE is not an appropriate remediation technology.

SWMU 18 – Blooming Mill Scale Pit (STU-1). SWMU 18 was a 95,000-gallon steel and concrete underground storage tank located at the north side of the Blooming Mill Building. This open-air tank was actively used from 1955 to 1988 for re-circulated cooling water from the mill water system, mill scale, and residual lubricating oil. SWMU 18 was inactive at the time of the 1992 RFA, but had not been cleaned and closed. AK Steel claims that the tank was cleaned out and backfilled prior to 1993. AK Steel has not provided EPA with any records to support this claim. The exact location of SWMU 18 is unknown, but it was likely located near SWMU 33, the Nail Mill Degreasing Area due to its association with the Blooming Mill operation. The extensive groundwater monitoring network at SWMU 33 would have likely detected contamination from the Blooming Mill Scale Pit (SWMU 18). Specifically, Sampling results from Well # 33MW16S, 33MW16D, 33MW15S, 33MW15D, 33MW10S, and 33MW15D. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 18 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 19 – Twelve-Inch Mill Scale Pit (STU-2). SWMU 19 was a concrete underground storage tank with a 27,000 gallon capacity located at the east side of the Twelve Inch Mill Complex. The tank was actively used from 1948 to 1988 to store re-circulated cooling water from the mill water system, mill scale, and residual lubricating oil. The tank was washed and was planned for backfilling as of October, 1991. EPA does not have any records of backfilling details or contaminant characterization for SWMU 19. Section 6 of the 1992 RFA recommended that the structural integrity of the pit be assessed and sampled if appropriate to determine compliance with the closure plan. The RFA recommended that the contractor that cleaned the Pit certify that the SWMU was cleaned and closed. EPA is not aware that this was performed. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 19 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 20 – Rod Mill Scale Pit (STU-3). SWMU 20 was a steel and concrete underground storage tank with a 42,000 gallon capacity located at the west end of the Rod Mill Complex. The tank was actively used from 1957 to 2001 to store re-circulated cooling water from the mill water system, mill scale, and residual lubricating oil. The exact location of SWMU 20 is not known, but it is presumed to be on property owned by House of Burgess, LLC and located near the Rod Mill. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 20 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents. One groundwater monitoring well should be installed between the Rod Mill and the Big Blue River. (Note: The monitoring well can serve multiple SWMUs)

SWMU 21 – No. 2 Melt Shop Scale Pit (STU-4). SWMU 21 was a steel and concrete underground storage tank with a 171,000 gallon capacity located at the northeast corner of the 19-inch Mill Building. The tank was actively used from 1977 to 2001 to store re-circulated cooling water from the mill water system, mill scale, and residual lubricating oil. The exact location of SWMU 21 is not known. The 1992 RFA indicated that the tank was actively used at the time and recommended that the structural integrity of the pit lining be assessed. EPA has no record of

closure details for the SWMU. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 21 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 22 - Mill Ponds. SWMU 22 consists of two inactive, clay-lined ponds separated by a clay berm. The ponds are irregular in shape, ranging in width from 250 to 540 feet, with an approximate length and depth of 900 feet and 7 feet respectively. The ponds were constructed in 1976 in order to cool mill water from various on-site locations. Since construction, the ponds have collected fluids from numerous sources:

- Cooling water from Rod Mill, 19-Inch Rolling Mill, Continuous Casting, Ball Forging, Grinding Media, and other hot-rolling facilities that have since been demolished
- Groundwater recovered during remediation efforts at an abandoned fuel oil tank (AOC 1) in 1991
- Hydrochloric and phosphoric acid solutions generated in the Etch Lab and Roll Cleaning operations, respectively, placed in the ponds to control the pH of the mill water
- Direct precipitation; grading prevents stormwater runoff from entering the ponds.

In 1993, GST purchased the property from ARMCO; Compass Big Blue subsequently purchased the property from GST. During the 1993 property transfer, the NPDES permit was revised, transferring Mill Ponds Outfall No. 042 to GST. From 1993 to the bankruptcy of GST in 2001, GST continued to add a phosphoric acid solution to the ponds at a rate of approximately 750 gallons of solution every three to four months. During the RFI, 10 direct push groundwater samples were analyzed for RCRA metals, pH, VOCs, and SVOCs. An additional five direct-push groundwater samples and four piezometers samples were analyzed for arsenic. Two compounds--arsenic (10 samples) and BEHP (two samples)--were detected at concentrations exceeding their MCLs. These compounds were not detected in three downgradient piezometer samples collected in 2003 by Compass Big Blue. Also during the RFI, three out of four sediment samples collected from the Mill Ponds contained arsenic at concentrations exceeding 20 DAF: soil screening levels; dissolved arsenic was not detected in four corresponding surface water samples. Compass Big Blue also collected six sediment samples in 2003 for TPH and TCLP metals analyses. TCLP metals analysis revealed chromium (0.247 mg/L) in one sample, and TCLP metals were not detected in the remaining samples. The extractable TPH analysis revealed motor oil (up to 84,000 mg/kg). On December 30, 2008, Compass Big Blue sold the SWMU 22 property to Blue Summit LLC, whose point of contact is Mr. Greg Short. EPA notified Mr. Short of a PPA prior to this purchase, but he did not enter into one. Since the sale, Mr. Short has been selling the mill scale to Lafarge for use in its cement production. However, Mr. Short has been struggling with drying the mill scale prior to shipping to Lafarge, and cannot provide a date when he will complete the mill scale removal. Interim measures were outlined in the *Interim Measures Work Plan for SWMU 22, Mill Ponds, AK Steel, Kansas City, Missouri* (Burns & McDonnell, 2009), which was approved by EPA and MDNR in February 2009. Corrective/interim measures at SWMU 22 will consist of some combination of mill scale removal, capping, groundwater monitoring, and institutional controls.

SWMU 23 – Safety-Kleen Units. SWMU consisted of 78 spent solvent storage units located around the facility. Storage capacity of the units ranged from 6 to 250 gallons. The spent solvents stored consisted of D001, D018, D039, and F005 wastes. The primary solvent constituents consisted of petroleum naphtha, benzene, and tetrachloroethylene. The storage tanks were located inside buildings used for the steel production facilities. The locations of these tanks cannot be confirmed as the facilities have been dismantled. At some time prior to issuing the 1994 HSWA Part II Permit, the EPA determined that no further action was required for SWMU 23.

SWMU 24 - Waste Hydraulic Lubricating Oil Storage Tanks. SWMU 24 consisted of a waste oil collection system that served the entire facility between 1975 and 1993. According to the facility's post-closure permit application, the system consisted of two 28,000-gallon above-ground storage tanks (ASTs). Used oil was brought to SWMU 24 in drummed containers or 600-gallon totes. Spills associated with waste oil transfer caused soil staining. Briefly, in the 1980s, 1,1,1-trichloroethane (TCA) may have been added to the fuel oil system; however, there was no mechanism for doing so at the Boiler Furnace Area. Waste oil from SWMU 24 was incorporated in the heating oil supply until 1991, after which it was sent off site for fuel blending. In 1993, SWMU 24 was removed from service. The components were cleaned, dismantled, and removed; in 1996, the two ASTs were recycled. During the RFI, 51 surface and subsurface soil samples were analyzed for RCRA metals and polynuclear aromatic hydrocarbons (PAHs); 29 were analyzed for VOCs. Of the metals, cadmium and lead concentrations exceeded 20 DAF soil screening levels throughout the area, with detections extending to 15 feet bgs; however, only one sample had lead concentrations in excess of the site-specific PRG of 1,531 mg/kg. One-detection of arsenic and chromium and two detections of selenium exceeded 20 DAF soil screening levels in a limited area that extended no deeper than 5 feet bgs. Two PAHs--benzo(a)anthracene and benzo(b)fluoranthene--exceeded 20 DAF soil screening levels in a limited area that extended no deeper than 5 feet bgs. No VOCs were detected. Also during the RFI, two perched groundwater samples and eight saturated zone groundwater samples were analyzed for RCRA metals, VOCs, and/or PAHs. One unfiltered sample that was seeping into the bottom of a trench had detections of cadmium and lead that exceeded groundwater MCLs. VOCs were detected in five out of 10 samples with *cis*-1,2-dichloroethene (DCE), TCE, and vinyl chloride exceeding their MCLs in one sample of perched groundwater encountered at 2.5 ft bgs in the immediate vicinity of the former tanks. The horizontal and vertical extent of VOCs was defined by surrounding groundwater samples collected from the saturated zone, which were non-detect for VOCs or exhibited concentrations below MCLs. No PAHs were detected. Groundwater sampling performed in 1998 detected only one VOC (1,1-dichloroethane) exceeding it's RSL in two monitoring wells. VOCs were not detected in the two Supplemental Investigation groundwater samples collected from in 2007. The 2007 Supplemental Investigation soil sampling failed to verify lead contamination documented in the RFI largely due to the fact that the 2007 samples were not co-located with the RFI samples and were collected at different depths than the RFI samples. However, the entire data set from the 2007 Supplemental Investigation generally supports the precision of the RFI data and should be relied upon for remediation decisions. The

groundwater data generated subsequent to the RFI does not appear to warrant extensive corrective measures. The soil contamination also does not appear to warrant extensive corrective measures as long as ICs are put in place to restrict land use for industrial use only.

SWMU 25 - Roll Shop Drum Storage Area. SWMU 25, established in the early to mid 1970s, consisted of an approximately 45- by 14-foot storage area for drums of waste oil, swarf (grindings from carbide rolls), and worn or broken carbide toolings. Waste oil drums were temporarily stored on pallets over asphalt pavement. They were later transported to the Waste Oil Storage Area (SWMU 24). Used phosphoric and hydrochloric acids occasionally were stored in 500-gallon ASTs at SWMU 25 prior to use for pH control in the Mill water recirculation system. Use of waste oil storage ended in 1993. Visual inspection in 2006 revealed only scrap metals storage. During the RFI, 37 surface and subsurface soil samples were collected for RCRA metals, pH, and PAH analyses. Of the metals, cadmium and lead concentrations exceeded 20 DAF soil screening levels (cadmium - 8 mg/kg; lead - 400 kg/mg) throughout the area, with detections extending to 8 feet bgs; however, only one lead detection exceeded the site-specific PRG of 1,531 mg/kg. One detection of mercury exceeded its 20 DAF Soil screening level (2 mg/kg). PAHs were detected in most soil samples, with samples from one boring exceeding 20 DAF soil screening levels. Subsurface PAH contamination exists below the footings of former buildings. Compass constructed an asphalt cap over SWMU 25 sometime in 2003. The November 25, 2003 Cleanup Completion Report prepared by Compass indicates that Deed Restrictions will be implemented to protect the asphalt cap. House of Burgesses, LLC (operating as Midwest Scrap Management), purchased the property in 2005 and now uses the SWMU 25 property as a scrap metal yard, making re-sampling impractical. No further soil sampling appears necessary. ICs for SWMU 25 appear reasonable, and one down gradient groundwater monitoring well installed between the Roll Shop and the Big Blue River is recommended. (Note: The monitoring well can serve multiple SWMUs)

SWMU 26 - Rod Mill Drum Storage Area. SWMU 26 consisted of a 15- by75-foot outside storage area located at the southwest end of the Rod Mill, just east of the Rod Mill Scale Pit. Waste oil drums--up to 30 or 40 at one time--were stored in the area before being transported to the Waste Oil Storage Area (SWMU 24). Drum storage activities occurred between the mid1980s and 1993. Visual inspection in 1991 revealed soil staining and several drums that were open or leaking. SWMU 26 is located on property previously owned by GST and Compass Big Blue, and currently owned by House of Burgesses, LLC (operating as Midwest Scrap Management). In 1994, GST constructed an extension to the Rod Mill Building over SWMU 26. The SWMU was excavated during construction and paved with concrete. In March 2006, Midwest Scrap Management machinery was observed on SWMU 26. Four subsurface soil samples collected during the RFI revealed RCRA metals at concentrations below 20 DAF soil screening levels and no PAHs. Compass constructed an asphalt cap over SWMU 26 sometime in 2003. The November 25, 2003 Cleanup Completion Report prepared by Compass indicates that Deed Restrictions will be implemented to protect the asphalt cap. House of Burgesses, LLC (operating as Midwest Scrap Management), purchased the property in 2005 and now uses the SWMU 26 property as a scrap metal yard, making re-sampling impractical. No further soil sampling appears necessary. ICs for SWMU 26 appear reasonable, and one down gradient groundwater monitoring well installed between the Rod Mill and the Big Blue River is recommended. (Note: The

monitoring well can serve multiple SWMUs)

SWMU 27 - Bar Joist Building Hazardous Waste Storage Area. SWMU 27 consists of a roughly 30- by 85-foot drum storage area within the north end of the Bar Joist Building. Drums were stored at SWMU 27 on an as-needed basis from 1982 to 1984 and on one occasion in 1987. Inspection reports from 1982 associated with the SWMU indicated over one hundred 55-gallon drums containing paint sludge, caustic sludge, TCE, and nonhazardous waste. SWMU 27 is located on property previously owned by GST and currently owned by Hansen Property Development, Inc. A U-Pick-It salvage yard currently operates on the parcel. SWMU 27 is currently paved with concrete, but may not have been paved during drum storage. During the RFI, nine subsurface soil samples were collected for RCRA metals and VOC analyses, and an additional nine subsurface soil samples were analyzed for cadmium and lead. Cadmium and lead were detected at concentrations above 20 DAF soil screening levels, and none of the lead results exceeded the site-specific PRG of 1,531 mg/kg. Groundwater sampling has not been performed at SWMU 27, and is recommended. We have not provided a Strategy Letter for this SWMU. At a minimum, a restrictive covenant/ICs should be obtained for SWMU 27. One groundwater monitoring well installed between the Bar Joist Building and the Big Blue River is also recommended. (Note: The monitoring well can serve multiple SWMUs)

SWMU 28 – Outside Hazardous Waste Storage Area. SWMU 28 was identified in the 1992 RFA as an unknown location where drums of hazardous waste were stored outside. The RFA identified the waste as caustic sludge and liquids of unspecified origin. Additional research is needed to determine the location of SWMU 28. The 1992 RFA indicated that the SWMU was inactive and recommended ARMCO make additional efforts to identify the location of SWMU 28 and collect soil samples. EPA has not been provided any records to identify the location of SWMU 28 or indicate that any closure or sampling activity was performed at this SWMU. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 28 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 29 – Main Substation PCB Storage Area. SWMU 29 was a PCB waste storage area used for storing PCB-transformer oil and waste capacitors and transformer components contaminated with PCBs. The 1992 RFA identifies the location as inside a building at the main substation area. The RFA indicated that the SWMU was inactive and recommended that the soil be sampled for PCBs. The EPA has not been provided any records that this SWMU was sampled or properly closed. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 29 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 30 – Long Tractor Shed PCB Storage Area (CS-2). A 1982 PCB Inspection Report states that four transformers containing PCB-oil were stored in a tractor shed at this SWMU. During a 1991 RCRA inspection, 6 transformers and approximately two dozen drums were observed stored at the SWMU 30 location. The RFA identified SWMU 30 as an active SWMU with drum contents being roofing tar, degreaser concentrate, and alkaline cleaner. Additional research is needed to determine the location of SWMU 30, but it is believed to be located on property currently owned by House of Burgess, LLC. At some time prior to issuing the 1994 HSWA Part

II Permit, the EPA determined that no further action was required for SWMU 30.

SWMU 31 – Small Tractor Shed PCB Storage Area. SWMU 31 was identified in the 1992 RFA as a small fenced area inside of a small tractor shed. During a 1991 Site Inspection, 6 drums containing PCB wastes and solvents were observed. The 1992 RFA indicated this SWMU was active. EPA has not been provided any data or closure information for this SWMU. Additional research is needed to determine the exact location of SWMU 31, but it is believed to have been located on property currently owned by House of Burgess, LLC, approximately 1,000 feet northeast of SWMU 25. At some time prior to issuing the 1994 HSWA Part II Permit, the EPA determined that no further action was required for SWMU 31.

SWMU 32 – No. 1 Melt Shop PCB Storage Area. SWMU 32 was identified in the RFA as a concrete area within the No 1 Melt Shop building where PCB capacitors were stored. Additional research is needed to determine the location of SWMU 32, but it is assumed to be near the No. 1 Melt Shop and on property currently owned by AK Steel. The RFA recommended that the soil at this SWMU be sampled for PCB contamination. EPA has not been provided any data or closure information for this SWMU. The EPA's response to comments for the 1994 RCRA Permit agreed to remove SWMU 32 from the list of SWMUs requiring further action based on information provided to EPA in the RFA and Armco documents.

SWMU 33 - Nail Mill Degreasing Area. SWMU 33 was located in the northwest portion of the Nail Mill and consisted of a degreasing operation used to remove residue during nail production. In 1991, during closure and conversion of the mill to a warehouse, chlorinated VOCs were detected in the surrounding area. As a result, the Nail Mill was demolished. A wood block floor within the mill was found contaminated with TCE; it was removed and properly disposed of. Currently, SWMU 33 consists of the concrete mill floor covered with rubble. During the RFI, 58 subsurface soil samples were analyzed for VOCs. Chlorinated compounds--including 1,1,1-TCA, 1,1,2-TCA, 1,1,-dichloroethane, 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, TCE, methylene chloride, and vinyl chloride--were detected, with total VOC concentrations exceeding 1 mg/kg near the former degreaser location. These results were confirmed by additional soil sampling in the vicinity of the degreaser location in 2010 (Burns & McDonnell, 2010). Also during the RFI, groundwater samples were collected from 20 new wells and three existing wells. TCE: *cis*-1,2-DCE, vinyl chloride were the primary VOCs detected (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Additional groundwater monitoring performed in 2001 confirmed previous RFI sampling results. Two additional well clusters (i.e., four monitoring wells) were installed as part of the 2007 Supplemental Investigation, and groundwater sampling associated with this investigation also confirmed previous RFI sampling results. EPA has approved a pilot study to assess the feasibility of using soil vapor extraction as an interim measure at SWMU 33. Corrective measures will be necessary at SWMU 33.

SWMU 34 – Waste Oil Storage Area East of GST's No. 2 Melt Shop. SWMU 34 was located on property sold to GST in 1993. GST owned and operated the SWMU from November 1993 to 2001. In 2002, SWMU 34 property was sold to Compass Big Blue as part of GST's bankruptcy proceedings. SWMU 34 was used by AK Steel for temporary storage of waste oil and grease from 1991 to 1993. Material was stored in 55-gallon drums. The SWMU covered an area

approximately 10 by 30 feet. It had an asphalt base. There are no records of spills or releases from SWMU 34. No sampling has been conducted at this SWMU. Operational history and a 2009 visual inspection lead to the conclusion that no further action was needed at SWMU 34.

SWMU 35 – Waste Oil Storage Area on North Side of GST's 19-Inch Mill. The property was sold to GST in 1993 and later sold to Compass Big Blue in 2002. Waste oil in 55-gallon drums was stored at this location from the late 1970s to 1993. There are no records of spills or releases at SWMU 35. No sampling has been conducted at this SWMU. Operational history and a 2009 visual inspection lead to the conclusion that no further action was needed at SWMU 35.

SWMU 36 – Ball Department Waste Oil Storage Area. SWMU 36 was operated by AK Steel and GST as a waste oil storage area from the late 1970s to 2001. Waste oils and grease were stored in 55-gallon drums on a concrete pad at the SWMU. It encompassed an area approximately 30 by 60 feet located inside a building near the old Spike Department within the Ball Department. There are no records of spills or releases at SWMU 36. No sampling has been conducted at this SWMU. Operational history and a 2009 visual inspection lead to the conclusion that no further action was needed at SWMU 36.

SWMU 37 – Wire Mill Waste Oil Storage Area. SWMU 37 was a 10 by 15-foot area located in the south side of the Wire Mill Storage Area. It was used to store waste oil in 55-gallon drums from approximately the late 1970s to 1990. The SWMU was always paved and indoors. There are no records or any spills or releases at SWMU 37. No sampling has been conducted at this SWMU. A 2009 inspection noted a concrete floor with no cracks and minimal stains. Operational history and the 2009 visual inspection lead to the conclusion that no further action was needed at SWMU 37.

SWMU 38 – Bar Joist Temporary Grease Storage Area. SWMU 38 was used for the temporary storage of waste grease prior to shipping off site for disposal. The grease was stored in 55-gallon drums on an unpaved lean-to encompassing a 30 by 30-foot area on the north side of the long-span portion of the Bar Joist Building. SWMU 38 was operated from 1991 to 1993. There are no records of spills or releases at SWMU 38. This area is currently owned by Hansen Property Development, Inc., and a U-Pick-It salvage yard currently operates in and around the former Bar Joist Building. An inspection of SWMU 38 in 2009 noted a concrete floor with no cracks and heavy staining. Based on the 2009 visual inspection, further investigation consisting of sampling of shallow soils beneath the concrete floor should be conducted.

SWMU 39 – Bar Joist Waste Oil and Grease Storage Area. SWMU 39 was located inside the Bar Joist Building and consisted of a concrete floored, 30 by 60-foot area used to temporarily stage 55-gallon drums of used grease and oil from approximately the late 1970s to July, 1993. There are no records of spills or releases at SWMU 39. An inspection of SWMU 39 in 2009 noted a concrete floor with no cracks and heavy staining. Based on the 2009 visual inspection, further investigation consisting of sampling of shallow soils beneath the concrete floor should be conducted.

AOC 1 - Abandoned Fuel Oil Storage Tank. AOC 1 is a 1.5-acre area that contained a single 840,000-gallon AST used to store heating oil. The AST, which was surrounded by a containment dike, received oil from railcars via aboveground piping. The tank stored No. 6 fuel oil from 1951 to 1962 and No. 2 fuel oil from 1962 to 1982. In 1982, the tank was removed from service; in1991, the tank was cleaned and removed. In 1988, AOC 1 was linked to an oil sheen observed on the Blue River. Soil samples collected on the eastern bank of the Blue River revealed total recoverable petroleum hydrocarbons at concentrations up to 728 mg/kg and oil and grease at concentrations up to 9,505 mg/kg. VOCs were detected in one soil sample. A 1989 Preliminary Site Investigation revealed 1.5 feet of oil-saturated soil at one test boring location, as well as free product floating on groundwater. A recovery well was installed on site and began pumping in February 1991. During the 1999 RF I, surface and subsurface soil samples revealed PAH detections at concentrations below 20 DAF soil screening levels. Acetone and vinyl acetate were detected in one monitoring well, and naphthalene was detected in another monitoring well. ICs are recommended for AOC 1.

AOC 2 - Underground Storage Tanks. AOC 2 consists of 21 USTs reported for the facility. The USTs contained leaded and unleaded gasoline, diesel fuel, hydraulic fuel, lubricating oil, heating oil, and boiler fuel oil. At least one unleaded gasoline UST was reported to have leaked. Reportedly, all USTs at the facility have been removed and, if necessary, replaced with ASTs. MDNR reviewed the status of the tanks in 2003 and determined that the USTs were either not regulated or had been properly closed out and that no further action was necessary. No further action is recommended for AOC 2.

AOC 3 – ARMCO Dam/PCB Excavation Area. AOC 3 is an area where PCBs were discovered in sediments dredged from the east bank of the Big Blue River at a location approximately 0.5 miles downstream of Independence Avenue. The 1992 RFA states that the Army Corps of Engineers (COE) removed the contaminated sediments at AOC 3. There are no EPA records indicating that EPA oversaw the COE removal of contaminated sediments. The RFA indicated the source of the PCBs in sediments was unknown. No further action is recommended for AOC 3.

AOC 4 – Boiler Furnace Area. The RFA does not provide a map showing the location of the Boiler Furnace Area. A photograph identified as AOC 4 provided in the RFA shows debris in a backwash area of Rock Creek, which appears to be unrelated to a Boiler Furnace. The RFA indicates that prior to sometime in 1983, ARMCO accepted spent 1,1,1-TCA from Union Wire Rope that was ultimately burned in the boiler furnace. The 1999 RFI concluded that spent TCA could have only been blended with fuel oil at the No. 4 fuel oil storage tank, and re-identified AOC 4 as the No. 4 fuel oil storage tank instead of the boiler furnace. AOC 4 was then included with the other tanks at SWMU 6 for supplemental sampling. PAHs were detected in soil at AOC 4 that exceeded 20 DAF soil screening level and worker exposure levels of concern. Corrective action will be necessary at AOC 4. Soil samples were collected in the vicinity of Tank No. 4 during the RFI (1997 and 1998) and Supplemental Investigation (2007), and these samples were analyzed for metals, PAHs, VOCs, and/or SVOCs. Soil sample results were previously presented with the discussion for SWMU 6 (i.e., Tank Nos. 1, 2, 3, and 5).

AOC 5 – Outfall 006. During the operation of the Wire Mill, AOC 5/outfall 006 was a discharge of storm water, groundwater, steam condensate, and winter discharge of City water for freeze protection for the wire mill cleaning and coating processes. The Wire Mill ceased operations in 1989 and has since been dismantled. Records indicate that the outfall had been the location where NPDES violations had been documented due to low pH. Outfall 006 is still in use as a storm water outfall, and it is sampled when flowing as part of AK Steel's current NPDES permit (MDNR, 2010). At some time prior to issuing the 1994 HSWA Part II Permit, the EPA determined that no further action was required for AOC 5. No further action is recommended for AOC 5.

AOC 6 – Outfall 042. This outfall was once regulated under an NPDES Permit and had effluent limitations for total suspended solids, oil and grease, total lead, and total zinc. The outfall received overflow from the two mill ponds (SWMU 22). As a result of the property transfer from Armco to GST in 1993, a revision to Armco NPDES Permit MO-0004952 was requested, and the request resulted in the transfer of Outfall 042 to GST. Following GST's bankruptcy in 2001, which resulted in the GST plant closing permanently, use of the outfall was discontinued. The outflow pipe is on the Blue River side of the slag levee road directly across from the center berm that divides the two Mill Ponds, and the sluice gate structure for controlling the flow of the outfall is located adjacent to the levee road. Arsenic and oil and grease constituents would be the likely contaminants found at the outfall, based on the mill pond sampling results. However, contamination would likely be limited to minimal area around the outfall. At some time prior to issuing the 1994 HSWA Part II Permit, the EPA determined that no further action was required for AOC 6. It was also not included in the 1999 RFI. Because oil and grease contamination would have likely biodegraded by this time and arsenic was non-detect in RFI surface water sampling, no further action is recommended for AOC 6.

AOC 7 – Backwash area of Rock Creek. AOC 7 is an area that would become inundated with floodwater debris following the receding of floodwaters. Debris consisted of tires, wood, porcelain fixtures, plastic trash, and other various junk. At some time prior to issuing the 1994 HSWA Part II Permit, the EPA determined that no further action was required for AOC 7. No further action is recommended for AOC 7.

AOC 8 - "Owl Gun Club" Shooting Park. AOC 8 was a clay pigeon shooting park located south of the Old Blue River "W" Landfill (SWMU 2) and north of Rock Creek. Although the exact dates of operation are unknown, the shooting park is evident on aerial photographs beginning in 1955 and ending in 1974. According to the RFI, AOC 8 covers approximately 6 acres. Soils contain lead concentrations ranging from 100 mg/kg near the perimeter to 55,200 mg/kg in the central portion of AOC 8 (Tetra Tech, Inc. 1992; Burns & McDonnell 2006b). Although limited, additional soil sampling performed to verify the results of the RFI supported the ITS Richardson data collected at the AOC. Corrective action will be necessary at AOC 8.

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