U.S. Environmental Protection Agency
Region 5

Determination of No Further Action
Lexington/SANCAP Abrasives Facility
16123 Armour Street
Alliance, OH
OHD 093 289 700

Introduction

This document provides the United States Environmental Protection Agency's (EPA's) Determination of No Further Action (NFA) for the Lexington/SANCAP Abrasives facility ("Facility" or "Site"). The EPA is issuing this NFA Determination as part of its corrective action responsibilities under the Resource Conservation and Recovery Act (RCRA).

This document summarizes information that can be found in greater detail in the Site File for this Facility including these specific files from the EPA Region 5 Records Center:

- A.1. One Folder Site – SANCAP Abrasives

Determination

EPA has made a determination that no further action by the federal RCRA corrective action program is required at the Lexington/SANCAP Abrasives Facility at this time, based on the information contained in the Site File for this Facility.

EPA may modify this determination based on new information from any source. Therefore, this NFA Determination is being made available to the public. The public can be involved by reviewing this Determination the Administrative File for Facility.

A more detailed discussion of this NFA Determination is included below

Facility Background

Management

The Lexington/SANCAP Abrasives Company Facility is located at 16123 Armour Street, in a mixed-use industrial, agricultural and residential community in Alliance, Ohio. The Facility occupies a 280 acre parcel of land, located in Stark and Mahoning Counties. The primary building is a 625,000 sq. ft. and is occupied by three (3) separate companies; Lexington Abrasives, Inc. (d/b/a SANCAP Abrasives), SANCAP Liner Technology, Inc. (SANCAP Liner), and Quality Repair and Maintenance, Inc. (QRM. The facility layout is attached at end of this document. The Facility is bordered on the north by a wooded area and strip mines, and to the west, south and east by residences and farms. The nearest body of surface water is the Mahoning River which is located approximately 0.5 mi. west of the Facility, and is used for surface water runoff. Remsen soils are found in abundance at the site and contain 90-95% clay. These soils

could have acted as a natural liner for SANCAP's former settling lagoons.

Operations at the SANCAP facility began in the 1940s under the operation of Turner Aircraft. Turner manufactured light observation aircraft until filing for bankruptcy in 1948. In 1948, Armour Meat Packing bought the facility for upholstery and adhesive operations using glues from slaughtered animals. In 1970, Greyhound Bus Company bought the site. The current owners state that Greyhound bought and re sold the property within two weeks after acquiring it.

The property was subsequently bought by Armak Corporation, a subsidiary of Azko Chemical. Armak manufactured coated abrasives and liners in similar fashion to the current owners, of SANCAP. In 1978, Swiss Industrial Adhesive bought the site and operations remained the same. In 1988, Robert Stuhlmiller, purchased the coatings division of the company and named it SANCAP Liner. In 1992, Stuhlmiller also purchased the abrasives division and called it SANCAP Abrasives. SANCAP Abrasives manufactures coated sandpaper, while SANCAP Liner makes coated products including bottle cap liners. Another affiliated company called QRM is located between SANCAP Abrasives and SANCAP Liner. QRM performs maintenance on machinery at both facilities. Operations include changing oils, maintaining equipment, and some metal cutting. In March 1998, SANCAP Abrasives, Inc. became SANCAP Abrasives Corporation under the ownership of Edward Spinelli. In August 1, 1999, SANCAP Abrasives Corporation was reacquired by Robert Stuhlmiller and renamed Lexington Abrasives, Inc., but continued to do business as SANCAP Abrasives. QRM was owned by Tom Chiappini and Chuck Sefert when it began operation in 1992.

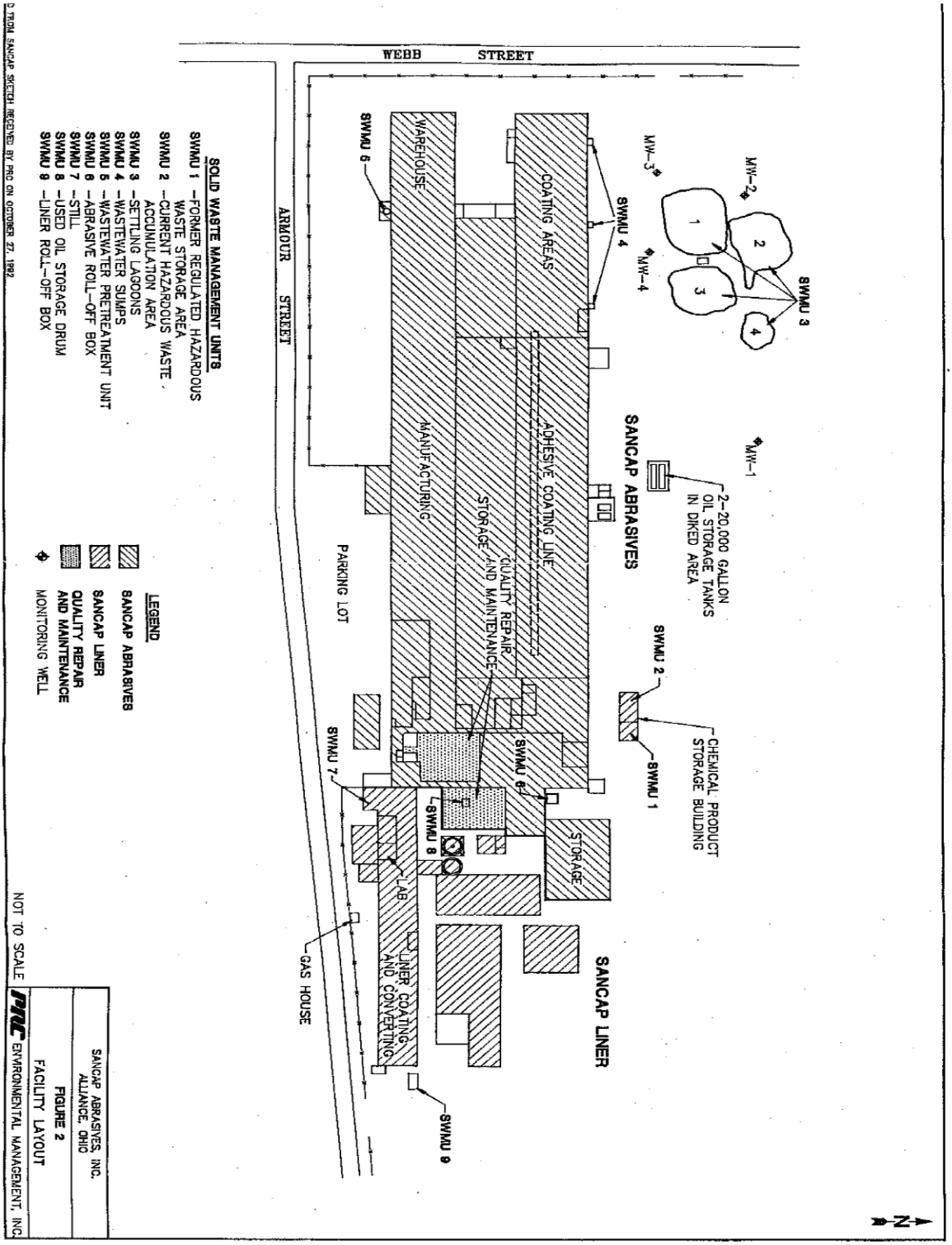
SANCAP Abrasives, located on the west side of the facility, manufactures several different coated abrasives, but primarily produces sandpaper. The abrasive coating process is initiated by applying adhesives and abrasive grains to the backing of either paper or cloth web. The coated web is then dried in an oven. After drying, the coated web is reduced to various sizes in converting operations to make disks and belts. Raw materials used in the manufacturing process include resins, animal glues, silica carbide grains, aluminum oxide grains, paper, and cloth.

SANCAP Liner, located on the east side of the facility, produces several different coated products, but primarily produces bottle cap liners. Operations at SANCAP Liner consist of receiving rolls of uncoated liners; placing the rolls on coating machines; and coating the rolls with adhesives, polyvinyl acetate, or paraffin. Excess material is trimmed from the coated rolls before they are printed and shipped to an off-site facility for stamping. Operations at SANCAP Liner are conducted under the supervision of, *inter alia*, the Food and Drug Administration because these operations involve food packaging.

QRM is located between SANCAP Abrasives and SANCAP Liner. QRM performs maintenance on machinery for both Facilities' Operations include changing oils, maintaining equipment, and some metal cutting.

A diagram of the entire Facility is shown in Figure 1, on the next page.

Figure 1 – SANCAP Lexington Facility Diagram



Waste Generation History

According to the 1992 Preliminary Assessment/Visual Site Inspection (PA/VSI), the facility generated the following wastes: waste methylene chloride (F002), methylene chloride still bottoms (F002), methyl ethyl ketone (MEK) (F005). During cleaning operations of the former solvent recycling still known as solid waste management unit (SWMU 7), methylene chloride still bottoms were generated, and very small quantities (ounces) of still bottoms were disposed in the liner roll-off box which was known as (SWMU 9).

SANCAP Abrasives also generates approximately 100 gallons of nonhazardous wastewater per day in process equipment and sumps at the abrasive coating machine. The wastewater is collected in the east and west wastewater sumps and gravity fed to the Central Wastewater Sump (SWMU 4). The wastewater is then pumped to the Wastewater Pretreatment Unit (SWMU 5) where the pH level of the wastewater is monitored. If necessary, the pH level is adjusted so the wastewater is within criteria set forth by the City of Alliance in the facility's wastewater discharge permit. The wastewater is then discharged to the sanitary sewer. Until 1978, the wastewater was pumped from the center sump to the Former Settling Lagoons (SWMU 3) before being discharged to the city sewer system. Nowadays after pH adjustment, (if required) the water is discharged directly to the sanitary sewer. The facility states that SANCAP and most if not all the residents are on the City of Alliance water system with waters coming from the Mahoning River, as well as local groundwater, subsequently treated and analyzed, and distributed to the residents and companies there.

Abrasive and liner trim wastes are generated by the converting operations at the SANCAP Abrasive and SANCAP Liner facilities. The abrasive trim is accumulated in the Abrasive Roll-off Box (SWMU 6), and liner trim is accumulated in the Liner Roll-off Box (SWMU 9). The roll-off boxes are emptied twice per week for disposal at the G & G Landfill in Carrollton, Ohio; the American Landfill in Malvern, Ohio; and/or the Kimbell Landfill in Dover, Ohio.

Until 1986, SANCAP Liner also generated MEK-containing hazardous waste (F005) from cleaning equipment. This waste was accumulated in 55-gallon drums at the Former Regulated Hazardous Waste Storage Area (SWMU 1). After this storage area was clean closed in November 1983, the MEK waste (F005) was accumulated at the Current Hazardous Waste Accumulation Area (SWMU 2)

QRM generates used oil during various equipment maintenance activities at the SANCAP facilities. The used oil is accumulated in a 55-gallon steel drum in the Used Oil Storage Drum (SWMU 8). The waste is then transported by Safety-Kleen Corporation (Safety-Kleen) to their facility in Cleveland, Ohio. QRM generates 100-150 gallons of waste oil annually.

SANCAP Abrasives submitted a Notification of Hazardous Waste Activity Form to EPA on August 13, 1980. In this notification, the facility indicated that it was a RCRA hazardous waste generator and storage facility. SANCAP Abrasives submitted a RCRA Part A permit application on November 18, 1980. This application indicated that hazardous wastes were stored in containers with a cumulative 5,500-gallon capacity in the Former Regulated Hazardous Waste Storage Area (SWMU 1). The facility also indicated that approximately 10,000 pounds of F005

waste and 1,000 pounds of ignitable wastes (D001) were generated at the site per year. In addition, the facility indicated that U002, UI59, U220, UI12, UI25, UI54, and U243 wastes could also be generated in the event of a spill, but annual quantities of such wastes were estimated at 0 pounds.

On June 25, 1982, SANCAP Abrasives requested withdrawal of the Part A permit application because they were not managing hazardous wastes on site for longer than 90 days. In October 1982, SANCAP Abrasives submitted a closure plan for the Former Regulated Hazardous Waste Storage Area (SWMU 1) to EPA. RCRA closure of this SWMU was completed in January 1983. EPA approved closure of the former storage area in February 1983 and approved withdrawal of the facility's Part A permit application in March 1983. Ohio EPA (OEPA) also approved withdrawal of the facility's Part A permit application on November 14, 1983, and the facility was classified as a RCRA generator only.

In 1992, SANCAP Abrasives and SANCAP Liner were operating as small quantity generators of hazardous waste under the original EPA identification number issued to SANCAP Abrasives (OHD 093289700). In the mid-1980s, SANCAP Liner reduced the quantity of hazardous waste it sent off site by recovering spent methylene chloride in a Solvent Still (SWMU 7). Since March 2001, Lexington Abrasives/DBA SANCAP Abrasives has been operating as a conditionally exempt small quantity generator (CESQG) under RCRA. SANCAP Liner currently has its own EPA ID number (OHD 987-022-498) and is also listed as a CESQG in the RCRA Info database.

In May 1991, SANCAP Abrasives submitted a Permit to Install application to OEPA for closure of the Former Settling Lagoons (SWMU 3). Final revisions to the Permit to Install application were submitted on April 22, 1992. On May 21, 1992, OEPA issued the facility a Permit to Install as approval to proceed with the closure of the former settling lagoons. Closure activities were conducted between April and October 1993, in accordance with OEPA regulations and the Permit to Install. SANCAP Abrasives provided OEPA with a Certification of Closure for the former settling lagoons in March 1994.

As part of the Permit to Install, the facility was required to conduct groundwater monitoring semi-annually over a three-year period at the four groundwater monitoring wells installed in 1988. As required, SANCAP Abrasives performed six semi-annual monitoring events starting in June 1993 and ending in December 1995. In June 1999, SANCAP requested OEPA's approval to decommission the four groundwater monitoring wells because they were no longer needed as monitoring points and had not been re-sampled since December 1995. On August 24, 1999, OEPA approved the request to decommission the four monitoring wells. On October 22, 1999, SANCAP Abrasives submitted Water Well Sealing Reports for these four wells.

The facility is also required to have operating air permits. SANCAP Abrasives has an air discharge permit for the 80-inch paper and cloth coating line. The facility also operated a 45-inch coating line under an air discharge permit. Prior to December 1998, SANCAP Abrasives and SANCAP Liner discharged noncontact cooling water, storm water, and boiler blowdown to an unnamed tributary of the Mahoning River by way of a roadside ditch under a National Pollutant Discharge Elimination System (NPDES) permit (number OH0063576). These

discharges were monitored for flow rate, pH, and oil and grease. In September 1998, SANCAP Abrasives requested that the liner operation discharge be removed from their permit because this division had been sold and was under new ownership. In November 1998, SANCAP Liner tied their wastewater discharge into the sanitary sewer system and therefore no longer required a NPDES permit. On October 27, 1999, a modified NPDES permit was issued to SANCAP Abrasives. This permit expired on November 30, 2004. The NPDES permit was not renewed in December 2004 because SANCAP Abrasives was also discharging all wastewaters to the City of Alliance wastewater treatment plant.

The SANCAP Abrasive facility discharges wastewater from the Wastewater Pretreatment Unit (SWMU 5) under City of Alliance Permit Number 216-A. Under this permit, the facility is required to monitor flow rate, pH, biological oxygen demand, chemical oxygen demand, total non-filterable solids, mercury, phenol, and zinc.

Hydrogeological Setting

Soils at the site are classified as Wadsworth silt loam and Remsen silt loam. The Wadsworth silt loam is typically a grayish-brown silt loam from a depth of 0 to 7 inches below ground surface (bgs); a brownish-yellow silty clay loam from 7 to 12 inches bgs; a brown, silty clay loam from 12 to 20 inches bgs; and a mottled-brown, clay loam fragipan from 20 to 31 inches bgs. Below the fragipan is a brown clay loam that extends to a depth of 48 inches bgs. This soil overlies a calcareous soil material that extends to 60 inches bgs. The Remsen silt loam is typically a dark grayish-brown silt loam from a depth of 0 to 7 inches bgs, and a mottled-brown, silty clay loam from 7 to 29 inches bgs. At approximately 36 inches bgs, there is a dark, yellow-brown layer approximately 10 inches thick that overlies a yellowish-brown silty clay glacial till. The depth to calcareous soil material ranges from 28 to 46 inches bgs.

Both the Wadsworth and Remsen soils typically contain high percentages of silt and clay with low permeabilities. The Wadsworth soils, which contain 70 to 90 percent silt and clay, have intervals with permeabilities as low as 0.063 to 0.2 inch per hour, or 0.5×10^{-3} to 17×10^{-3} centimeters per second (cm/sec). The Remsen soils, which typically contain 90 to 95 percent silt and clay, have intervals with permeabilities as low as 0.063 inch per hour, or 0.5×10^{-3} cm/sec. Because of their textural and permeability characteristics, these soils may have acted as a natural liner for the facility's Former Settling Lagoons.

Glacial till that was deposited during Wisconsinan glaciation underlies the Wadsworth and Remsen soil intervals in the site area. The shallowest glacial deposit in the area is the Hiram Till, which is a thin (*i.e.*, less than 2 feet thick) clay with very little sand or gravel. At the SANCAP Abrasive facility, the Lavery till may also be present beneath the Hiram Till. The thickness of till beneath the facility is unknown. Generally, till thickness increases dramatically toward the Mahoning River Valley, located west of the facility. The Pennsylvanian-age Pottsville Group consisting of coals, shales, sandstones, and thin limestones occurs beneath the glacial till. The bedrock surface dips gently to the southwest.

During closure of the Former Settling Lagoons, four groundwater monitoring wells were installed at the SANCAP Abrasives facility. All water-bearing zones except one were

encountered below the base of the clay-rich till. The exception is a small perched zone found at a depth of 16 to 18 feet below grade surface (bgs) in monitoring well 1. However, this zone yielded only very small amounts of water. The clay-rich till was encountered at a depth of 33 to 43 bgs. The intergranular permeability of the clay-rich till is expected to be on the order of 10^{-3} feet per day (103 cm/sec) or less. Permeability of the deeper, coarser-grained intervals encountered below the base of the clay till should be considerably higher than that of the till. Additionally, in Stark County, where till deposits contain thick, permeable layers of sand and gravel, high groundwater yields have been recorded. Water encountered in these coarser intervals is under confined pressure and typically rises 10 feet or more above the top of the water-bearing formation. Groundwater depths in the region typically vary from 22 to 25 feet bgs. Groundwater flow direction is generally to the southwest. The hydraulic gradient of the confined zones is approximately 0.01 foot per foot.

Groundwater in the site area through private wells is no longer used as a private drinking water supply. Most if not all of the City of Alliance, OH is on the cities' water supply system.

Ecological Setting

The SANCAP facility exists within a mixed-use, residential, industrial and agricultural area in Alliance, Ohio. The facility occupies a 280-acre parcel of land located in Stark and Mahoning Counties. The primary building at the facility is 625,000 square feet and is occupied by three separate businesses: SANCAP Abrasives, SANCAP Liner, and Quality Repair and Maintenance (QRM). The facility layout is provided in Appendix 1 to this document. The facility is bordered on the north by a wooded area and strip mines, and on the west, south, and east by residences, farms and other industries. The nearest body of surface water is the Mahoning River which is located 0.5 mile west of the facility and is used for surface runoff.

Vegetation in and around the SANCAP facility consists of primarily course native grasses that cover most of the undeveloped land. Stream banks, gullies and the banks of the Mahoning River often contain sumac and tall weeds.

No endangered species are known or observed to inhabit the local area. The Mahoning River and its tributaries is home to over many species of fish including Crappie, Bluegill and various Bass.

RCRA Status and Operation of SWMUs

SANCAP Abrasives submitted a Notification of Hazardous Waste Activity Form to EPA on August 13, 1980. In this notification, the facility indicated that it was a RCRA hazardous waste generator and storage facility. SANCAP Abrasives submitted a RCRA Part A permit application on November 18, 1980. This application indicated that hazardous wastes were stored in containers with a cumulative 5,500-gallon capacity in the Former Regulated Hazardous Waste Storage Area (SWMU 1). The facility also indicated that approximately 10,000 pounds of F005 waste and 1,000 pounds of ignitable wastes (D001) were generated at the site per year. In addition, the facility indicated that U002, UI59, U220, UI12, UI25, UI54, and U243 wastes could also be generated in the event of a spill, but annual quantities of such wastes were estimated at 0

pounds.

On June 25, 1982, SANCAP Abrasives requested withdrawal of the Part A permit application because they were not managing hazardous wastes on site for longer than 90 days). In October 1982, SANCAP Abrasives submitted a closure plan for the Former Regulated Hazardous Waste Storage Area (SWMU 1) to EPA. RCRA closure of this unit was completed in January 1983. EPA approved closure of the former storage area in February 1983 and approved withdrawal of the facility's Part A permit application in March 1983. Ohio EPA (OEPA) also approved withdrawal of the facility's Part A permit application on November 14, 1983, and the facility was classified as a RCRA generator only.

In 1992, SANCAP Abrasives and SANCAP Liner were operating as small quantity generators of hazardous waste under the original EPA identification number issued to SANCAP Abrasives (OHD 093289700). In the mid-1980s, SANCAP reduced the quantity of hazardous waste it sent off site by recovering spent methylene chloride in a Solvent Still (SWMU 7). Since this time, SANCAP has completely discontinued use of the solvent still and removed it from operation, as the lines were converted to using non hazardous solutions in place of the ones recovered in the still. Additionally, since March 2001, Lexington Abrasives/DBA SANCAP Abrasives has been operating as a conditionally exempt small quantity generator (CESQG) under RCRA. SANCAP Liner currently has its own EPA ID number (OHD 987022498) and is also listed as a CESQG in the RCRA Info database.

In May 1991, SANCAP Abrasives submitted a Permit to Install application to OEPA for closure of the Former Settling Lagoons (SWMU 3). Final revisions to the Permit to Install application were submitted on April 22, 1992. On May 21, 1992, OEPA issued the facility a Permit to Install as approval to proceed with the closure of the former settling lagoons. Closure activities were conducted between April and October 1993, in accordance with OEPA regulations and the Permit to Install. SANCAP Abrasives provided OEPA with a Certification of Closure for the former settling lagoons in March 1994.

As part of the Permit to Install, the facility was required to conduct groundwater monitoring semi-annually over a three-year period at the four groundwater monitoring wells installed in 1988. As required, SANCAP Abrasives performed six semi-annual monitoring events starting in June 1993 and ending in December 1995. In June 1999, SANCAP requested OEPA's approval to decommission the four groundwater monitoring wells because they were no longer needed as monitoring points and had not been re-sampled since December 1995. On August 24, 1999, OEPA approved the request to decommission the four monitoring wells. On October 22, 1999, SANCAP Abrasives submitted Water Well Sealing Reports for these four decommissioned monitoring wells.

The facility is also required to have operating air permits. SANCAP Abrasives has an air discharge permit for the 80-inch paper and cloth coating line. The facility also operated a 45-inch coating line under an air discharge permit.

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by way of a roadside ditch under a National Pollutant Discharge Elimination System (NPDES) permit (number OH0063576). These discharges were monitored for flow rate, pH, and oil and grease. In September 1998, SANCAP Abrasives requested that the liner operation discharge be removed from their permit because this division had been sold and was under new ownership. In November 1998, SANCAP Liner tied their wastewater discharge into the sanitary sewer system and therefore no longer required a NPDES permit. On October 27, 1999, a modified NPDES permit was issued to SANCAP Abrasives. This permit expired on November 30, 2004. The NPDES permit was not renewed in December 2004 because SANCAP Abrasives was also discharging all wastewaters to the City of Alliance wastewater treatment plant.

The SANCAP Abrasives facility discharges wastewater from the Wastewater Pretreatment Unit (SWMU 5) under City of Alliance Permit Number 216-A. Under this permit, the facility is required to monitor flow rate, pH, biological oxygen demand, chemical oxygen demand, total non-filterable solids, mercury, phenol, and zinc.

Regulatory History

OEPA conducted RCRA compliance evaluation inspections in 1981 and 1983. No violations were noted during the 1981 inspection. Violations noted during the April 1983 inspection included:

- No chemical and physical analyses of wastes on file
- No waste analysis plan on file
- The facility did not control entry
- No inspection schedule and inadequate inspection frequency
- Training deficiencies
- Inadequate posting near areas where ignitable wastes are handled and stored and at each entrance
- Contingency plan and operating record deficiencies
- Improper storage of hazardous waste.

Information gathered during the 1983 OEPA inspection indicated that the facility was treating resin wastes by allowing them to harden on site. However, a follow-up inspection by OEPA concluded that the facility was not treating the waste because the resin was self-hardening. Thus, this waste was not to be considered in determination of RCRA generator classification. SANCAP Abrasives had also substituted a water-based, non-ignitable solvent for the original toluene-based adhesive, further reducing the quantity of hazardous waste generated by the facility.

In October 1991, OEPA received notice of a leaking transformer at the center substation from a machine workshop employee. This transformer had been removed from a cemented area at the SANCAP Abrasives facility and placed on the ground a few days prior to the notice. The transformer had leaked onto the cement prior to being moved and continued to leak on the ground at the substation. During an OEPA inspection in April 1992, SANCAP Abrasives indicated that the transformer had been properly disposed.

Investigations

Environmental investigations at SANCAP Abrasives were initiated in 1987 and completed in 1995. According to the Preliminary assessment/visual site inspection (PA/VSI), a SANCAP Abrasive representative indicated that the facility was required to either close or line the Former Settling Lagoons (SWMU 3) in the early 1980s. In 1987, SANCAP Abrasives chose to close the lagoons, and hired a contractor to conduct environmental sampling. In 1988, four groundwater monitoring wells were installed in the vicinity of the former settling lagoons. Locations of these wells are shown in Figures 1 and 2 of this NFA Determination. Monitoring Well 1 was installed upgradient of the former settling lagoons to provide background concentrations, and the remaining three wells were installed downgradient of the lagoons. Groundwater samples from these wells were analyzed for priority pollutant compounds (excluding pesticides), contamination indicators, water quality indicators, metals, acetone, MEK, and total xylenes. Analytical results indicated exceedances of OEPA drinking water standards for total dissolved solids (TDS), sulfate, manganese, selenium, and lead.

Sampling and analysis conducted in 1988 indicated that Lagoons 1 and 2 exhibited the greatest impact from historic treatment operations. Both water and sediment in these lagoons had elevated concentrations of phenol, total organic carbon (TOC), and barium. The barium concentration in Lagoon 3 suggested that it may have also occasionally received wastewater. Hazardous waste characterization on sediments in the lagoons indicated that they were not ignitable, corrosive, or characteristically toxic. However, the sulfide concentration in one sediment sample collected from Lagoon 1 was 496 milligrams per liter (mg/L), or just slightly less than the limit of 500 mg/L for the RCRA reactivity characteristic. Downgradient groundwater sampling did not detect elevated concentrations of the constituents present in lagoon water and sediment. Based on this information, sediments present in Lagoons 1, 2, and 3 were classified as residual wastes, and the sediment in Lagoon 4, which was used to provide soil for berm construction and occasionally dilution water, was classified as naturally occurring.

In February 1990, SANCAP submitted a Sampling and Analysis Plan (SAP) for Lagoon #1 sediment to OEPA. At OEPA's request, the SAP was developed to evaluate whether the sediments in Lagoon #1 were characteristic hazardous waste and to assess the adequacy of proposed closure activities. Although the SAP was executed, the sampling results were not provided in the available file materials. In 1991, SANCAP Abrasives performed a treatability study to evaluate the use of cement kiln dust as a stabilizing agent for Lagoon #1 sediments in response to OEPA comments on the settling lagoon closure plan. The treatability study demonstrated that: (1) the Lagoon #1 sediments do not leach appreciable sulfate, and (2) a sediment to kiln dust ratio of 2:1 reduces the reactive sulfide concentrations and provides favorable compressive strength. In 1993, the lagoons underwent non-RCRA closure in accordance with a Permit to Install issued by OEPA. The lagoons were drained, lagoon sediments were stabilized with cement kiln dust, and the units were backfilled with berm material.

As required by the Permit to Install for closure of the former settling lagoons, SANCAP Abrasives conducted six semi-annual groundwater monitoring events starting in June 1993 and ending in December 1995. During each monitoring event, groundwater samples were collected

for all four monitoring wells and analyzed for dissolved metals, pH, specific conductance, oil and grease, TOC, total organic halogen, phenol, sulfate, nitrate, TDS, and acetone. According the April 1996 groundwater monitoring report, a comparison of the semi-annual groundwater monitoring data with data collected in November 1988 (pre-closure) indicated that changes in groundwater quality following closure were not significant. Concentrations of TOC and acetone showed decreasing trends since the initial sampling event in November 1988. Arsenic and manganese concentrations, which had increased slightly following closure, had returned to pre-closure levels by December 1995. Selenium, silver, and thallium were not detected in any downgradient well during any of the six post-closure sampling events. Barium was only detected in the December 1995 event at a concentration of 0.01 mg/L. TDS and sulfate concentrations increased from 4,500 mg/L to 5,160 mg/L and 3,100 mg/L to 3,340 mg/L, respectively, since the initial monitoring event in November 1988. Lead concentrations decreased from 0.1 mg/L in the pre-closure sampling to non-detect in the June and December 1995 events. Because groundwater data collected over the three-year period of post-closure monitoring did not indicate significant degradation of groundwater quality, SANCAP Abrasives recommended that no further groundwater monitoring be conducted at the closed lagoon site. SANCAP Abrasives also recommended that the four existing monitoring wells (MW-1 though MW-4) be decommissioned in accordance with OEPA regulations. Following receipt of an approval letter from OEPA in August 1999, the facility decommissioned the four monitoring wells in September 1999, and submitted Water Well Sealing Reports to OEPA in October 1999.

Corrective Action History

A total of nine SWMUs were identified through the PA/VSI process. Each of these areas is discussed below. The locations of the SWMUs were provided as Figure 2 of the PA/VSI Report, which is included as Appendix A to this document. No formal areas of concern (AOCs) were identified in the PA/VSI report.

SWMU 1 – Former Regulated Hazardous Waste Storage Area

Description and Release History

The Former Regulated Hazardous Waste Storage Area consists of a 60-foot by 50-foot area in the eastern part of the Chemical Product Storage Building that was formerly used for storage of hazardous and nonhazardous wastes in 55-gallon drums. Specifically, MEK-containing hazardous waste was managed in this unit for periods longer than 90 days between 1980 and 1983. This unit is located on a concrete floor with no drains. At the time of the VSI, this unit was being used for management of approximately 120 drums of hardened resin in open 55-gallon steel drums. According to the PA/VSI, this hardened resin had been left by SIA before the facility was sold to Robert Stuhlmiller in 1992. No signs of spills, leaks or solvent odor were noted at the time of the PA/VSI.

In April 1981, SANCAP Abrasives submitted a closure plan for this unit, and RCRA closure was completed in January 1983. Closure was accomplished through removal of hazardous wastes and decontamination of the area. No sampling was conducted as part of the RCRA closure

activities. Nevertheless, EPA and OEPA approved RCRA clean closure of this unit in 1983. No releases from this unit have been documented

Release Control, Response Actions, and Environmental Data

It was resolved through OEPA that the hardened resin waste drums generated in this SWMU could be disposed as solid non-hazardous waste. Thus, No further action was recommended for this SWMU in the PA/VSI.

SWMU 2 – Current Hazardous Waste Accumulation Area

Description and Release History

The facility's Current Hazardous Waste Accumulation Area consists of a 10-foot by 10-foot area in the western portion of the Chemical Product Storage Building. This indoor area was previously used to accumulate 55-gallon drums of spent MEK (F005) for less than 90 days. The unit is equipped with a concrete floor and a ventilation system to prevent the buildup of flammable vapors. The unit began operation in January 1983 and became inactive in 1985 or 1986, when SANCAP Liner stopped using MEK to clean equipment and SANCAP Abrasives and SANCAP Liner began recycling all their waste on site. No releases from this unit have been documented.

Release Control, Response Actions, and Environmental Data

No further action was recommended for this SWMU in the PA/VSI.

SWMU 3 – Former Settling Lagoons

Description and Release History

The Former Settling Lagoons were in operation from 1977 to 1987. Each of the four lagoons was unlined and used for management of wastewater generated during cleaning of the abrasive coating line. Lagoons 1 through 3 were excavated into native soil by SIA. Lagoon 4 was a borrow pit formed by excavation of berm material. Lagoon 1 was approximately 140 feet wide by 130 feet long by 4 feet deep. Lagoon 2 was approximately 170 feet wide by 120 feet long by 4 feet deep. Lagoon 3 was approximately 140 feet square by 3 feet deep. Lagoon 4 was approximately 120 feet square by 3 feet deep. Lagoons 1 and 2 were used for treatment of nonhazardous wastewater generated from equipment cleaning operations. Lagoon 1 was used for aeration of the wastewater, while Lagoon 2 served as a subsequent settling basin and discharge point. Rainwater collected in Lagoon 3 was also discharged into Lagoon 2. The combined wastewaters from Lagoon 2 were then discharged to the City of Alliance sanitary sewer system. Lagoon 4 was used to provide soil for berm construction and occasionally dilution water. At the time of the VSI, this unit was undergoing non-RCRA closure under guidance from OEPA.

A release to on-site soils occurred from this unit. Sampling and analyses of lagoon sediment and

water conducted in 1988 indicated that Lagoons 1 and 2 exhibited the greatest impact. Both groundwater and sediment from these lagoons had elevated concentrations of phenol, TOC, and barium. Hazardous waste characterization of the sediments in the lagoons indicated that the sediments were not ignitable, corrosive, or characteristically toxic under RCRA. However, Lagoon 1 had elevated sulfide reactivity levels, which were reportedly attributed to natural, swamp-like conditions

Release Control, Response Actions, and Environmental Data

No release controls were located at this unlined unit. As a result, closure activities were initiated at this unit in April 1993, in accordance with OEPA regulations and the Permit to Install. Closure activities consisted of draining standing water from the lagoons, stabilizing lagoon sediments with cement kiln dust, and backfilling the lagoons with berm material. Closure of this unit was completed in October 1993, and SANCAP Abrasives submitted a Certification of Closure for the Former Settling Lagoons to OEPA in March 1994.

As required by the Permit to Install, SANCAP Abrasives performed six semi-annual groundwater monitoring events at this unit, starting in June 1993 and ending in December 1995. During each monitoring event, groundwater samples were collected and analyzed for dissolved metals, pH, specific conductance, oil and grease, TOC, total organic halogen, phenol, sulfate, nitrate, TDS, and acetone. TDS, manganese, and sulfate were detected above OEPA secondary drinking water standards in monitoring wells both upgradient and downgradient of the lagoons. A comparison of all collected groundwater data was presented in the April 1996 Groundwater Monitoring Report. The report stated that "changes in groundwater quality following closure have been relatively slight. The most significant changes since closure are decreases in thallium and acetone concentrations to non-detected levels. Based on the pre-closure and post-closure monitoring, the impact of the former impoundments on groundwater quality is not considered significant." The report recommended that no further groundwater monitoring be conducted at the closed lagoon site, and that the four existing groundwater monitoring wells be decommissioned in accordance with OEPA regulations. No further groundwater sampling was conducted, and the four groundwater monitoring wells were decommissioned with OEPA approval in 1999 and the unit was considered clean closed.

SWMU 4 – Wastewater Sumps

Description and Release History

This unit consists of three outdoor, underground, lined, concrete sumps: east, west, and central. The west sump is 15 feet long by 10 feet wide by 5.5 feet deep. The central sump is 12 feet long by 10 feet wide by 6 feet deep. The east sump is 15 feet long by 10 feet wide by 6.5 feet deep. The sumps were used between 1977 and 1988 for management of wastewater from cleaning of the abrasive coating line. Wastewater accumulating in the east and west sumps gravity drained to the central sump, and then was pumped to the Former Settling Lagoons (SWMU 3). From 1988 to the present, this wastewater has instead been discharged to the Wastewater Pretreatment Unit (SWMU 5). No releases from SWMU 4 have been documented, and no visible signs or

evidence of a release were present during the VSI.

Release Control, Response Actions, and Environmental Data

According to the PA/VSI, the sumps are lined with an impervious liner and covered to prevent releases to the air. No further action was recommended for this SWMU in the PA/VSI.

SWMU 5 – Wastewater Pretreatment Unit

Description and Release History

This unit manages wastewater from abrasive coating line cleaning. This unit consists of a 1,500-gallon aboveground fiberglass tank located indoors above a concrete floor. Wastewater from the Center Sump (SWMU 4) is pumped to this unit, where the pH is adjusted, if necessary, to meet the facility's allowable discharge pH range of 6-10. SANCAP Abrasives discharges wastewater from this unit to the sanitary sewer system under City of Alliance Permit Number 216-A. The unit began operation prior to 1988 and was active at the time of the PA/VSI. No releases from this unit have been documented and no visible signs or evidence of a release were observed in the area during the PA/VSI.

Release Control, Response Actions, and Environmental Data

Because the tank is located aboveground, leaks would be easily and promptly detected. The tank is located in a dedicated concrete room with a concrete floor to contain potential leaks until they can be properly cleaned up. No further action was recommended for this SWMU in the PA/VSI.

SWMU 6 – Abrasive Roll-Off Box

Description and Release History

This unit consists of a 40-cubic yard steel roll-off box that manages trash and waste trim from SANCAP Abrasives operations. The abrasive waste is inert, nonhazardous, and non-liquid. The roll-off box is located outdoors on a concrete pad. The roll-off box is emptied twice per week, with waste being landfilled at one of three Ohio landfills. This unit began operations around 1985 and was active at the time of the PA/VSI. During the VSI, no visible signs or evidence of a release were noted in the area of this unit.

Release Control, Response Actions, and Environmental Data

No further action was recommended for this SWMU in the PA/VSI

SWMU 7 – Solvent Still

Description and Release History

The Solvent Still is used to recover spent methylene chloride (F002) from machine cleaning

activities. The still is located indoors on a concrete floor and is approximately 2 feet by 2 feet by 3.5 feet in size. Waste solvents are managed in 15-gallon quantities. Methylene chloride still bottoms (F002) are generated during annual Solvent Still cleaning operations. At the time of the VSI, the facility was disposing of still bottoms from this unit by putting them in the Liner Roll-off Box (SWMU 9). This unit was placed into service around 1985 or 1986 and was active at the time of the PA/VSI. During the VSI, no visible signs or evidence of a release or drains were noted in the area of this unit. Furthermore, no releases from this unit have been documented.

Release Control, Response Actions, and Environmental Data

The PA/VSI recommended that the facility manage and accumulate the waste methylene chloride still bottoms (F002) from this unit as a hazardous waste.

The process lines which formerly used hazardous solvents were converted to using non-hazardous liquids for the process, and the still was dismantled and removed and disposed of appropriately. Since no releases had ever been documented and the still ran in an area with a concrete floor, this unit was considered closed.

SWMU 8 – Used Oil Storage Drum

Description and Release History

This unit consists of a 55-gallon steel drum that is used to accumulate used oil from equipment maintained by QRM. When a sufficient volume of used oil has been collected, the waste oil is transported to the Safety-Kleen facility in Cleveland, Ohio for recycling. The drum is located on a concrete floor inside QRM's section of the primary facility building. This unit was placed into service in February 1992 and was still active at the time of the PA/VSI. No releases from this unit have been documented, and no visible signs or evidence of a release were present during the VSI.

Release Control, Response Actions, and Environmental Data

This unit is located indoors on a concrete floor. At the time of the PA/VSI, the drum was equipped with a covered funnel, and was kept closed unless waste oil was being added. No further action was recommended for this SWMU in the PA/VSI.

SWMU 9 – Liner Roll-Off Box

Description and Release History

This 40-cubic yard roll-off box is used for management of liner waste trim from SANCAP Liner. The waste trim is inert, nonhazardous, and non-liquid. The Liner Roll-off Box is emptied twice per week, and its contents are transported by Max Disposal to one of three Ohio landfills. This unit was placed into service around 1985 and was active at the time of the PA/VSI. In addition to trim wastes, this unit has reportedly received hazardous wastes. When the Solvent Still (SWMU 7) was cleaned (about once a year), the methylene chloride still bottoms (F002) were

thrown into the Liner Roll-off Box for disposal. However, no release has been documented from this unit, and no visible signs or evidence of a release were present during the VSI. SANCAP now uses non hazardous liquids on their manufacturing lines, and hazardous waste is no longer generated. Hazardous wastes were drummed and sent to Safety-Kleen facility in Cleveland, Ohio for treatment.

Release Control, Response Actions, and Environmental Data

The Liner Roll-off Box is located outdoors on a concrete pad in a covered area. The PA/VSI recommended that the facility manage and dispose of the methylene chloride still bottoms F002) as a hazardous waste.

All but SMWU 3 (wastewater treatment lagoons) and SWMU 9 (Liner Roll-Off Box existing on a concrete pad) were considered non-hazardous, and required no further action. Contaminants of concern at SANCAP Abrasives were principally lead, barium, phenol, reactive sulfides and to a lesser extent organic solvents such as methyl ethyl ketone (MEK), and acetone, used in the early development of resins in SANCAP's manufacturing processes, and for parts cleaning. The vast majority of these solvents (>99% as cited in the SANCAP 1992 Closure Plan) are reclaimed and recycled into facility operations. These operations took place on a concrete floor, with no known access to soils below the floor. Prior inspections reports prepared by the Ohio EPA identified that spillage of these substances was rare, and when they occurred (cited in inspection reports as less than one spill per year) , they were immediately cleaned. In manufacturing applications using organics, final products such as sandpaper and resins were allowed to air dry and solidify rendering non-hazardous wastes.

In May 1991, SANCAP submitted an application for a "Permit to Install" to OEPA for closure of the former settling lagoons. The wastewater treatment lagoons were clean closed in June 1993. This closure entailed excavation of several feet of soil and sediments. Excavated material were properly characterized and disposed in an appropriate landfill. Confirmation sampling of the excavated areas was performed, and the soils in lagoon basins were judged to meet OEPA human health risk standards. The lagoons were then backfilled with clean fill. Waste water was thereafter handled by the municipal water treatment system in Alliance OH. SWMU 9 (Liner Roll-off Box) and SANCAP's hazardous waste storage area (both of which were on concrete pads having no direct access to soils were clean closed in February 1983, cited in a letter from Basil Constantelos of U.S. EPA to Mr. R. Goeldi, Vice President of SANCAP Abrasives on Feb 8, 1983.

Post-closure care requirements required by OEPA were instituted requiring SANCAP to conduct semi-annual groundwater measurements on monitoring wells (MWs) installed from June 1993 until December 1995. This requirement was to ensure that site contaminants were not leaching into local groundwater supplies.

Four (4) monitoring wells (MWs) were originally installed in 1988 by SANCAP and these consisted of MW1 (an upgradient background well) and MWs 2, 3 and 4 (all down gradient wells). The post closure sampling required in SANCAP's lagoon closure plan is described in **Appendix 1** ("Groundwater Monitoring Report of the Former Wastewater Treatment Lagoons")

as prepared by RUST Environmental, contractor for SANCAP. Each well sampled was analyzed for RCRA metals, total organic carbon (TOC), total organic halides (TOX), phenols, sulfate and acetone. The OEPA reviewed and approved this report, and indicated that the groundwater did not exceed any OEPA allowable contaminant concentrations. This data led SANCAP to petition the OEPA to allow them to decommission and abandon these monitoring wells. This petition was approved, and all monitoring wells were decommissioned in August of 1999, as evidenced in a letter dated August 24, 1999 from William J. Zawiski, of OEPA to SANCAP accepting SANCAP's decommissioning plan.

Regarding earlier potential releases from SMWU 9, SANCAP had petitioned the US EPA in a letter dated June 25, 1982 from R. Goeldi (SANCAP Vice President) to Ms. Kathy Homer of US EPA Waste Management Division to withdraw their Part A Hazardous Waste Permit under Section 3005 of RCRA. On March 22, 1983, in a letter from Karl Klepitsch of the US EPA, SANCAP was notified that they no longer required the Part A permit. SANCAP currently stores no hazardous waste over 90 days; any and all wastes produced as a part of operations are either recycled or shipped under manifest to an appropriate hazardous waste treatment vendor.

Conclusion

Based upon the information presented in this document and in the Site File regarding releases and remedial actions performed at this Site to address those releases, EPA has determined that no further action by the federal RCRA corrective action program is necessary at this Site at this time. The site conditions were assessed against the objectives for eliminating threats from a site named above and EPA believes that the management of the site has met those objectives. SANCAP clean closed their one principal treatment unit which would have been most likely to have releases to groundwater, which were a set of wastewater treatment lagoons (SWMU 3). The cleanup work for unit was completed in 1993, and the OEPA approved its closure later that year. Other units listed as SWMUs in the 1992 PA/VSI were dismantled and no longer existed at the time of my August, 2012 site visit. SANCAP successfully completed remediation of its principle wastewater treatment unit in 1993 employing Lancy Environmental and Wadsworth Alert Laboratory in 1993. SANCAP's Clean-Closure was approved by OEPA on July 12, 1994. As part of the clean closure and post closure care requirements, SANCAP was required to install and develop monitoring wells and test for potential impact of SANCAP operations on groundwater. SANCAP advanced the wells and monitored them on a semi-annual basis for three (3) years. No RCRA contaminants were detected above EPA MCLs. There are no other known waste management areas at the facility which had releases.

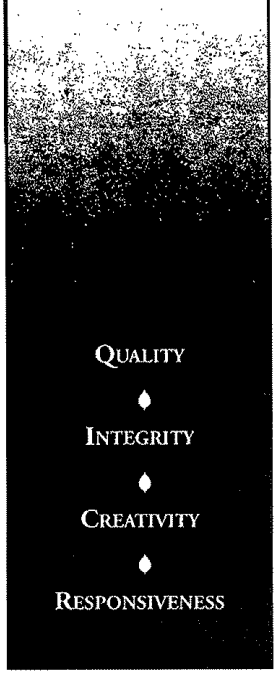
All former SWMUs and do not present concern for human health and the environment under the current conditions. EPA believes the site has achieved a CA070NO (no further investigation needed), CA400 (remedy decision), CA550-NR (remedy construction complete-no remedy) CA 900 NL (No Controls are Necessary)."

EPA reserves the right to change, modify or otherwise rescind this NFA Determination based on new information, from any source, not in the Site File at the time of this NFA Determination.

Appendix 1 – Groundwater Monitoring Report

Ground Water Monitoring Report
Former Wastewater Treatment
Lagoon Site

December 1993 Monitoring



Prepared for:

Sancap Abrasives
Alliance, Ohio
February 1994

RUST ENVIRONMENT & INFRASTRUCTURE

Appendix 1 – Continued

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1.0 INTRODUCTION

In May 1992, Sancap Abrasives received an Ohio EPA "Permit to Install" as approval to proceed with closure activities at the company's wastewater treatment lagoon site in Alliance, Ohio. Included in the permit are requirements for monitoring the site's four ground water monitoring wells semi-annually over a three year period. According to the permit, monitoring is to be conducted in June and December for the parameters specified in the permit.

This ground water monitoring report prepared by RUST Environment & Infrastructure (REI) describes sampling and analysis procedures and findings for the second semi-annual monitoring event conducted on December 3, 1993. Closure of the lagoons was completed in June, 1993. Site and regional geologic and hydrogeologic conditions have been described in the previously submitted Site Evaluation Report for Wastewater Treatment Lagoons Site (by Lancy Environmental Services dated March 1989). Therefore, a detailed description of these conditions will not be repeated in this report.

Appendix 1 – Continued

2.0 SAMPLING

REI subcontracted an experienced ground water sampling technician to collect ground water samples from the four on-site monitor wells (MW-1, 2, 3, and 4). Sampling activities were performed on December 3, 1993 in accordance with EPA-approved methods and consisted of the following:

- Measuring and recording ground water levels
- Purging ground water prior to sampling
- Measuring and recording field parameters (pH, specific conductance, and temperature)
- Sample collection utilizing disposable polyethylene bailers and field filtering samples, as necessary, for metals analysis
- Placing samples in appropriate containers and completing necessary chain-of-custody documentation.

The completed field sampling forms are included as Appendix A.

During the measurement of field specific conductance, a low reading (60 umhos/cm) of the fourth replicate measurement of MW-1 was recorded. The first, second, and third measurements were 1850, 2020 and 2000 umhos/cm, respectively. The low reading is attributed to a temporary equipment malfunction. Replicate field measurements of the other three ground water samples were consistent.

As described in the previously submitted ground water monitoring report, during ground water sampling in June 1993 an obstruction was encountered in the MW-4 well casing which hampered sampling efforts. During sampling activities for December, 1993, the obstruction became dislodged enabling sampling in MW-4 to proceed as planned.

Appendix 1 – Continued

3.0 ANALYSIS

Collected ground water samples and chain of custody documentation were transported to PACE Inc.'s laboratory in Warrendale, Pennsylvania. The ground water samples were analyzed for the parameters required by the Permit To Install. The following is a list of analytical parameters and methods:

Table 1
GROUND WATER ANALYTICAL PARAMETERS AND METHODS

Parameter	*Method*
*pH	SW846 9040
*Specific Conductance	SW846 9050
Arsenic, Dissolved	SW846 6010
Barium, Dissolved	SW846 6010
Cadmium, Dissolved	SW846 6010
Chromium, Dissolved	SW846 6010
Lead, Dissolved	SW846 6010
Manganese, Dissolved	SW846 6010
Mercury, Dissolved	SW846 7470
Selenium, Dissolved	SW846 6010
Silver, Dissolved	SW846 6010
Thallium, Dissolved	SW846 6010
Zinc, Dissolved	SW846 6010
Oil & Grease	SW846 9070
Total Organic Carbon	SW846 9060
Total Organic Halogen	SW846 9020
Phenol	SW846 9066
Sulfate	SW846 9038
Nitrate	EPA 353.2
Total Dissolved Solids	EPA 160.1
Acetone	SW846 8240

* Field parameter

Analytical results are included as Appendix B.

Appendix 1 – Continued

4.0 FINDINGS

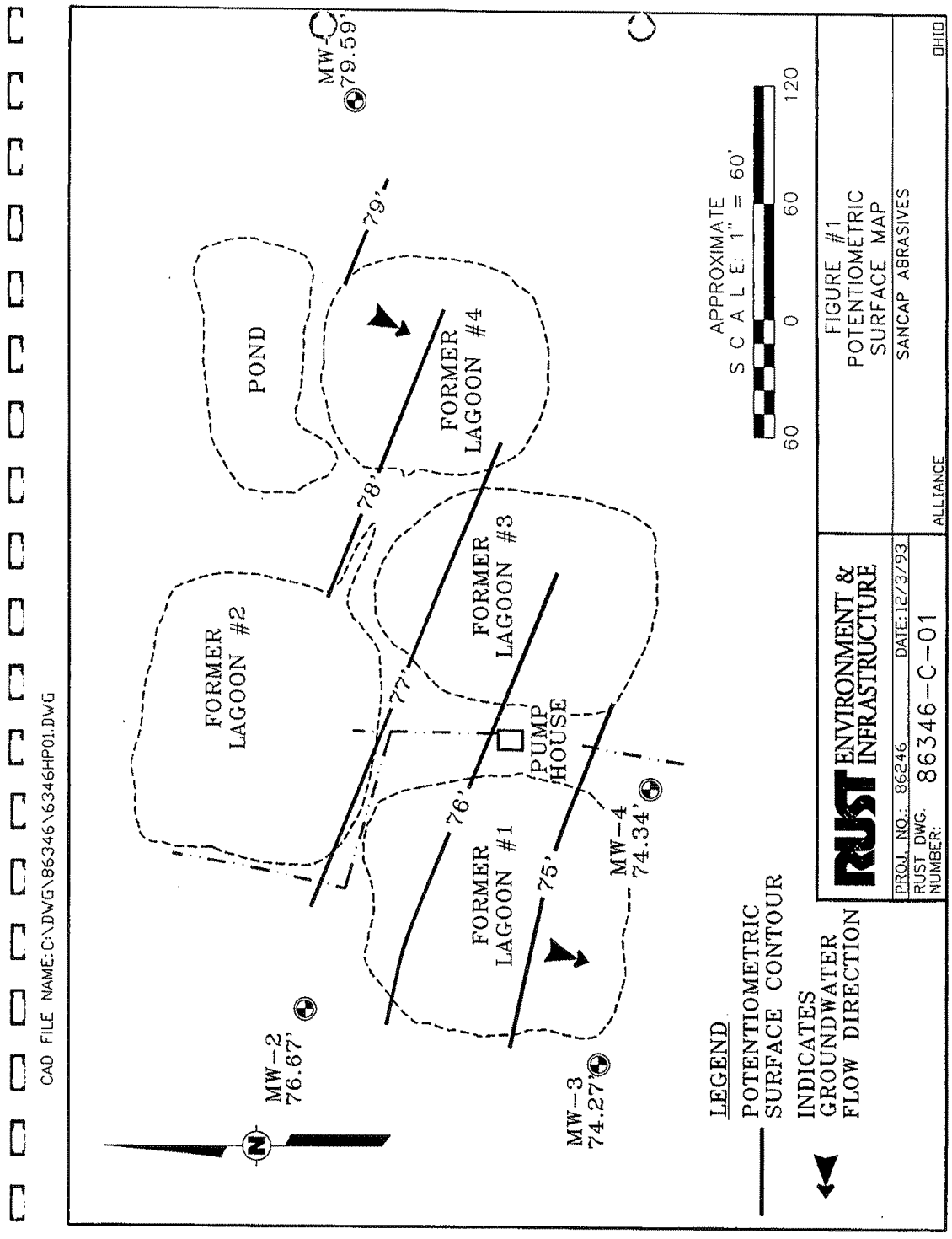
REI compared ground water monitoring data from the December 3, 1993 sampling event with ground water monitoring data from the November, 1988 (pre-closure) and June, 1993 events to identify possible trends in ground water quality and changes, if any, in ground water flow patterns. The potentiometric surface (ground water contour) map developed for the November 1988 sampling event indicates ground water flow direction from the northeast (MW-1) to the southwest (MW-3-MW-4). Figure 1 is a ground water contour and flow map developed from the relative datum and December 1993 ground water elevations. Ground water flow patterns (i.e. flow to the southwest) for the December 1993 event are consistent with historic patterns and site hydrogeologic interpretation. The calculated hydraulic gradient for the December 1993 measurement is approximately 0.01 ft./ft.

Table 3 compares the results in the downgradient wells from the three sampling events conducted at Sancap to date. Maximum network concentrations of TDS, phenols, total organic carbon, total organic halides, lead, selenium, thallium and acetone concentrations have decreased since the initial event in November, 1988. The most significant decreases occurred in TOC, lead, selenium, thallium, and acetone maximum concentrations. TOC was initially detected at 13-17 mg/L but has ranged from 3-5 mg/L during 1993. Selenium ranged from 0.015 to 0.05 mg/L in 1988, but has not been detected during the last two events. Lead and thallium detected in the initial event have also decreased to non-detected during the last two events. Acetone has been detected only in MW-4, at 100 μg/L in November, 1988 and 36 μg/L in June, 1993. Acetone was not detected in MW-4 in December, 1993. Specific conductance maximum concentrations increased since the pre-closure event. Arsenic manganese, and zinc levels have increased slightly in comparison with the pre-closure event. Cadmium, mercury and silver have not been detected in any downgradient well during any of the three sampling events.

For most parameters, maximum network concentration changes between the two recent events were non-existent or minor. The most notable decreases were in pH, specific conductance, oil and grease, and acetone concentrations. A high pH reading of 12 was recorded for MW-4 in June, 1993, but decreased to 6.8 in December, 1993. (Perhaps this anomalously high pH reading in June, 1993 was related to the inability to collect a representative pH sample due to the former obstruction in MW-4.) The most notable increases were in nitrogen nitrate and zinc concentrations.

Table 4 identifies constituent concentrations in downgradient wells which exceed twice the background (MW-1) concentrations. (Two times background was arbitrarily selected for comparison purposes.) As indicated by Table 4, two ground water monitoring parameters, manganese, and sulfate exceeded upgradient concentrations in excess of two times background concentrations. Manganese concentration in the background well was 0.20 mg/L, compared with the manganese concentrations of 3.0, 1.7 and 0.64 mg/L in MW-2, MW-3, and MW-4, respectively. Sulfate concentration in MW-1 was 1500 mg/L compared to 3100, 2700 and 2300 in MW-2, MW-3, and MW-4, respectively.

Figure 2 - Diagram of Settling Lagoons



Appendix 1 – Continued

Table 2

GROUND WATER ELEVATIONS
AUGUST 26, 1993

Well ID	*Relative Casing Elevation (ft)*	*Measured Depth to Water (ft)*	*Ground Water Elevation (ft)*
MW-1	104.53	23.95	80.58
MW-2	100.25	22.20	78.05
MW-3	95.42	20.11	75.31
MW-4	97.62	21.77	75.85

GROUND WATER ELEVATIONS
DECEMBER 3, 1993

Well ID	*Relative Casing Elevation (ft)*	*Measured Depth to Water (ft)*	*Ground Water Elevation (ft)*
MW-1	104.53	24.94	79.59
MW-2	100.25	23.58	76.67
MW-3	95.42	21.15	74.27
MW-4	97.62	23.28	74.34

Appendix 1 – Continued

TABLE 3

RANGE IN CONCENTRATION (MG/L)
DOWNGRADIENT WELLS (MW-2, 3, 4)
JUNE 1993 EVENT

Parameter	*11/21/88*	*6/02/93*	*12/03/93*
pH (S.U.)	6.5-8.6	6.8-12	6.7-7.1
Specific Conductance (umhos)	>1990	530-3390	2300-2890
Total Dissolved Solids	3000-4500	1800-4600	3800-4300
Oil and Grease	<2.0	<2.0-4.9	<2.0
Phenols	<0.002-0.017	0.010-0.018	<0.005-0.01
Sulfate	2300-3100	810-3100	2300-3100
Total Organic Carbon	13-17	3-4	4-5
Total Organic Halides	<0.01-0.03	<0.01-0.01	<0.01-0.01
Arsenic	<0.002	<0.01-0.022	<0.01-0.01
Barium	0.04-0.08	<0.2	<0.2
Cadmium	<0.004	<0.005	<0.005
Chromium	<0.006-0.007	<0.01-0.01	<0.01
Lead	<0.1-0.1	<0.003	<0.003
Manganese	<0.001-2.6	<0.01-2.69	0.64-3.0
Mercury	<0.0002	<0.0002	<0.0002
Nitrogen Nitrate	NA	0.02-0.05	0.06-0.12
Selenium	0.015-0.05	<0.005	<0.005
Silver	<0.01	<0.01	<0.01
Thallium	<0.3-43	<1	<1
Zinc	<0.05	<0.02	<0.02-0.06
Acetone (μg/L)	110	<10-36	<10

NA = Not Analyzed

Appendix 1 – Continued

TABLE 4

COMPARISONS BETWEEN UPGRADIENT
AND DOWNGRADIENT CONCENTRATIONS
DECEMBER 1993 EVENT

Parameter	*Conc. MW1 Upgradient*	*Conc. Range Downgradient*	*Conc. > 2 X Background*
pH	6.9	6.7-7.1	No
Specific Conductance (umhos)	2020	2300-2890	No
Total Dissolved Solids	3200	3800-4300	No
Oil and Grease	<2.0	<2.0	No
Phenols	0.006	<0.005-0.01	No
Total Organic Carbon	4	4-5	No
Total Organic Halide	0.01	<0.01-0.01	No
Arsenic	0.03	<0.01-0.01	No
Cadmium	<0.005	<0.005	No
Chromium	<0.01	<0.01	No
Lead	<0.003	<0.003	No
Manganese	0.20	0.64-3.0	Yes
Mercury	<0.0002	<0.0002	No
Selenium	<0.05	<0.005	No
Silver	<0.01	<0.01	No
Thallium	<1	<1	No
Zinc	0.13	<0.02-0.06	No
Barium	<0.2	<0.2	No
Nitrogen Nitrate	0.08	0.06-0.12	No
Sulfate	1500	2300-3100	Yes
Acetone (μg/L)	<10	<10	No

Concentrations in mg/L except when noted

Appendix 1 – Continued

Appendix 1 – Continued

Semi-annual ground water monitoring will be continued in 1994 to assess the long-term impact of lagoon closure on ground water quality.

Concurrences

Name	Title	Signature	Date
Brian P. Freeman	Project Manager	/Brian P. Freeman/	8/4/14
Eaton Weiler	Regional Counsel		
Donald Heller	Supervisor (Acting)		
Jose Cisneros	Branch Chief		