MORITO SCOVILL

April 11, 2024

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| Georgia Environmental Protection Division | Sent via UPS |
| Land Protection Branch | Waybill #: * |

Hazardous Waste Corrective Action Program
2 Martin Luther King Jr. Drive SE, Suite 1054 East Tower
Atlanta, Georgia 30334

Attention: Mr. Jim McNamara
Land Disposal Unit Coordinator

**Subject: Class 3 Permit Modification Request**
Morito Scovill Americas, LLC, dba Scovill Fasteners, Clarkesville, Georgia
Hazardous Waste Facility Permit No. HW-090(D)
EPD ID No. GAD003480530

Dear Mr. McNamara:

Morito Scovill Americas, LLC, dba Scovill Fasteners (Scovill) operates a metal electroplating facility in Clarkesville, Georgia. Under Hazardous Waste Facility Permit HW-090(D), reissued on October 17, 2016, Scovill has been operating a groundwater treatment system (GWTS) and monitoring groundwater contamination from residuals of three concrete-lined basins that were part of the on-site electroplating wastewater treatment system from 1973 to 1989. Groundwater extraction has been effective at eliminating or substantially reducing hazardous constituents in groundwater at the site. Scovill believes that the requirements for clean closure of groundwater have been attained in accordance with non-residential exposure assumptions and is requesting this modification.

In accordance with 40 CFR 270.42(c)(1), for each requested modification, Scovill's submission of this Class 3 Permit Modification Request accomplishes the following:

*Global Headquarters*
Morito Scovill Americas, LLC dba Scovill Fasteners
1802 Scovill Drive
Clarkesville, Georgia 30523, USA
1-888-726-8455
mgioiosa@scovill.com

(i) describes the exact changes to be made to the permit conditions and supporting documents referenced by the permit;
(ii) identifies that the modification is a Class 3 modification;
(iii) explains why the modification is needed; and
(iv) provides the applicable information required by 40 CFR 270.13 through 270.22, 270.62, 270.63 and 270.66.

Note Scovill does not believe that any applicable information required by 40 CFR 270.13 through 270.22, 270.62, 270.63 and 270.66 is relevant to this modification request.

**MODIFICATION REQUEST**

Scovill hereby requests the following modifications to the Corrective Action Plan:

- groundwater extraction from MW-4 will be suspended and will only be restarted if groundwater monitoring results indicate contamination is migrating or significantly rebounding;
- groundwater monitoring will continue for a period of 3 years to verify that any residual groundwater contamination is remaining within the Scovill property boundaries and is not migrating or significantly rebounding; and
- a Uniform Environmental Covenant will be implemented to restrict groundwater use and prevent disturbance of active monitoring wells.

**BASIS OF MODIFICATION REQUEST**

Scovill achieved clean closure with respect to residuals and soil related to the former surface impoundments. The clean closure report and certification are included as Attachment A to this letter. It was later determined that hazardous constituent residue remained in groundwater, so groundwater clean closure has not previously been certified.

Scovill believes that the requirements for clean closure of groundwater have been attained in accordance with non-residential exposure assumptions. As acknowledged by USEPA[1], "some limited quantity of hazardous constituents might remain in environmental media after clean closure provided they are at concentrations below levels that may pose a risk to human health and the environment. In the 1987 notice, EPA took the position that the amount of hazardous constituents that might remain in

[1] Risk-Based Clean Closure Memorandum, Elizabeth Cotsworth, Acting Director, USEPA Office of Solid Waste, March 16, 1998

environmental media after clean closure should be identified through appropriate application of risk information either by using available constituent-specific limits or factors that had undergone Agency review (e.g., MCLs…)".

Residual amounts of hazardous constituents remain in groundwater at the site, but are contained on the site property. Concentrations are not rebounding and plumes are not moving toward property boundaries during the past six months while the recovery well has been off (while no active remediation efforts were being performed). The residual hazardous constituents, mercury and nickel, are at concentrations below Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs).

**APPROPRIATE RISK-BASED CLEANUP STANDARDS**

Hazardous constituent residuals remain only in groundwater at this site. The constituent plume has not migrated offsite in over 30 years of monitoring, so there is no risk of offsite exposure pathways through surface water impact and instream water quality standards are not applicable. The worst-case exposure scenario is use of groundwater as a drinking water source. SDWA MCLs were reviewed, as follows:

- For mercury, 40 CFR 141.62(b)(6) lists the mercury MCL as 0.002 mg/l; Scovill suggests use of this MCL as a risk-based cleanup standard; and
- For nickel, prior to 1995, 40 CFR 141.62(b)(14) listed the nickel MCL as 0.1 mg/l; in 1995, this MCL was vacated and remanded by order of the U.S. Court of Appeals for the D.C. Circuit[2]; in addition, nickel does not appear on the U.S. EPA Regional Screening Level Resident Tap Water Table (November 2023); while there is not any current limit on drinking water nickel concentrations, Scovill suggests use of the former 0.1 mg/l nickel MCL as a conservatively low risk-based cleanup standard.

**GROUNDWATER RESIDUALS**

The only hazardous constituent residuals at the site are nickel and mercury detected in groundwater underlying a central portion of the Scovill property. Groundwater extraction was discontinued on September 26, 2023 in accordance with a Temporary Authorization to assessment of nickel and mercury levels and plume mobility with the discontinuation of active remediation. Groundwater monitoring events were conducted on December 7, 2023, and March 8, 2024. Results are summarized below:

[2] 60 FR 33929

| Constituents | Concentrations (mg/l) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MW-4 | | MW-8a | | MW-11 | | MW-13 | | MW-16 | | MW-19 | |
| | 12/7/23 | 3/8/24 | 12/7/23 | 3/8/24 | 12/7/23 | 3/8/24 | 12/7/23 | 3/8/24 | 12/7/23 | 3/8/24 | 12/7/23 | 3/8/24 |
| Mercury | 0.00029 | 0.00031 | 0.00040 | 0.00053 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.0002 |
| Nickel | 0.0474 | < 0.020 | < 0.020 | < 0.020 | < 0.020 | < 0.020 | 0.0228 | < 0.020 | 0.0281 | < 0.020 | < 0.020 | < 0.020 |

As presented in the table, all nickel concentrations were below the 0.1 mg/l risk-based cleanup standard. During the most recent sampling event, all nickel concentrations were below the 0.020 mg/l laboratory detection limit.

Mercury is still detected in two wells, MW-4 and MW-8, but at levels below the 0.002 mg/l risk-based cleanup standard. These two wells are in the central portion of the corrective action area. Wells downgradient of these wells are non-detect for mercury, including MW-16 and MW-19.

All groundwater residuals are within the site property, are not migrating, and are not significantly rebounding with discontinuation of groundwater extraction. This data demonstrates risk-based clean closure for groundwater residuals has been attained.

**CERTIFICATION**

I certify under penalty of law that this letter was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: ______________________________
Printed name: Michael Lowery
Title: VP Operations & Engineering
Date: April 11, 2024

# Attachment A:

# Basin Clean Closure Report & Certification

**(DRE Technologies; April 1990)**

# CLOSURE REPORT AND CERTIFICATION

Prepared for:

SCOVILL FASTENERS, INC.
CLARKESVILLE, GEORGIA

Prepared by:

DRE TECHNOLOGIES, INC.
FRANKLIN, TENNESSEE

Issued: FEBRUARY, 1990
Revised: APRIL, 1990

SCOVILL FASTENERS, INC.
CLARKESVILLE, GEORGIA

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## SECTION I

## BACKGROUND

## PRECLOSURE SAMPLING & ANALYTICAL RESULTS

### INTRODUCTION

The purpose of this section is to provide the background information used to develop the Scovill Fasteners, Inc. Wastewater Treatment System closure plan.

This section includes the following subsections:

- Summary of the preclosure sampling activities conducted at the Scovill Fasteners, Inc., Clarkesville, Georgia facility.

- The results of the analytical tests performed on the preclosure samples.

### OVERVIEW - SITE PRECLOSURE SAMPLING

There were 6 series of preclosure samples taken at the site as described below:

Series 1 - Soil Background Samples

Series 2 - Emergency Holding Basin Concrete Samples (Both background and bottom samples)

Series 3 - Emergency Basin Subfloor Soils Samples and Soils Between the Equalization Basin and Emergency Basin

Series 4 - Equalization Basin and Polishing Pond Concrete Samples

Series 5 - Equalization Basin and Polishing Pond Subfloor Soils Samples

Series 6 - Equalization Basin and Polishing Pond Area Soils Samples for Volatile, Base Neutral, and Acid Extractable Organic Compound Analyses

A description of the procedures used in the conduct of these sampling activities follows:

## DECONTAMINATION PROCEDURES

Three major equipment items were used in the conduct of this work: 1) the "Little Beaver" hydraulic auger, 2) a hand auger, 3) a concrete hole saw, 4) a stainless steel sample mixing bowl, and 5) a stainless steel spoon.

All sampling equipment, ie, the hand auger, mixing bowl, and spoon were washed in detergent, rinsed in acetone, rinsed in isopropyl alcohol, rinsed in water, and air dried prior to initiating sampling activities.

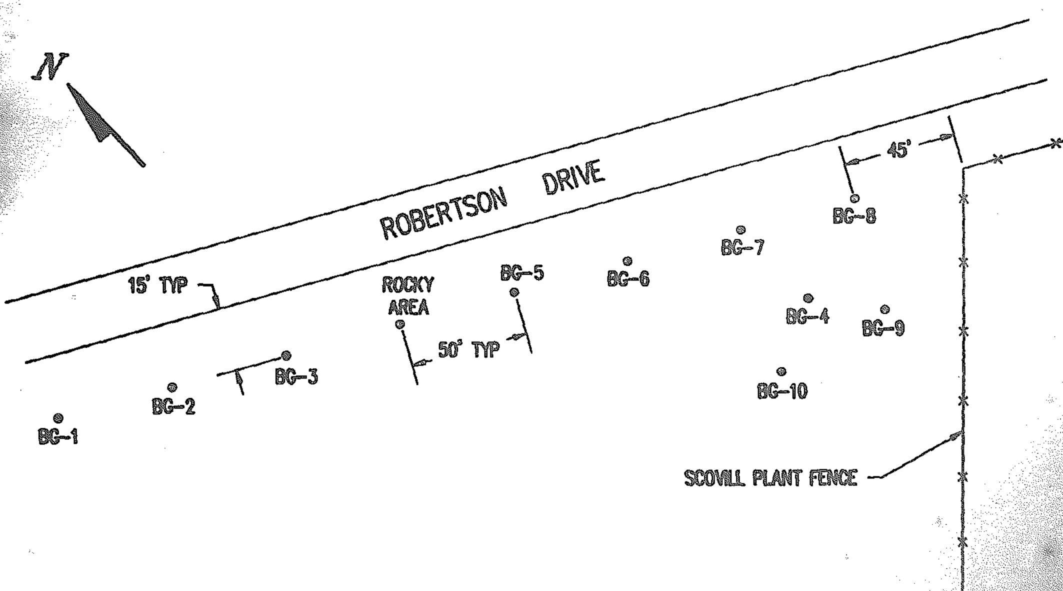
During sampling activities this equipment was washed in detergent and rinsed twice with clean water between each sample.

The hydraulic auger flights were washed with a detergent and water rinsed prior to sampling activities. All auger flights were cleaned with water between each boring.

The concrete hole saw was detergent washed and rinsed prior to use. Between each boring, the saw was water rinsed.

## SERIES 1 SAMPLING

the purpose of Series 1 sampling was to define background soils chemical characteristics. Series 1 sampling was conducted on the northern boundary of plant property along Robertson Drive as depicted in Figure I-1. This location was selected based on its comparable elevation to the wastewater treatment system, surface water cannot run from the plant site over this area, and its accessibility. Boring depths and estimated sample elevations are presented in Table I-1. Ten background samples were collected at an approximate depth of 15 ft. The hydraulic auger was used to bore to a depth of 14 ft. The remaining 1 ft of soil was removed using the hand auger prior to collecting a 1 ft sample.




SAMPLE LOCATION SERIES 1
FIGURE I-1

TABLE I-1

SCOVILL SAMPLING LOCATIONS AND ANALYTICAL SCHEDULE

| SERIES | SAMPLE | SURFACE ELEVATION (FT) | SAMPLE DEPTH (FT) | SAMPLE ELEVATION (FT) | E.P METALS (MG/L) | TOXICITY NICKEL (MG/L) | EXTRACT CN (MG/L) | MASS (MG/KG CU,NI,ZN,CR (MG/KG) | DRY WEIGHT CN (MG/KG) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | BG-1 | 84 | 15 | 69 | | | | X | X |
| | BG-2 | 84 | 15 | 69 | | | | X | X |
| | BG-3 | 84 | 15 | 69 | | | | X | X |
| | BG-4 | 80 | 15 | 65 | | | | X | X |
| | BG-5 | 84 | 15 | 69 | | | | X | X |
| | BG-6 | 84 | 15 | 69 | | | | X | X |
| | BG-7 | 84 | 15 | 69 | | | | X | X |
| | BG-8 | 82 | 15 | 67 | | | | X | X |
| | BG-9 | 79 | 15 | 64 | | | | X | X |
| | BG-10 | 79 | 15 | 64 | | | | X | X |
| 5 | EQ-1 | 68 | 0 | 68 | X | X | X | X | X |
| | EQ-2 | 68 | 0 | 68 | X | X | X | X | X |
| | EQ-3 | 68 | 0 | 68 | X | X | X | X | X |
| | EQ-4 | 68 | 0 | 68 | X | X | X | X | X |
| | P-5 | 68 | 0 | 68 | X | X | X | X | X |
| | P-6 | 68 | 0 | 68 | X | X | X | X | X |
| | P-7 | 68 | 0 | 68 | X | X | X | X | X |
| | P-8 | 68 | 0 | 68 | X | X | X | X | X |
| | P-9 | 68 | 0 | 68 | X | X | X | X | X |
| 6 | 1-C | 68 | 2 | 66 | X | X | X | X | X |
| | 1-4 | 68 | 4 | 64 | | | | | |
| | 1-6 | 68 | 6 | 62 | | | | | |
| | 1-8 | 68 | 8 | 60 | | | | | |
| | 1-10 | 68 | 10 | 58 | | | | | |
| | 2-C | 68 | 2 | 66 | X | X | X | X | X |
| | 2-4 | 68 | 4 | 64 | | | | | |
| | 2-6 | 68 | 6 | 62 | | | | | |
| | 2-8 | 68 | 8 | 60 | | | | | |
| | 2-10 | 68 | 10 | 58 | | | | | |
| | 3-C | 68 | 2 | 66 | X | X | X | X | X |
| | 3-4 | 68 | 4 | 64 | | | | | |
| | 3-6 | 68 | 6 | 62 | | | | | |
| | 3-8 | 68 | 8 | 60 | | | | | |
| | 3-10 | 68 | 10 | 58 | | | | | |
| | 4-C | 68 | 2 | 66 | X | X | X | X | X |
| | 4-4 | 68 | 4 | 64 | | | | | |
| | 4-6 | 68 | 6 | 62 | | | | | |
| | 4-8 | 68 | 8 | 60 | | | | | |
| | 4-10 | 68 | 10 | 58 | | | | | |
| | 5-C | 68 | 2 | 66 | X | X | X | X | X |
| | 5-4 | 68 | 4 | 64 | | | | | |
| | 5-6 | 68 | 6 | 62 | | | | | |
| | 5-8 | 68 | 8 | 60 | | | | | |
| | 5-10 | 68 | 10 | 58 | | | | | |
| | 6-C | 68 | 2 | 66 | X | X | X | X | X |

TABLE I-1 (CONT.)

SCOVILL SAMPLING LOCATIONS AND ANALYTICAL SCHEDULE

| SERIES SAMPLE | SURFACE ELEVATION (FT) | SAMPLE DEPTH (FT) | SAMPLE ELEVATION (FT) | E.P METALS (MG/L) | TOXICITY NICKEL (MG/L) | EXTRACT CN (MG/L) | MASS (MG/KG CU,NI,ZN,CR (MG/KG) | DRY WEIGHT CN (MG/KG) |
|---|---|---|---|---|---|---|---|---|
| 6-4 | 68 | 4 | 64 | | | | | |
| 6-6 | 68 | 6 | 62 | | | | | |
| 6-8 | 68 | 8 | 60 | | | | | |
| 6-10 | 68 | 10 | 58 | | | | | |
| 7-C | 68 | 2 | 66 | X | X | X | X | X |
| 7-4 | 68 | 4 | 64 | | | | | |
| 7-6 | 68 | 6 | 62 | | | | | |
| 7-8 | 68 | 8 | 60 | | | | | |
| 7-10 | 68 | 10 | 58 | | | | | |
| 8-C | 68 | 2 | 66 | X | X | X | X | X |
| 8-4 | 68 | 4 | 64 | | | | | |
| 8-6 | 68 | 6 | 62 | | | | | |
| 8-8 | 68 | 8 | 60 | | | | | |
| 8-10 | 68 | 10 | 58 | | | | | |
| 9-C | 68 | 2 | 66 | X | X | X | X | X |
| 9-4 | 68 | 4 | 64 | | | | | |
| 9-6 | 68 | 6 | 62 | | | | | |
| 9-8 | 68 | 8 | 60 | | | | | |
| 9-10 | 68 | 10 | 58 | | | | | |
| EQ 4-CMP | 68 | 4 | 64 | | | | X | X |
| EQ 6-CMP | 68 | 6 | 62 | | | | X | X |
| EQ 8-CMP | 68 | 8 | 60 | | | | X | X |
| EQ 10-CMP | 68 | 10 | 58 | | | | X | X |
| POL 4-CMP | 68 | 4 | 64 | | | | X | X |
| POL 6-CMP | 68 | 6 | 52 | | | | X | X |
| POL 8-CMP | 68 | 8 | 60 | | | | X | X |
| POL 10-CM | 68 | 10 | 58 | | | | X | X |

The sample was mixed by hand prior to collecting a 1 kg sample. Samples were collected in Ziploc bags, logged, and stored for future analysis.

All samples were granular with minute flakes and appeared to be a mixture of sand and mica. Colors ranged from red to off white.

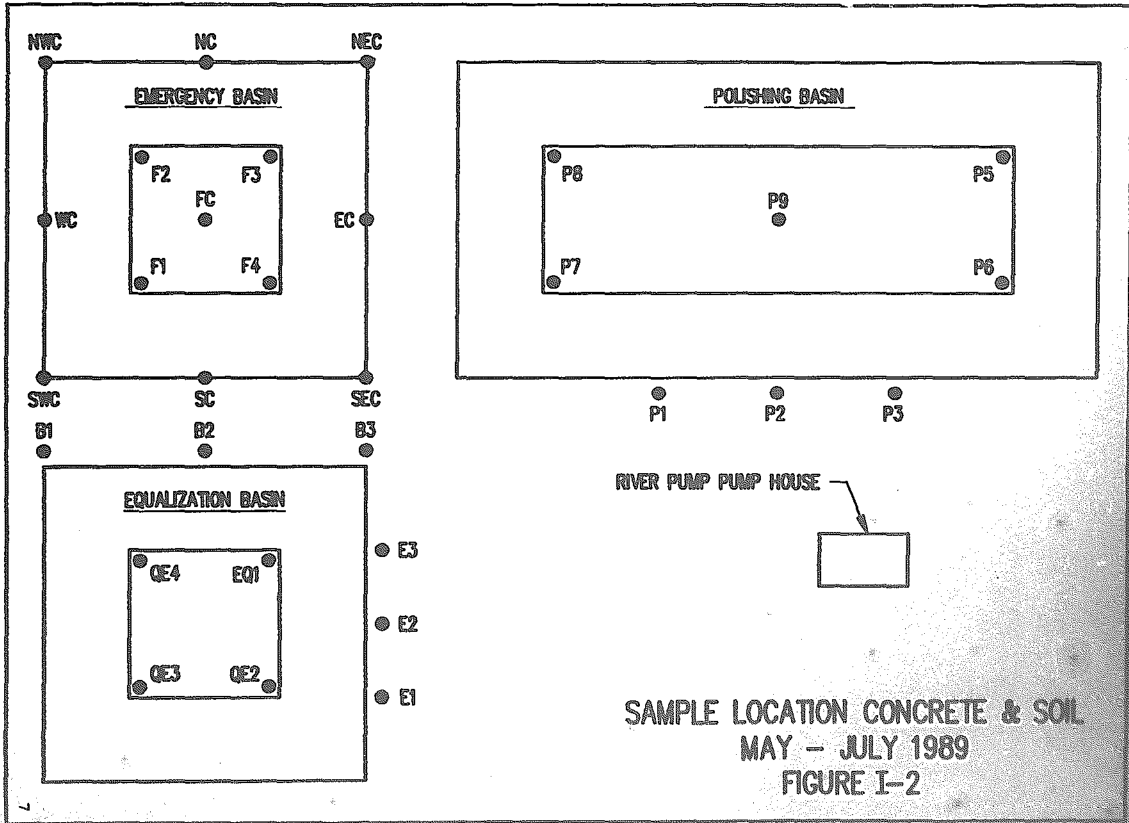
## SERIES 2 SAMPLING

The purpose of Series 2 sampling was to define the chemical characteristics of basin concrete which has not been in contact with hazardous waste; define the chemical characteristics of emergency basin concrete which has been in contact with hazardous waste, and; compare the analytical results to determine if the emergency basin concrete is, or has been contaminated by, a hazardous waste. Series 2 sampling consisted of collecting concrete basin samples. Eight background samples were collected. One from each corner and one from each side of the Emergency basin as shown in the attached Figure 1-2. These samples were collected by breaking the concrete lip with a sledge hammer. Approximate 2" by 3" by 1" pieces were collected, logged, and stored for future analysis. A 6" concrete hole saw was used to gain access to the bottom basin soils. This "plug" was labeled and saved for future analysis. Four "chips" each were broken from the top, sides, and bottom, composited, and analyzed for E.P. Toxicity.

## SERIES 3 SAMPLING

The purpose of Series 3 sampling was to determine if emergency basin sub floor soils were, or had been contaminated with, a hazardous waste.

Emergency basin subfloor soil samples were collected at each basin corner and the center of the basin as shown in the attached Figure 1-2. A two foot continuous sample was collected by hand augering two 1 ft samples. This sample was mixed and a 1 kg sample collected for analysis. Following the removal of this sample, the hole was machine augered to depths of 4, 6, 8, and 10 ft. In each case, a 6" to 1 ft tailing cleanout sample




SAMPLE LOCATION CONCRETE & SOIL
MAY - JULY 1989
FIGURE I-2

was hand augered and disposed. A one foot sample was then taken and mixed prior to collection of a 1 kg sample.

Boring depths and approximate elevations are presented in Table I-1. Sample appearance was the same as Series 1.

In addition, a set of three samples was collected from the dike between the equalization basin and emergency basin as shown in Figure I-2. Holes were mechanically bored to a depth of 14 ft. Each sample was collected at a depth of 15 ft using a hand auger. An intermediate sample was removed to discard tailings prior to collecting samples. A 1 ft sample was collected and mixed prior to collecting a 1 kg sample for storage and future analysis. All samples were of a red granular material and included flakes of mica.

The emergency/equalization basin dike is constructed of a tight red clay to a depth of approximately 13 ft. This clay was wet in each of the three borings. Boring 3 clay, located on the northern boundary of the Equalization Basin, was very wet. In all cases, sub clay soils were relatively "dry" and friable, as were all other soil samples collected during the conduct of this work.

## SERIES 4 SAMPLING

The purpose of Series 4 sampling was to define the chemical characteristics of equalization basin and polishing pond concrete which has been in contact with hazardous waste, and; compare the analytical results with background concrete analysis to determine if the basin concrete was, or had been contaminated by, a hazardous waste. Series 4 sampling consisted of collecting concrete basin samples. A 6" concrete hole saw was used to gain access to each basin's subfloor as depicted in Figure I-2. This concrete "plug" was labeled and saved for future analysis. Four "chips" each were broken from the top, sides, and bottom, composited, and analyzed for E.P. Toxicity and mass metals.

## SERIES 5 SAMPLING

The purpose of Series 5 sampling was to determine if Equalization Basin and Polishing Pond subfloor soils were, or had been contaminated with, a hazardous waste. Series 5 samples were collected at each basin corner and the center of the polishing pond as depicted in Figure I-2. A two foot continuous sample was collected by hand augering two 1 ft samples. This sample was mixed and a 1 kg sample collected for analysis. Following the removal of this sample, the hole was machine augered to depths of 4, 6, 8, and 10 ft. In each case, a 6" to 1 ft tailing cleanout sample was hand augered and disposed. A one foot sample was then taken and mixed prior to collection of a 1 kg sample. Boring depths and approximate elevations are presented in Table I-1. Sample appearance was the same as Series 1.

## SERIES 6 SAMPLING

The purpose of Series 6 sampling was to determine if wastewater treatment area soils were contaminated with volatile, base neutral, or acid extractable organics. A total of 6 samples were collected at the concrete seams of the equalization basin and polishing pond as depicted in Figure I-2. Holes were mechanically bored to a depth of 14 ft. Each sample was collected at a depth of 15 ft using a hand auger. An intermediate sample was removed to discard tailings prior to collecting samples. A 1 ft sample was collected and gently mixed prior to collecting three VOA sample vials at each of the six sampling locations. Samples were immediately placed in ice and stored until delivery to the laboratory. All samples were of a red granular material and included flakes of mica.

## SAMPLE CUSTODY

At the end of each day all samples were locked in a secure plywood box. Samples were transported to the DRE office, transported to Eckenfelder Laboratories, and transferred to their custody.

## ANALYTICAL RESULTS

### Series 1 - Background Soils Analyses

The analytical results for Series 1, background sampling, are provided in Table I-2. Samples were analyzed for Copper, Nickel, Zinc, Total Chrome, Total Cyanide, and Dry Weight Solids. Analytical data were reduced to obtain the mean and variance statistics.

### Series 2 - Emergency Basin Subsoils Analyses

E.P. Toxicity analytical results for all emergency basin subfloor soils samples were less than detection limits for all parameters. (Analytical results for this series of testing is provided in Appendix 1, Table 1-4.)

Mass metals analytical data are summarized in Table I-3. These data were reduced to obtain the mean and variance statistics. In all cases the background soils average metals concentration exceeded the basin subsoils average metals concentration indicating a very low probability of emergency basin leakage.

### Series 3 - Background and Emergency Basin Concrete

Background concrete samples were at, or less than, detection limits for all parameters, except in one case. Four background E.P Toxicity extract samples had a detectable chrome concentration. Three samples were at the chrome detection limit and one had a concentration of 0.07 mg/l, slightly above the detection limit. This value is 1.4 percent of the E.P. Toxicity limit, 5 mg/l. (Analytical results for this series of testing is provided in Appendix 1, Table 1-3.)

E.P. Toxicity analytical results for emergency basin concrete floor samples were less than detection limits for all parameters. (These data are provided in Appendix 1, Table 1-4)

TABLE I - 2

BACKGROUND SOIL SAMPLES AND ANALYTICAL RESULTS

| | SAMPLE LOCATION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONSTITUENT | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | MEAN | VAR |
| WET WEIGHT BASIS | | | | | | | | | | | | |
| CU, MG/KG | 20.7 | 17.8 | 15.6 | 29.6 | 2.2 | 13.3 | 34.8 | 13.3 | 19.3 | 14.1 | - | - |
| NI, MG/KG | 13.2 | 9.9 | 16.5 | 13.2 | 9.9 | 18.2 | 16.5 | 8.3 | 8.3 | 8.3 | - | - |
| ZN, MG/KG | 83.8 | 45.2 | 67.6 | 76.6 | 24.2 | 50.8 | 53.2 | 23.9 | 39.4 | 42.6 | - | - |
| CR, MG/KG | 19.4 | 16.1 | 22.7 | 24.1 | 4.7 | 18.7 | 24.1 | 18.1 | 14.1 | 11.4 | - | - |
| CN, MG/KG | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - |
| DWS, % | 85.1 | 83.7 | 80.2 | 85.2 | 84.9 | 85.5 | 82.1 | 81.1 | 84.0 | 83.5 | - | - |
| DRY WEIGHT BASIS | | | | | | | | | | | | |
| CU, MG/KG | 24.3 | 21.3 | 19.5 | 34.7 | 2.6 | 15.6 | 42.4 | 16.4 | 23.0 | 16.9 | 21.7 | 106.5 |
| NI, MG/KG | 15.5 | 11.9 | 20.6 | 15.5 | 11.7 | 21.3 | 20.1 | 10.2 | 9.8 | 9.9 | 14.6 | 19.3 |
| ZN, MG/KG | 98.5 | 54.0 | 84.3 | 89.9 | 28.5 | 59.4 | 64.8 | 29.5 | 46.9 | 51.0 | 60.7 | 519.5 |
| CR, MG/KG | 22.8 | 19.2 | 28.3 | 28.3 | 5.5 | 21.9 | 29.4 | 22.3 | 16.8 | 13.7 | 20.8 | 49.6 |
| CN, MG/KG | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | - | - |

TABLE I-3

EMERGENCY BASIN SUBSOILS - ANALYTICAL RESULTS

| CONSTITUENT | 1C | 2C | 3C | 4C | CC | 4FTCMP | 6FTCMP | 8FTCMP | 10FTCMP | B1 | B2 | B3 | MEAN | VAR | T* | Tc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SAMPLE LOCATION | | | | | | | | | | | | | | | |
| WET WEIGHT BASIS | | | | | | | | | | | | | | | | |
| CU, MG/KG | 10.7 | 19.9 | 10.0 | 12.3 | 15.4 | 10.7 | 15.3 | 12.2 | 16.1 | 23.2 | 3.9 | 11.5 | - | - | - | - |
| NI, MG/KG | 11.4 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | - | - | - | - |
| ZN, MG/KG | 15.3 | 43.5 | 21.0 | 20.3 | 23.9 | 24.3 | 35.9 | 31.2 | 35.9 | 51.1 | 11.2 | 21.0 | - | - | - | - |
| CR, MG/KG | 12.5 | 15.2 | 12.5 | 17.8 | 17.8 | 17.8 | 20.5 | 17.8 | 20.5 | 28.2 | 8.0 | 16.9 | - | - | - | - |
| CN-1, MG/KG | 2.5 | 0.3 | 0.7 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | - | - | - | - |
| CN-2, MG/KG | 0.1 | 0.1 | 1.9 | - | - | - | - | - | - | <0.1 | - | - | - | - | - | - |
| DWS(%) | 74.8 | 81.3 | 78.9 | 80.0 | 70.4 | 80.4 | 81.4 | 84.6 | 84.8 | 80.2 | 86.1 | 79.5 | - | - | - | - |
| DRY WEIGHT BASIS | | | | | | | | | | | | | | | | |
| CU, MG/KG | 14.3 | 24.5 | 12.7 | 15.4 | 21.9 | 13.3 | 18.8 | 14.4 | 19.0 | 28.9 | 4.5 | 14.5 | 16.8 | 54.0 | NEG | - |
| NI, MG/KG | 15.2 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 5.9 | - | NEG | - |
| ZN, MG/KG | 20.5 | 53.5 | 26.6 | 25.4 | 33.9 | 30.2 | 44.1 | 36.9 | 42.3 | 63.7 | 13.0 | 26.4 | 34.7 | 75.6 | NEG | - |
| CR, MG/KG | 16.7 | 18.7 | 15.8 | 22.3 | 25.3 | 22.1 | 25.2 | 21.0 | 24.2 | 35.2 | 9.3 | 21.3 | 21.4 | 47.1 | NEG | - |
| CN-1,MG/KG(a) | 3.4 | 0.3 | 0.9 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.2 | <0.1 | <0.1 | 0.5 | - | (b) | - |
| CN-2,MG/KG(a) | 0.2 | 0.1 | 2.4 | - | - | - | - | - | - | <0.1 | - | - | 0.7 | - | (b) | - |

LEGEND:

1C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL SOUTH CORNER OF EMERGENCY BASIN FLOOR
2C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL WEST CORNER OF EMERGENCY BASIN FLOOR
3C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL NORTH CORNER OF EMERGENCY BASIN FLOOR
4C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL EAST CORNER OF EMERGENCY BASIN FLOOR
CC - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL CENTER OF EMERGENCY BASIN FLOOR
4FTCMP - 4 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3,4, AND C
6FTCMP - 6 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3,4, AND C
8FTCMP - 8 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3,4, AND C
10FTCMP - 10 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3,4, AND C
B1 - 15 FT INTERVAL SAMPLE, DIKE BETWEEN EMERGENCY AND EQUALIZATION BASIN, SOUTH CORNER OF EMERGENCY BASIN
B2 - 15 FT INTERVAL SAMPLE, DIKE BETWEEN EMERGENCY AND EQUALIZATION BASIN, MID POINT BETWEEN EAST AND SOUTH CORNERS
B3 - 15 FT INTERVAL SAMPLE, DIKE BETWEEN EMERGENCY AND EQUALIZATION BASIN, EAST CORNER OF EMERGENCY BASIN
T* - CALCULATED COCHRAN APPROXIMATION TO BEHRENS-FISHER STUDENT T-TEST AT 95% CONFIDENCE LEVEL
Tc - CALCULATED COMPARISON T VALUE

NOTE: In computing means the detection limit was used.
(a) CN-1 and CN-2 are duplicate analysis.
(b) CN is in excess of background by inspection.

Series 4 - Equalization Basin and Polishing Pond Concrete

E.P. Toxicity analytical results for equalization basin and polishing pond concrete floor samples were less than detection limits for all parameters with the exception of chrome which ranged from 0.06 to 0.08 mg/l. (These data are provided in Appendix 1, Table 1-9)

Mass metal concrete analyses for the equalization basin, polishing pond, emergency basin, and background are summarized and presented in Table I-4. These data were reduced to obtain the mean, variance, standard deviation, and Cochran approximation to Behrens-Fisher t-test statistics. In all cases, the calculated t-statistic is less than the t-comparison statistic indicating no difference at the 95 percent level of confidence.

Series 5 - Equalization and Polishing Basin Subsoils

Equalization Basin and Polishing Basin sub floor soils analytical data is summarized in Table I-5. The mean sub floor soils data for each parameter is less than the mean background for every parameter indicating a low probability of any equalization basin leakage of hazardous waste. Polishing Pond sub floor soils analytical data is summarized in Table I-6. The mean sub floor soils data for each parameter is less than the mean background for every parameter, with the exception of cyanide, indicating a low probability of any equalization basin leakage of hazardous waste.

Total cyanide levels were above detection limits for 4 samples in the first two feet of clay under the polishing pond (5C, 6C, 7C, 8C).

Series 6 - Wastewater Treatment System Soils - Organics

Volatile and Semivolatile Organic Compounds were not detected in any of the six soil samples collected adjacent to the equalization basin and polishing pond. (These data are provided in Appendix 1, Tables 1-10, 1-11, and 1-12)

TABLE I-4

BASIN CONCRETE SAMPLING AND ANALYSIS RESULTS

| SAMPLE/PARAMETER | CU | CR | NI | ZN |
|---|---|---|---|---|
| BACKGROUND SAMPLES | | | | |
| NC | 6.7 | 12.3 | 5.0 | 26.8 |
| SC | 8.4 | 3.8 | 5.0 | 26.1 |
| EC | 10.1 | 11.9 | 6.8 | 34.0 |
| WC | 1.6 | 2.9 | 5.0 | 16.1 |
| NEC | 5.0 | 11.9 | 9.9 | 19.8 |
| NWC | 15.1 | 3.8 | 5.0 | 27.1 |
| SEC | 5.0 | 8.3 | 5.0 | 19.5 |
| SWC | 1.0 | 6.5 | 5.0 | |
| MEAN | 6.6 | 7.7 | 5.8 | 24.2 |
| VAR | 18.7 | 14.0 | 2.7 | 31.7 |
| S.D. | 4.3 | 3.7 | 1.6 | 5.6 |
| BASIN SAMPLES | | | | |
| F1 | 6.7 | 7.4 | 5.0 | 43.1 |
| F2 | 5.8 | 2.5 | 5.0 | 22.4 |
| F3 | 1.0 | 2.5 | 5.0 | 13.5 |
| F4 | 8.4 | 2.9 | 5.0 | 20.5 |
| FC | 2.4 | 2.5 | 5.0 | 14.5 |
| EQ1 | 28.6 | 2.5 | 5.0 | 88.4 |
| EQ2 | 14.2 | 2.5 | 5.0 | 15.3 |
| EQ3 | 8.3 | 3.3 | 5.0 | 19.0 |
| EQ4 | 14.2 | 4.2 | 5.0 | 47.4 |
| P5 | 48.1 | 8.9 | 13.7 | 68.0 |
| P6 | 16.8 | 6.1 | 5.0 | 29.0 |
| P7 | 5.8 | 3.3 | 5.0 | 20.0 |
| P8 | 10.0 | 5.1 | 5.0 | 25.6 |
| P9 | 21.0 | 8.9 | 5.0 | 43.3 |
| MEAN | 13.7 | 4.5 | 5.6 | 33.6 |
| VAR | 143.0 | 5.4 | 5.0 | 460.4 |
| S.D. | 12.0 | 2.3 | 2.2 | 21.5 |
| T* | 0.2 | NEG | NEG | 0.1 |
| Tc | 2.2 | - | - | 2.2 |

NOTE: In computing means, the detection limit was used.

TABLE I-5

EQUALIZATION BASIN SUBSOILS - ANALYTICAL RESULTS

| | SAMPLE LOCATION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONSTITUENT | 1C | 2C | 3C | 4C | 4CMP | 6CMP | 8CMP | 10CMP | MEAN | VAR | T* | Tc |
| WET WEIGHT BASIS | | | | | | | | | | | | |
| CU, MG/KG | 13.2 | 4.0 | 7.8 | 7.8 | 7.8 | 4.0 | 7.8 | 7.8 | - | - | - | - |
| NI, MG/KG | <5.0 | 10.5 | <5.0 | 10.5 | 6.7 | <5.0 | <5.0 | 6.7 | - | - | - | - |
| ZN, MG/KG | 13.8 | 53.2 | 46.9 | 6.7 | 47.2 | 33.8 | 40.6 | 60.7 | - | - | - | - |
| CR, MG/KG | 12.3 | 23.7 | 15.6 | 2.6 | 19.7 | 8.3 | 12.3 | 17.2 | - | - | - | - |
| CN, MG/KG | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | - | - | - | - |
| DWS(%) | 83.8 | 86.7 | 85.8 | 87.5 | 86.5 | 85.8 | 85.9 | 82.8 | - | - | - | - |
| DRY WEIGHT BASIS | | | | | | | | | | | | |
| CU, MG/KG | 15.8 | 4.6 | 9.1 | 8.9 | 9.0 | 4.7 | 9.1 | 9.4 | 8.8 | 10.5 | NEG | - |
| NI, MG/KG | <5.0 | 12.1 | <5.0 | 12.0 | 7.7 | <5.0 | <5.0 | 8.1 | 7.5 | - | NEG | - |
| ZN, MG/KG | 16.5 | 61.4 | 54.7 | 7.7 | 54.6 | 39.4 | 47.3 | 73.3 | 44.3 | 437.0 | 0.1 | 56.5 |
| CR, MG/KG | 14.7 | 27.3 | 18.2 | 3.0 | 22.8 | 9.7 | 14.3 | 20.8 | 16.3 | 51.9 | NEG | - |
| CN, MG/KG | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.2 | - | NEG | - |

LEGEND:

1C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL NORTH CORNER OF EQUALIZATION BASIN FLOOR
2C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL EAST CORNER OF EQUALIZATION BASIN FLOOR
3C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL SOUTH CORNER OF EQUALIZATION BASIN FLOOR
4C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL WEST CORNER OF EQUALIZATION BASIN FLOOR
4FTCMP - 4 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3, AND 4
6FTCMP - 6 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 1,2,3, AND 4
8FTCMP - 8 FT INTERVAL SAMPLE COMPOSITE FROM LOCATIONS 1,2,3, AND 4
T* - CALCULATED COCHRAN APPROXIMATION TO BEHRENS-FISHER STUDENT'S T-TEST AT 95% CONFIDENCE LEVEL
Tc - CALCULATED COMPARISON T VALUE

NOTE: In computing means, the detection limit was used.

TABLE I-6

POLISHING POND SUBSOILS - ANALYTICAL RESULTS

| CONSTITUENT | SAMPLE LOCATION 5C | 6C | 7C | 8C | 9C | 4CMP | 6CMP | 8CMP | 10CMP | BACKGROUND SAMPLE 95% OF CONFIDENCE MEAN | VAR | T* | Tc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WET WEIGHT BASIS | | | | | | | | | | | | | |
| CU, MG/KG | 15.4 | 16.5 | 23.9 | 15.4 | 7.0 | 13.9 | 10.9 | 10.9 | 11.6 | - | - | - | - |
| NI, MG/KG | 8.6 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | - | - | - | - |
| ZN, MG/KG | 31.2 | 41.3 | 36.0 | 57.6 | 12.3 | 44.0 | 36.9 | 49.4 | 50.7 | - | - | - | - |
| CR, MG/KG | 11.5 | 14.4 | 12.3 | 5.9 | 11.5 | 14.8 | 11.5 | 15.6 | 11.5 | - | - | - | - |
| CN, MG/KG | 0.4 | 0.3 | 0.3 | 0.3 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | - | - | - | - |
| DWS(%) | 78.7 | 80.2 | 77.1 | 82.7 | 84.7 | 78.3 | 84.8 | 84.4 | 85.3 | - | - | - | - |
| DRY WEIGHT BASIS | | | | | | | | | | | | | |
| CU, MG/KG | 19.6 | 20.6 | 31.0 | 18.6 | 8.3 | 17.8 | 12.9 | 12.9 | 13.6 | 17.2 | 37.8 | NEG | - |
| NI, MG/KG | 10.9 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | 5.7 | - | NEG | - |
| ZN, MG/KG | 39.6 | 51.5 | 46.7 | 69.6 | 14.5 | 56.2 | 43.5 | 58.5 | 59.4 | 48.9 | 221.7 | NEG | - |
| CR, MG/KG | 14.6 | 18.0 | 16.0 | 7.1 | 13.6 | 18.9 | 13.6 | 18.5 | 13.5 | 14.9 | 11.7 | NEG | - |
| CN, MG/KG | 0.5 | 0.4 | 0.4 | 0.3 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 0.3 | - | (a) | - |

LEGENDS:
5C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL NORTH CORNER OF POLISHING POND FLOOR
6C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL EAST CORNER OF POLISHING POND FLOOR
7C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL SOUTH CORNER OF POLISHING POND FLOOR
8C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL WEST CORNER OF POLISHING POND FLOOR
10C - 2 FT CONTINUOUS SUB BASIN SOIL INTERVAL CENTER OF POLISHING POND FLOOR
4FTCMP - 4 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 5,6,7,8, AND 9
6FTCMP - 6 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 5,6,7,8, AND 9
8FTCMP - 8 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 5,6,7,8, AND 9
10FTCMP - 10 FT INTERVAL SAMPLE, COMPOSITE FROM LOCATIONS 5,6,7,8, AND 9
T* - CALCULATED COCHRAN APPROXIMATION TO BEHRENS-FISHER STUDENT'S T-TEST AT THE 95% LEVEL OF CONFIDENCE
(IN THIS CASE THE MEAN VALUES ARE LESS THAN THE BACKGROUND MEAN)

NOTE: In computing means, the detection limit was used.
(a) CN is in excess of background by inspection

## SECTION II

## CLOSURE PLAN AND CERTIFICATION OF CLOSURE

Based on the results of these analyses, DRE concluded there was no evidence of a past release of waste, or waste constituents, from any of the Scovill Wastewater Treatment System Impoundments.

Based on the results of these analyses, DRE concluded there was no evidence of hazardous waste contamination of the basin concrete or underlying soils.

Therefore, the clean closure of the treatment system's impoundments and the construction of the Wastewater Treatment System's equalization tanks in the area of the emergency basin are recommended. A Closure Plan was developed and submitted to the State of Georgia, Department of Natural Resources, Environmental Protection Division, on August 25, 1987. A brief summary of this plan is described below.

### FACILITY CLOSURE PLAN SUMMARY

Preclosure activities demonstrated the basin concrete could be washed and handling the concrete as a hazardous waste would not be required. In addition, these activities indicated soils underlying the concrete was not contaminated. As a result closure plan required:

1. The collection of additional samples and the performance of inspections demonstrate clean closure.
2. The removal of wastes from the basins.
3. The removal of waste residuals from the basins by high-pressure washing.
4. The removal and on-site disposal, as a non-hazardous waste, of the concrete floors and sides of the basins.
5. No removal of any of the soils underlying the basins and in the perimeter berms of the basins.

6. The backfilling of the basins using the concrete from the basins and the soils in the perimeter.

**Demonstration of Clean Closure**

The following procedures were used, in conjunction with the data background presented in this section, to demonstrate clean closure.

Concrete - The background information presented in this section demonstrated the concrete of the floors and side of the basins, after cleaning by high pressure washing, were not contaminated materials and were not hazardous wastes. To further support this demonstration, the concrete floors and sides of the basins were to be inspected after being washed and before being removed for visual signs of cleanliness and for any signs of deterioration. In addition, the concrete removed from the basins was to be inspected for signs of deterioration. These inspections were to be made by the independent, registered professional engineer responsible for certification of closure. Should these inspections indicate inadequate cleaning, the concrete was to be re-washed until the engineer was satisfied all surfaces were clean. If these inspections indicated signs of concrete deterioration, samples were to be taken of the deteriorated concrete and analyzed for copper, zinc, nickel and chromium. The results would be statistically compared with the background concrete sampling results. If this comparison showed the deteriorated concrete was contaminated with respect to any of these parameters, it would be considered a hazardous waste and would be sent to off-site hazardous waste disposal.

Underlying Soils - The background data presented in this section demonstrated that the soils underlying the Emergency Basin were not contaminated and were not hazardous waste. These data preliminary made the same demonstration for the soils underlying the Equalization and Polishing Basins. However, because these two basins were put back in use since this preliminary demonstration, a verification demonstration was required as described below.

After concrete removal, the first six-inches of the underlying soils were to be sampled. A composite sample was to be collected from each of four equal-size sections of the Equalization Basin and each of eight equal-size sections of the Polishing Basin. Each composite sample was to be composed of five samples taken with a split-spoon sampler from random locations within the section. Each composite sample was to be analyzed for copper, zinc, nickel, total chromium, total cyanide, cyanide amenable to chlorination (when total cyanide was in excess of ppm), dry weight solids, and volatile organic constituents. The results from these analyses was to be statistically compared with the respective background soil results. In addition, each of the composite samples was to be subjected to the EP toxicity test procedure and the extract analyzed for the eight metals of the EP toxicity characteristic plus nickel and total cyanide.

If the results, including the statistical results, were similar to those already obtained for these soils, the soils underlying the Equalization and Polishing Basins were to be considered non-contaminated. If the results were dissimilar, Scovill was to assess the implications of such results and consult with the Georgia Department of Natural Resources to determine whether the soils were or were not contaminated soils. If they were determined to be contaminated soils, they either (1) were to be removed to a depth at which a demonstration of non-contaminant soils could be made, and sent to off-site disposal as hazardous waste, so that the basins could be clean closed under the closure procedures, (2) would be left in place and the basins closed under the procedures of 265.228(a)(2).

<u>Groundwater</u> - The results from the first round of groundwater sampling indicated that the groundwaters underlying the basins evidenced no inorganic contamination and no exfiltration of waste or hazardous constituents from the basins. A definitive demonstration in this regard could not be made, however, until the results for the four rounds of groundwater sampling were obtained and analyzed. Consequently, the four rounds of groundwater monitoring required by the consent order and described in the <u>Groundwater Monitoring Plan</u> were to be completed and the results statistically compared in conformance with 40 CFR 265.93.

If the statistical comparison of the results from all four rounds of samples showed that there was no statistical difference between the concentrations of the indicator parameters in the upgradient and downgradient wells, these results would demonstrate that no waste or hazardous constituents had exfiltrated from the basins and would enable clean closure of the basins.

If the results of the four rounds of samples continued to evidence detectable concentration of volatile organic constituents in the downgradient groundwater, an assessment of the human health and environmental impacts of such concentrations would be made and reviewed with the Georgia Department of Natural Resources to determine whether any groundwater remedial actions would be necessary to reduce or otherwise control these concentrations.

Removal of Wastes and Waste Residuals

Wastes (wastewaters) and waste residuals were removed from the Emergency Basin the week of May 8, 1989, when this basin was permanently taken out of operation. The wastewaters removed from the basin were processed through the wastewater treatment plant and the treated effluent was discharged to the Soque River under the facility's NPDES permit. The waste residuals were removed from the concrete floors and sides of the basin by high-pressure washing. The wash waters were processed through the wastewater treatment plant, and the treated effluent ways discharged to the Soque River in the same manner as the wastewaters.

Following the construction of the new equalization facilities, the equalization and polishing basin were to be cleaned as described below. The wastewaters held by the Equalization Basin were to be processed through the wastewater treatment plant and the treated effluent discharged to the Soque River under the facility's NPDES permit. The waste residuals on the concrete floors and sides of the basin were to be removed by high-pressure washing, and the wash waters treated and discharged in the same manner as the wastewaters removed from the basin. The treated effluent held by the Polishing basin, having already been treated, was to be discharged to the Soque River under the facility's NPDES permit. Any waste residual on the concrete floor and sides of this basin were to be removed by high-pressure washing, and the wash waters treated in the wastewater treatment plant prior to discharge to the Soque River.

### Removal of Concrete Floors and Sides of Basins

Based on the results of the concrete sampling described above, the high-pressure washing of concrete floors and sides of the basins would effectively decontaminate this material and allow it to be removed and disposed as a non-hazardous waste.

During the week of July 24, 1989, the concrete floor and sides of the Emergency Basin were removed and temporarily stored on the outer side of the west berm of the Polishing Basin. This concrete was removed at that time to permit the construction of the foundation and secondary containment system for the replacement tanks.

Following the removal of wastes and waste residuals from the Equalization and Polishing Basins, the concrete floors and sides of these basins were to be removed. This concrete, together with the concrete already removed from the Emergency Basin and stored on the west berm of the Polishing Basin, was to be disposed in the area now occupied by the Polishing Basin and used as partial backfill for that area.

### Erection of Replacement Tanks

The Equalization Basin was to be replaced by two 60,000-gallon, open-top, steel tanks installed in the area that was occupied by the Emergency Basin. The Polishing Basin was to be replaced by a 10,000-gallon, vertical, flat-bottom, open-top, fiberglass reinforced plastic tank located near the neutralization tank of the wastewater treatment plant.

**Backfilling of the Equalization and Polishing Basins**

Following the removal of the concrete floors and sides of the Equalization and Polishing Basins, the concrete removed from these basins, together with the concrete already removed from the Emergency Basin and stored on the west berm of the Polishing Basin was to be placed in the voided area of the Polishing Basin. The remainder of this voided area and the voided area of the Equalization Basin then was to be backfilled with the clay soils in the berms of the three basins. As indicated above, the voided area of the Emergency Basin was to be occupied by the secondary containment system of the two large replacement tanks.

The backfilled area of the Equalization and Polishing Basins was to be graded seeded with grass to provide a vegetative cover to prevent erosion.

**Groundwater Monitoring**

Pursuant to Provision 4 of the Consent Order, four rounds of sampling of the currently installed five groundwater monitoring wells was to be performed. The samples were to be analyzed for those parameters specified in Provision 4 of the Consent Order and in the Groundwater Monitoring Plan.

Following receipt of results from the fourth round of sampling, the results for the indicator parameters (total cyanide, total copper, total zinc, total nickel, total organic carbon, total organic halide, specific conductance and pH) from the downgradient wells (MW-04 and MW-05) were to be statistically compared with those from the upgradient wells (MW-01 and MW-02) using the procedures specified in 40 CFR 265.93. The results of this statistical comparison, together with a collation and evaluation of all sampling results, were to be submitted to the Georgia Department of Natural Resources.

Following the completion of closure of the three basins, groundwater samples are to be collected semi-annually from the five groundwater monitoring wells for three years, beginning in March 1990. In addition, the water level in each well is to be measured during each monitoring event. Each set of samples are to be analyzed for the indicator parameters specified in the Groundwater Monitoring Plan (total cyanide, total copper, total zinc, total nickel, total organic carbon, total organic halide, specific conductance and pH). Every other set of samples, beginning with the set collected in September 1990, will also be analyzed for chloride, iron, manganese, magnesium, sodium and sulfate. The methods used for the collection and analysis of all samples will be those described in the Groundwater Monitoring Plan.

## BASIN CLOSURE ACTIVITIES - CONCRETE

### Emergency Basin Concrete

During the week of May 8, 1989, the Emergency Basin was permanently removed from service. All wastes were removed from the basin and the concrete floors and sides of the basin were decontaminated by washing them with high-pressure 6000 psig water and immediately removing the wash waters. Both the wastes and the wash waters were pumped into the Equalization Basin where they were mixed into and treated with other wastewaters being treated by the plant.

During the week of July 24, 1989, the concrete floor and sides of the Emergency Basin were removed and temporarily stored on the outer side of the west and north berm of the Polishing Basin.

### Polishing Basin Concrete

During the week of October 21, 1989, the concrete sides and floor of the Polishing Basin were washed by high pressure 6000 psig water. No detergent was used. Wash water was pumped immediately into the facility equalization basin where it was mixed with other production wastewaters. The concrete floor and walls of the basin were visually inspected and found to be free of deterioration or defects that would cause suspicion of a leak or absorption of waste materials into the concrete.

The concrete floor was removed from the Polishing Basin, inspected for deterioration and placed on the berm around the perimeter of the basin. The soils laying under the concrete floor were not disturbed. These soils were sampled as described in the previous section of this report.

### Equalization Basin Concrete

Residual solids were removed from the floor and walls of the Equalization Basin during the week of October 23, 19[illegible]. These solids were mixed and treated with other production wastewaters. During the week of November [illegible] to November [illegible], 19[illegible] the floor and walls of the Equalization Basin were washed with high pressure water. The basin was washed eight times as follows:

(1) Three times with high pressure water and a nonphosphate detergent.
(2) Four times with clean high pressure water alone.
(3) A final clean water rinse.

Final inspection was made of the basin November [illegible], 19[illegible]. A [illegible] was used on all seams of the basin during the inspection to ensure an unobstructed view of all the seams and surfaces of the basin. The visual inspection found the floor and walls of the basin to be free from any residual waste materials and no areas of deterioration or cracks. The basin coating was still intact after the washing of the basin. (This basin had been coated with an asphalt epoxy coating when it was initially put into service and restored as necessary during the life of the basin.)

The concrete floor was removed from the Equalization Basin, inspected, and placed directly into the Polishing Basin along with concrete from the Polishing and Emergency Basins. The soils under the concrete floor were not disturbed.

absorption of waste materials into the concrete.

The concrete floor was removed from the Polishing Basin, inspected for deterioration and placed on the berm around the perimeter of the basin. The soils laying under the concrete floor were not disturbed. These soils were sampled as described in the previous section of this report.

**Equalization Basin Concrete**

Residual solids were removed from the floor and walls of the Equalization Basin during the week of October 23, 1989. These solids were mixed and treated with other production wastewaters. During the week of November 1 to November 10, 1989 the floor and walls of the Equalization Basin were washed with high pressure water. The basin was washed eight times as follows:

(1) Three times with high pressure water and a nonphosphate detergent,
(2) Four times with clean high pressure water alone,
(3) A final clean water rinse.

Final inspection was made of the basin November 10, 1989. A wet vacuum was used on all seams of the basin during the inspection to assure an unobstructed view of all the seams and surfaces of the basin. The visual inspection found the floor and walls of the basin to be free from any residual waste materials and no areas of deterioration or cracks. The basin coating was still intact after the washing of the basin. (This basin had been coated with an asphalt epoxy coating when it was initially put into service and recoated as necessary during the life of the basin.)

The concrete floor was removed from the Equalization Basin, inspected, and placed directly into the Polishing Basin along with concrete from the Polishing and Emergency Basins. The soils under the concrete floor were not disturbed.

## EQUALIZATION FACILITIES CONSTRUCTION

The Equalization Basin was replaced by two 160,000 gallon, open-top, steel tanks with mixers installed in the area that was occupied by the Emergency Basin. The concrete floor and walls of the Emergency Basin was removed beginning in May 1989 and temporarily stored on the berm of the Polishing Basin. The soil under the Emergency Basin was excavated and stored adjacent to the basin to allow construction of the tank foundations and tank secondary containment. This dirt was later used for closure of the Equalization and Polishing Basins.

The foundations and secondary containment for the new Equalization tanks were begun in July 1989. The two tanks and pump house were constructed in August through October 1989. The new Equalization tanks and pumps were put into service in October 1989.

## POLISHING BASIN REPLACEMENT

The Polishing Basin was permanently taken out of service the week of September 5, 1989. A 10,000 gallon vertical, flat bottom plastic tank was installed to serve as a river pumps feed tank. This function was previously serviced by the Polishing Basin.

## BACKFILLING OF THE EQUALIZATION AND POLISHING BASINS

The concrete removed from the Equalization and Polishing Basins, (together with the concrete already removed from the Emergency Basin and stored on the west and north berm of the Polishing Basin), was placed in the voided area of the Polishing Basin. During the week of November 11 to November 17, 1989 the concrete was broken up into pieces small enough to compact with clay soils and minimize volume. The former polishing pond and Equalization Basin area were finally backfilled and compacted with the clay soils from the berms of the three basins and the soils excavated from the Emergency Basin. The former Emergency Basin area was occupied by the secondary containment system of the Equalization Tanks.

The backfilled area of the Equalization Basin and Polishing Basin, and the area around the new Equalization Tanks were graded to match the surrounding contours and seeded with grass to provide a vegetative cover to prevent erosion on December 5 and 6, 1989. A gentle slope was provided in the grading to assure drainage would be in the form of a sheet. Silt fences were installed in the drainageways to prevent silt from leaving the graded area.

**CLOSURE CERTIFICATION**

Based on the information provided in this report, I certify that closure of the Scovill Fasteners, Inc. Clarkesville, Georgia wastewater treatment system impoundments (equalization basin, emergency basin, and polishing pond) has been performed in accordance with the closure plan. I supervised and/or inspected the closure activities as stated in this report with the exception of the ground water monitoring and quality determination.

Samuel L Escue

Samuel L. Escue, P.E.
Georgia Registration No. 18396

Samuel L Escue 4-30-90

## SECTION III

## CLOSURE SAMPLING AND ANALYTICAL RESULTS

### EMERGENCY BASIN SUBSOILS - SAMPLING

During the week of May 8, 1989, the soils underlying the Emergency Basin were sampled to determine whether they had been contaminated by any exfiltration of wastes or waste constituents from the Emergency Basin.

The soil samples were taken from five bore holes, one bore hole located at each corner of the floor of the basin and one bore hole located at the center of the basin as depicted in Figure I-2. At each of these locations, a 6 inch hole saw was used to gain access to the underlying soils. At each bore hole, two one-foot samples were taken with a hand auger and composited. Then the bore hole was advanced with a mechanical auger. At intervals of 4, 6, 8 and 10 feet, a one-foot sample was taken with a hand auger. The interval samples from all five bore holes were composited to provide composite samples for the 4, 6, 8 and 10-foot intervals.

### EMERGENCY BASIN SUBSOILS - ANALYTICAL RESULTS

The five samples collected from the soils immediately underlying the floor of the basin were subjected to the EP toxicity test procedure and the extracts were analyzed for the eight metals of the EP toxicity characteristic plus nickel and total cyanide. The results of these analyses are reported in Table 1-4 of Appendix 1 (see results for samples 1C, 2C, 3C, 4C and CC). These data indicated none of the constituents were detected in the extracts from the samples. These data demonstrated the soils underlying the Emergency Basin did not exhibit the EP toxicity characteristic.

In addition, the samples collected from the soils underlying the basin were analyzed for total constituent concentrations of copper, zinc, nickel, total chromium, total cyanide and dry weight solids. These analytical results and the dry weight solids concentration of the analyzed constituents are shown in Table 1-2 Appendix 1.

The total constituent results obtained from the soils underlying the Emergency Basin were compared with the results obtained from the background samples using Cochran's Approximation to the Behrens-Fisher Students' t-Test. These comparisons (one for each constituent) indicated that the concentrations of copper, zinc, nickel and total chromium in the soils underlying the Emergency Basin were not significantly different, at the 95% confidence level, from the background concentrations of these constituents.

The similar comparison of the total cyanide results was less conclusive. In 4 of the 12 samples collected from the soils underlying the basin, detectable levels of total cyanide were found, whereas the concentrations of this constituent were below detectable levels in the remaining 8 samples from such soils and in all of the background soils. A re-analysis of the 4 samples containing detectable total cyanide concentrations showed detectable levels in three of the samples but levels significantly different than those initially detected. The initial and re-analyzed results were as follows:

| Sampling | Initial Concentration (mg/kg) | Re-Analyzed Concentration (mg/kg) |
|---|---|---|
| 1C | 3.4 | 0.15 |
| 2C | 0.3 | 0.14 |
| 3C | 0.9 | 2.4 |
| B1 | 0.2 | <0.1 |

Because of these detected concentrations, the statistical comparison of the sampling results suggests that the soils underlying the Emergency Basin had statistically significant higher cyanide concentrations than the background samples.

## POLISHING BASIN SUBSOILS - SAMPLING

The first six inches of the underlying Polishing Basin soils were sampled October 26, 1989. A composite sample was collected from each of eight equal-size sections as depicted in Figure III-1. Each composite sample was composed of five samples taken with a hand auger sampler from random locations within the section. Each composite sample was analyzed for copper, zinc, nickel, total chromium, total cyanide, cyanide amenable to chlorine when total cyanide exceeded 1 ppm, dry weight solids and volatile organic constituents. The results from these analyses for the inorganic constituents were statistically compared with respective background soil results. In addition, each composite sample was analyzed for the eight metals of the EP toxicity characteristic plus nickel and total cyanide.

## POLISHING BASIN SUBSOILS - ANALYTICAL RESULTS

The Polishing Basin Subsoils sampling (heavy metals and cyanide) analytical results are summarized in Table III-1. These results indicate all basin subsoils heavy metals concentrations are less than the background. Seven of the eight sub basin soil samples had cyanide levels in excess of background. Cyanide amenable to chlorination was run on the one sample in excess of 1 CN mg/kg. The concentration of cyanide ameable to alkaline chlorination was below detection levels, less than o.1 mg/kg indicating a complexed, rather then simple, cyanide.

TABLE III - 1

POLISHING BASIN SUBSOIL SAMPLING RESULT

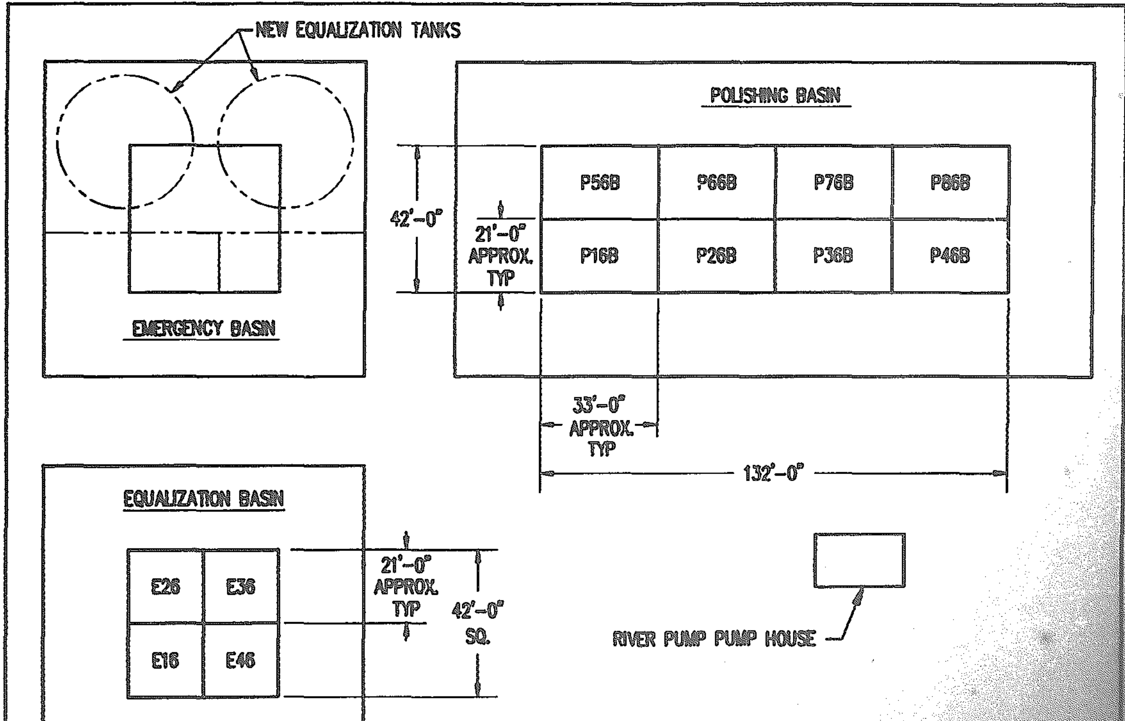
| I.D. | CR MG/KG | CU MG/KG | ZN MG/KG | NI MG/KG | CN MG/KG | AM-CN MG/KG |
|---|---|---|---|---|---|---|
| BG MEAN(a) | 20.8 | 21.7 | 60.7 | 14.6 | <0.1 | <0.1 |
| P16B | 13.7 | 20.2 | 34.0 | <2.0 | <0.1 | NA |
| P26B | 15.9 | 9.1 | 19.8 | <2.0 | 0.2 | NA |
| P36B | 18.3 | 11.0 | 18.2 | <2.0 | 0.5 | NA |
| P46B | 17.1 | 14.6 | 19.9 | 3.8 | 1.0 | NA |
| P56B | 14.9 | 14.9 | 38.2 | <2.0 | 2.2 | <0.1 |
| P66B | 15.5 | 11.3 | 17.9 | <2.0 | 0.3 | NA |
| P76B | 19.5 | 13.4 | 23.5 | <2.0 | 0.7 | NA |
| P86B | 19.1 | 10.5 | 15.2 | <2.0 | 0.7 | NA |
| MEAN | 16.73 | 13.13 | 23.39 | <2.0 | 0.8 | NA |

(a) From Table I-2 Section I

(b) The remaining results are taken from Table 2-1 Appendix 2.

(c) N/A - Not analyzed.

(d) All analysis corrected to dry weight basis.




SAMPLE LOCATION NOV. 1989
FIGURE III-1

## EQUALIZATION BASIN SUBSOILS - SAMPLING

The surface six inches of the underlying Equalization Basin soils were sampled November 10, 1989. A composite sample was collected from each of four equal-size sections depicted in Figure III-1. Each composite sample was composed of five samples taken with a hand auger sampler from random locations within the section. Each composite sample was analyzed for copper, zinc, nickel, total chromium, total cyanide, cyanide amenable to chlorine when total cyanide was in excess of 1 ppm, dry weight solids and volatile organic constituents. The results from these analyses for the inorganic constituents were statistically compared with respective background soil results. In addition, each composite sample was analyzed for the eight metals of the EP toxicity characteristic plus nickel and total cyanide.

## EQUALIZATION BASIN SUBSOILS - ANALYTICAL RESULTS

The Equalization Basin Subsoils analytical results are summarized in Table III-2. These results indicate the mean heavy metals and cyanide concentrations are consistent with background. In one case, Sample E46B, the chrome concentration was 23.8 mg/kg vs the background mean of 21.7 mg/kg. However, there is no statistically significant difference in this value at the 95 percent level of confidence.

TABLE III-2

EQUALIZATION BASIN SUBSOIL SAMPLING RESULTS

| I.D | CR MG/KG | CU MG/KG | ZN MG/KG | NI MG/KG | CN MG/KG | AM/CN MG/KG |
|---|---|---|---|---|---|---|
| BG MEAN(a) | 20.8 | 21.7 | 60.7 | 14.6 | <0.1 | <0.1 |
| E16B | 15.3 | 9.7 | 45. | 5.6 | <0.1 | <0.1 |
| E26B | 19.8 | 9.9 | 30.0 | 5.2 | <0.1 | <0.1 |
| E36B | 16.5 | 14.6 | 25.5 | 8.5 | <0.1 | <0.1 |
| E46B | 23.8 | 13.8 | 35.2 | 10.5 | <0.1 | <0.1 |
| MEAN | 18.9 | 12.0 | 33.0 | 7.4 | <0.1 | <0.1 |

(a) From Table I-2 Section I

(b) The remaining results are taken from Table 2-3 Appendix 2.

(c) All analysis corrected to dry weight basis.

## SECTION IV
## GROUNDWATER MONITORING

### GROUNDWATER INVESTIGATIONS AND MONITORING

Pursuant to the Consent Order, the hydrogeology underlying the basin was investigated and the groundwaters underlying the basins were monitored by West Services Inc. A full report on the findings of this work is provided in Appendix 3.

## SECTION V
## CONCLUSIONS

### CONCLUSIONS RELATIVE TO ADEQUACY OF CLOSURE

This section presents conclusions relative to the adequacy of closure of the three basins based on the data and information presented in this document.

#### Concrete

As shown in Table I-4, the concentrations of copper, chromium, nickel and zinc in the samples of concrete taken from the floors of the basins, which were in contact with wastewaters during operation of the basins, were not significantly higher than the concentrations of these constituents in background samples of concrete collected from parts of the Emergency Basin that were never in contact with wastewaters. In addition, none of the samples of concrete from the floors of the basins exhibited EP toxicity for metals. These results demonstrate that the concrete was not detectably contaminated by the wastewaters or wastewater constituents handled in the basins during operation.

#### Soils

As shown in Tables I-3, I-5, I-6, III-1, III-2, the concentrations of copper, chromium, nickel and zinc in the samples of soil taken from the floors of the basins and the common berm between the Emergency and Equalization Basins were not significantly higher than the concentrations of these constituents in the background samples of soil taken from the site. Additionally, as shown in Tables I-5 and III-2, total cyanide was not detected in samples of soil taken from the floor of the Equalization Basin and, therefore, evidenced no apparent difference from the non-detection of cyanide in the background samples taken from the site. Together, these results suggest that the soils underlying the basins, particularly the Equalization Basin, and in the berms of the basins were not detectably contaminated by the wastewaters or wastewater constituents handled in the basins during their operation.

However, as shown in Tables I-3, 1-6, and III-1, low but detectable concentrations of total cyanide (0.2 to 3.4 mg/l) were found in upper two feet of the soils underlying the Emergency and Polishing Basins, but not in the deeper soils underlying these basins. A supplemental analysis of one of the samples exhibiting detectable total cyanide revealed that the cyanide was not amenable to chlorination. Although there is poor precision and accuracy in the analytical procedure for total cyanide in soil matrices, these data suggest, as explained below, that there may have been a minimal amount of exfiltration and/or leakage of wastewater from the basins, at least the Emergency and Polishing Basins. Such minimal exfiltration or leakage would not be totally unexpected because concrete is not 100% impermeable and often does exhibit hairline cracks.[1]

Because the wastewaters and sludges handled by the basins typically exhibited low concentrations of iron cyanide[2] and because iron cyanide has a very low solubility and a propensity to absorbed onto soils, it is hypothesized that the minimal exfiltration and/or leakage of wastewaters from the basins served to introduce low concentrations of this complex into the soils underlying the basins. It is further hypothesized that such exfiltration and/or leakage also introduced into the underlying soils small amounts of the major metal constituents (e.g., copper, chromium, nickel and zinc) contained in the wastewaters but that the added concentrations of these metals imparted to the soils are masked by their naturally occurring concentrations in the soils.

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[1] Inspection of the concrete lining in all three basins and the underlying soils during closure did not reveal any evidence of major cracks or deterioration of this concrete lining nor any evidence of substantial leakage or exfiltration of wastewaters from the basins.

[2] An iron cyanide complex was formed in the electroplating solutions before they were discharged to the wastewater treatment plant. Because this complex was not readily treated by the cyanide oxidation process, low concentration of iron cyanide were typically contained in the influent and effluent wastewaters and in the sludges generated during the treatment process. Since these wastewaters and sludges were held in the three basins, any exfiltration or leakage of wastes from the basins would have resulted in the exfiltration of iron cyanide from the basins.

Consequently, it is theorized that the soil data evidence very low levels of contamination of the soils underlying the Emergency and Polishing Basins by low levels of wastewater exfiltration or leakage from these basins which has resulted in very low levels of stable and immobile iron cyanide in these soils.

Groundwater

As reported in the Final Groundwater Monitoring Report provided in Appendix 3, statistically significant increases in TOX and specific conductance are evident in downgradient compliance point well MW-08. No statistically significant increases in any of the other indicator parameters are evident in these wells, and no statistically significant increases in any of the indicator parameters are evident in downgradient compliance point well MW-05.

By virtue of the fact that no above-background concentrations of zinc were found in the soils underlying either the Equalization or Emergency Basins, it is unlikely that the occurrence of statistically significant increase in zinc found in well MW-08 resulted from exfiltration and/or leakage of wastewaters from either of these basins[3]. It is hypothesized that the most likely cause of this increase, if it is determined by subsequent monitoring to be a real increase, was leakage of wastewaters from the packings, strainers and appurtenant piping flanges of the wastewater pumps that were part of the wastewater treatment plant and previously were located about 15 feet from well MW-08.

There is no apparent explanation for the occurrence of statistically significant increases in TOX in wells MW-07 and MW-08.

[3] As shown in the potentiometric surface maps provided in Appendix 3, well MW-08 is so situated that it would intercept contaminants that exfiltrated or leaked from either or both the Equalization or Emergency Basins and migrated into the underlying groundwaters.

The GC scans of organics constituents in the samples from these wells revealed the occurrence of only low levels (3 to 12 ug/l) of chloroform but no other individual chlorinated organic species (see Tables 3-6 and 3-7 of Appendix 3)[4].These levels of chloroform, however, were considerably lower than the detected levels of TOX in these wells (19 to 602 ug/l) and, therefore, do not fully account for the detected TOX levels. Moreover, the plant does not use chloroform in its manufacturing processes.

Additionally, no volatile organic compounds were detected in the soils immediately underlying the Equalization or Polishing Basins (see Tables 2-2 and 2-4 of Appendix 2) and no volatile or base neutral organic compounds were detected in the deeper soils under the northern side of the Equalization Basin or the eastern side of the Polishing Basin (see Tables 1-10 and 1-11 of Appendix 1). Thus, there is no indication that the TOX levels detected in wells MW-07 and MW-08 derived from exfiltration or leakage of wastewater from these impoundments[5].

The plant does employ chlorinated hydrocarbon solvents for some degreasing processes, but these solvents and their waste still bottoms are managed in a manner that virtually prohibits their discharge or spillage into the wastewaters that flow to the wastewater plant. Thus, the possibility that the TOX concentrations detected in wells MW-07 and MW-08 resulted from the incorporation of chlorinated hydrocarbon constituents in the wastewaters managed in the basins and the exfiltration and/or leakage of these constituents from the basins into the underlying groundwaters is believed to be highly unlikely. This conclusion is supported by the absence of any detection of chlorinated organic compounds in the soils underlying the Equalization and Polishing Basins as discussed above.

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[4] The GC scans also revealed the occurrence of low levels of toluene in the samples from these wells but no other non-chlorinated organic species (see Tables 3-6 and 3-7 of Appendix 3).

[5] As shown in the potentiometric surface maps provided in Appendix 3, well MW-08 is so situated that it would intercept contaminants that exfiltrated or leaked from either or both the Equalization or Emergency Basins and migrated into the underlying groundwaters, and well MW-07 is so situated that it would intercept contaminants that exfiltrated or leaked from the Polishing Basin and migrated into the underlying groundwaters.

In addition to the higher-than-background concentrations of TOX found in wells MW-07 and MW-08, low but detectable concentrations of several chlorinated compounds were found in nearby well MW-04 (see Table 3-4 of Appendix 3) and low but detectable concentrations of two chlorinated compounds were found in upgradient well MW-02 (see Table 3-2 of Appendix 3). It is believed that the detectable concentrations of TOX in wells MW-07 and MW -08 are related to the chlorinated organic compounds found in these wells. This belief is based on two hypotheses.

First, in 1988, there was temporary storage drums of products that included chlorinated solvents in the vicinity of wells MW-04, MW-07 and MW-08. These drums of product were received from another Scovill manufacturing plant that had been closed, and they were stored on the ground in the vicinity of these wells until they could be moved indoors for use. Although no leakage or spillage of product from these drums was observed during or after their outdoor storage and although soil sampling in the summer of 1989 in the areas of their storage failed to find any evidence of soil contamination by organic compounds, any small leakage or spillage from these drums could have caused the introduction of the chlorinated compounds into the groundwaters evidenced by the findings at wells MW-04, MW-07 and MW-08.

Second, past management of chlorinated solvents and spent solvent still bottoms in the manufacturing plant, particularly prior to the advent of the RCRA hazardous waste regulations, may have resulted in minor leakage or spillage of these materials and their migration into the groundwaters. Since the management of these materials occurred upgradient from well MW-02 and since groundwater appears to flow from the manufacturing plant to wells MW-02 and then possibly to MW-07 and MW-04, any contamination of the groundwaters resulting from past management of chlorinated solvents and their waste products could have caused the detectable concentrations of chlorinated compounds found in well MW-02 and, possibly, MW-07 and MW-04.

There is no apparent explanation for the statistically significant increase in specific conductance at well MW-07. This increase is not accompanied by statistically significant increases in total suspended solids or in any of the metal species, particularly those metal species associated with the treated wastewaters that where handled in the Polishing Basin. It is suspected that this increase is associated with the natural variations in the composition of the soils which, in turn, impart variations in the quality of unfiltered groundwater.

Adequacy of Closure

Based on the foregoing analyses, it is concluded that the soils underlying the Emergency and Polishing Basins are very slightly contaminated with iron cyanide which is quite stable and immobile and is unlikely to migrate into the underlying groundwaters. It is further concluded that the groundwaters underlying the basins have not been contaminated by wastewaters or wastewater constituents that may have exfiltrated from the basins. The apparent low levels of organic contamination of the groundwaters seen at wells MW-02, MW-04, MW-07 and MW-08 and the apparent low level of zinc contamination of the groundwaters seen at well MW-08 appear to derive from sources other than the basins. Moreover, the basins, as closed, clearly present~~s~~ no threat of increasing or otherwise aggravating these low levels of groundwater contamination because all wastes have been removed from the basins ... waste residuals left in place are ... of iron cyanide which, a ... immobile.

SC is function of TDS not TSS

I asked for Piper analysis of macrospecies on earlier wells. Maybe need it here.

Groundwater Quality

As indicated above, the groundwa... reflect low levels of contamination at wells MW-02, MW-04, MW-07 and MW-08. The degree of this contamination, however, is quite low. At each of wells MW-02 and MW-04, a concentration of tetrachloroehene (6.6 and 8 ug/l, respectively) slightly exceeded the Federal MCL for this constituent (5 ug/l) in one out of four samples (see Tables 3-2 and 3-4 of Appendix 3). At well MW-07, a concentration of chromium (86.7 ug/l) exceeded the MCL for this constituent (50 to 3.1) slightly exceeded the Federal MCL for this constituent (2 ug/l) in four out of four samples (see Table 3-6 in Appendix 3). At well MW-08, a concentration of silver (53.1 ug/l) slightly exceeded the Federal MCL for this constituent in one out of four samples (see Table 3-8 of Appendix 3). These levels of contamination are quite marginal and appear to require no remedial action. However, they should continue to be monitored through the three-year monitoring program specified in the approved closure plan.