

March 6, 2017

Ms. Mary Siedleicki
North Carolina Department of Environmental
Quality
Division of Waste Management
Post Office Box 27687
Raleigh, North Carolina 27611-7687

Reference: **Part B Permit Application**
(Former) Porcelanite Facility
20 Victor Street
Lexington, North Carolina 27292
EPA ID #NCD 986 181 451

Dear Ms. Siedleicki:

On behalf of Mannington Mills, Inc (formerly referred to as Mannington Mills of Delaware, Inc. or Maneto, Inc. and referred to in this submittal as “Mannington”), and without admission of liability, enclosed please find a Part B permit application for a post closure permit application and related modules for the above referenced facility.

This submission is in response to the September 7, 2016 letter from the NCDEQ Hazardous Waste Section Chief, Julie Woosley, to Mannington and Condumex, Incorporated, requesting same. Mannington continues to solicit participation from the site owner Condumex/Porcelanite and is hopeful that it will agree to participate in this effort going forward. We will advise you if and when progress is made in this regard.

We look forward to discussing the enclosed materials with you to address any questions you may have.

Sincerely,


WATERS EDGE ENVIRONMENTAL, LLC



Phillip L. Rahn, P.G.
President

15-006/PLR

Part A
Part A Application

| | | |
|--|--|--|
| <p>SEND COMPLETED FORM TO: The Appropriate State or Regional Office.</p> | <p>United States Environmental Protection Agency RCRA SUBTITLE C SITE IDENTIFICATION FORM</p> |  |
| <p>1. Reason for Submittal</p> <p>MARK ALL BOX(ES) THAT APPLY</p> | <p>Reason for Submittal:</p> <p><input type="checkbox"/> To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)</p> <p><input type="checkbox"/> To provide a Subsequent Notification (to update site identification information for this location)</p> <p><input type="checkbox"/> As a component of a First RCRA Hazardous Waste Part A Permit Application</p> <p><input type="checkbox"/> As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # _____)</p> <p><input type="checkbox"/> As a component of the Hazardous Waste Report (If marked, see sub-bullet below)</p> <p style="margin-left: 20px;"><input type="checkbox"/> Site was a TSD facility and/or generator of >1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)</p> | |
| <p>2. Site EPA ID Number</p> | <p>EPA ID Number <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/></p> | |
| <p>3. Site Name</p> | <p>Name: <input style="width: 90%;" type="text"/></p> | |
| <p>4. Site Location Information</p> | <p>Street Address: <input style="width: 95%;" type="text"/></p> | |
| | <p>City, Town, or Village: <input style="width: 70%;" type="text"/></p> | <p>County: <input style="width: 20%;" type="text"/></p> |
| | <p>State: <input style="width: 15%;" type="text"/></p> | <p>Country: <input style="width: 55%;" type="text"/></p> |
| <p>5. Site Land Type</p> | <p><input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p> | |
| <p>6. NAICS Code(s) for the Site (at least 5-digit codes)</p> | <p>A. <input style="width: 20%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/></p> | <p>C. <input style="width: 20%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/></p> |
| | <p>B. <input style="width: 20%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/></p> | <p>D. <input style="width: 20%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/> <input style="width: 5%;" type="text"/></p> |
| <p>7. Site Mailing Address</p> | <p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p> | |
| | <p>City, Town, or Village: <input style="width: 95%;" type="text"/></p> | |
| | <p>State: <input style="width: 15%;" type="text"/></p> | <p>Country: <input style="width: 55%;" type="text"/></p> |
| <p>8. Site Contact Person</p> | <p>First Name: <input style="width: 30%;" type="text"/></p> | <p>MI: <input style="width: 5%;" type="text"/></p> |
| | <p>Last: <input style="width: 60%;" type="text"/></p> | |
| | <p>Title: <input style="width: 95%;" type="text"/></p> | |
| | <p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p> | |
| | <p>City, Town or Village: <input style="width: 95%;" type="text"/></p> | |
| | <p>State: <input style="width: 15%;" type="text"/></p> | <p>Country: <input style="width: 55%;" type="text"/></p> |
| | <p>Zip Code: <input style="width: 20%;" type="text"/></p> | |
| <p>9. Legal Owner and Operator of the Site</p> | <p>A. Name of Site's Legal Owner: <input style="width: 80%;" type="text"/></p> | |
| | <p>Date Became Owner: <input style="width: 15%;" type="text"/></p> | |
| | <p>Owner Type: <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p> | |
| | <p>Street or P.O. Box: <input style="width: 95%;" type="text"/></p> | |
| | <p>City, Town, or Village: <input style="width: 70%;" type="text"/></p> | |
| | <p>State: <input style="width: 15%;" type="text"/></p> | <p>Country: <input style="width: 55%;" type="text"/></p> |
| | <p>Phone: <input style="width: 20%;" type="text"/></p> | |
| <p>B. Name of Site's Operator: <input style="width: 80%;" type="text"/></p> | | |
| <p>Date Became Operator: <input style="width: 15%;" type="text"/></p> | | |
| <p>Operator Type: <input type="checkbox"/> Private <input type="checkbox"/> County <input type="checkbox"/> District <input type="checkbox"/> Federal <input type="checkbox"/> Tribal <input type="checkbox"/> Municipal <input type="checkbox"/> State <input type="checkbox"/> Other</p> | | |

10. Type of Regulated Waste Activity (at your site)

Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

- Y N **1. Generator of Hazardous Waste**
 If "Yes," mark only one of the following – a, b, or c.
- a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo.) or more of hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; or Generates, in any calendar month, or accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.
- b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.
- c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.

If "Yes" above, indicate other generator activities in 2-10.

- Y N **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.
- Y N **3. United States Importer of Hazardous Waste**
- Y N **4. Mixed Waste (hazardous and radioactive) Generator**

- Y N **5. Transporter of Hazardous Waste**
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)
- Y N **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.
- Y N **7. Recycler of Hazardous Waste**
- Y N **8. Exempt Boiler and/or Industrial Furnace**
 If "Yes," mark all that apply.
- a. Small Quantity On-site Burner Exemption
- b. Smelting, Melting, and Refining Furnace Exemption
- Y N **9. Underground Injection Control**
- Y N **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

- Y N **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.**
- a. Batteries
- b. Pesticides
- c. Mercury containing equipment
- d. Lamps
- e. Other (specify) _____
- f. Other (specify) _____
- g. Other (specify) _____

- Y N **2. Destination Facility for Universal Waste**
 Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

- Y N **1. Used Oil Transporter**
 If "Yes," mark all that apply.
- a. Transporter
- b. Transfer Facility (at your site)
- Y N **2. Used Oil Processor and/or Re-refiner**
 If "Yes," mark all that apply.
- a. Processor
- b. Re-refiner
- Y N **3. Off-Specification Used Oil Burner**
- Y N **4. Used Oil Fuel Marketer**
 If "Yes," mark all that apply.
- a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
- b. Marketer Who First Claims the Used Oil Meets the Specifications

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

❖ You can ONLY Opt into Subpart K if:

- you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
- you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y N 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories
See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:

- a. College or University
- b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university
- c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y N 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

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B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

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12. Notification of Hazardous Secondary Material (HSM) Activity

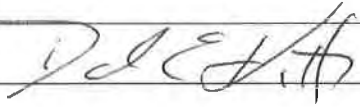
Y N Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

- 1) This is an inactive facility that ceased use of lead in 1990. Facility ceased manufacturing operations in 1999 and continued for some period as a distribution warehouse.
- 2) Regarding Item 8, a biannual Hazardous Waste Report is not submitted and not relevant for this site.
- 3) Regarding Item 8, Mr. Tony Shaw has been listed as Site Contact Person. He is now retired from Mannington, but lives in Lexington, NC. Tony continues to conduct site inspections and escorts NCDEQ inspectors. His phone is 336-442-2085. His email is tony_shaw@mannington.com. Also, Condumex property Caretaker is Mr. George Smith (336-752-2945).
- 4) Regarding 9.B, Mannington began operations in 1984, sold the facility to Porcelanite in 1994 & ceased all operations in 1995. Porcelanite continued manufacturing activities until 1999.
- 5) Mannington retains RCRA operator obligations for closed SWMU-2 (settling ponds) & closed SWMU-3 (tile pile). Also SWMU-7 (Walltown Branch); AOC-1 (tile pile discharge area); & AOC-2 (broken tile roadway) identified in 2005. The other eight(8) SWMU's & one(1) AOC were continually operated by Porcelanite after the 1994 sale. These were also identified in 2005 and not retained areas of responsibility by Mannington.
- 6) We have identified four supply wells in Figure A-1. These are non-potable water supply wells which were sampled for boron in 2012 and were either BDL or below the boron North Carolina 2L Groundwater Standard of 0.7 mg/L.

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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 fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

| Signature of legal owner, operator, or an authorized representative | Name and Official Title (type or print) | Date Signed (mm/dd/yyyy) |
|---|---|--------------------------|
| | Alejandro Sanchez - Pres. Condumex | |
|  | David Kitts - VP Mannington | 3/1/17 |
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ADDENDUM TO THE SITE IDENTIFICATION FORM: NOTIFICATION OF HAZARDOUS SECONDARY MATERIAL ACTIVITY



ONLY fill out this form if:

- ❖ You are located in a State that allows you to manage excluded hazardous secondary material (HSM) under 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent). See <http://www.epa.gov/epawaste/hazard/dsw/statespf.htm> for a list of eligible states; **AND**
- ❖ You are or will be managing excluded HSM in compliance with 40 CFR 261.2(a)(2)(ii), 261.4(a)(23), (24), or (25) (or state equivalent) or you have stopped managing excluded HSM in compliance with the exclusion(s) and do not expect to manage any amount of excluded HSM under the exclusion(s) for at least one year. Do not include any information regarding your hazardous waste activities in this section.

1. Indicate reason for notification. Include dates where requested.

- Facility will begin managing excluded HSM as of _____ (mm/dd/yyyy).
- Facility is still managing excluded HSM/re-notifying as required by March 1 of each even-numbered year.
- Facility has stopped managing excluded HSM as of _____ (mm/dd/yyyy) and is notifying as required.

2. Description of excluded HSM activity. Please list the appropriate codes and quantities in **short tons** to describe your excluded HSM activity ONLY (do not include any information regarding your hazardous wastes). Use additional pages if more space is needed.

| a. Facility code (answer using codes listed in the Code List section of the instructions) | b. Waste code(s) for HSM | c. Estimated short tons of excluded HSM to be managed annually | d. Actual short tons of excluded HSM that was managed during the most recent odd-numbered year | e. Land-based unit code (answer using codes listed in the Code List section of the instructions) |
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3. Facility has financial assurance pursuant to 40 CFR 261.4(a)(24)(vi). (Financial assurance is required for reclaimers and intermediate facilities managing excluded HSM under 40 CFR 261.4(a)(24) and (25))

Y N Does this facility have financial assurance pursuant to 40 CFR 261.4(a)(24)(vi)?

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7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

- A. PROCESS CODE** – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For “other” processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.
- B. PROCESS DESIGN CAPACITY** – For each code entered in Item 7.A; enter the capacity of the process.
1. **AMOUNT** – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
 2. **UNIT OF MEASURE** – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.
- C. PROCESS TOTAL NUMBER OF UNITS** – Enter the total number of units for each corresponding process code.

| Process Code | Process | Appropriate Unit of Measure for Process Design Capacity | Process Code | Process | Appropriate Unit of Measure for Process Design Capacity |
|------------------|-------------------------------------|--|--|--|---|
| Disposal | | | Treatment (Continued) (for T81 – T94) | | |
| D79 | Underground Injection Well Disposal | Gallons; Liters; Gallons Per Day; or Liters Per Day | T81 | Cement Kiln | Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour |
| D80 | Landfill | Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards | T82 | Lime Kiln | |
| D81 | Land Treatment | Acres or Hectares | T83 | Aggregate Kiln | |
| D82 | Ocean Disposal | Gallons Per Day or Liters Per Day | T84 | Phosphate Kiln | |
| D83 | Surface Impoundment Disposal | Gallons; Liters; Cubic Meters; or Cubic Yards | T85 | Coke Oven | |
| D99 | Other Disposal | Any Unit of Measure Listed Below | T86 | Blast Furnace | |
| Storage | | | T87 | Smelting, Melting, or Refining Furnace | |
| S01 | Container | Gallons; Liters; Cubic Meters; or Cubic Yards | T88 | Titanium Dioxide Chloride Oxidation Reactor | |
| S02 | Tank Storage | Gallons; Liters; Cubic Meters; or Cubic Yards | T89 | Methane Reforming Furnace | |
| S03 | Waste Pile | Cubic Yards or Cubic Meters | T90 | Pulping Liquor Recovery Furnace | |
| S04 | Surface Impoundment | Gallons; Liters; Cubic Meters; or Cubic Yards | T91 | Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid | |
| S05 | Drip Pad | Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards | T92 | Halogen Acid Furnaces | |
| S06 | Containment Building Storage | Cubic Yards or Cubic Meters | T93 | Other Industrial Furnaces Listed in 40 CFR 260.10 | |
| S99 | Other Storage | Any Unit of Measure Listed Below | T94 | Containment Building Treatment | Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour |
| Treatment | | | Miscellaneous (Subpart X) | | |
| T01 | Tank Treatment | Gallons Per Day; Liters Per Day | X01 | Open Burning/Open Detonation | Any Unit of Measure Listed Below |
| T02 | Surface Impoundment | Gallons Per Day; Liters Per Day | X02 | Mechanical Processing | Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day |
| T03 | Incinerator | Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour | X03 | Thermal Unit | Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour |
| T04 | Other Treatment | Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour | X04 | Geologic Repository | Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters |
| T80 | Boiler | Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour | X99 | Other Subpart X | Any Unit of Measure Listed Below |

| Unit of Measure | Unit of Measure Code | Unit of Measure | Unit of Measure Code |
|------------------------|----------------------|----------------------------|----------------------|
| Gallons | G | Short Tons Per Hour | D |
| Gallons Per Hour | E | Short Tons Per Day | N |
| Gallons Per Day | U | Metric Tons Per Hour | W |
| Liters | L | Metric Tons Per Day | S |
| Liters Per Hour | H | Pounds Per Hour | J |
| Liters Per Day | V | Kilograms Per Hour | X |
| | | Million BTU Per Hour | X |
| | | Cubic Yards | Y |
| | | Cubic Meters | C |
| | | Acres | B |
| | | Acre-feet | A |
| | | Hectares | Q |
| | | Hectare-meter | F |
| | | BTU Per Hour | I |

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

| Line Number | A. Process Code (From list above) | | | B. PROCESS DESIGN CAPACITY | | C. Process Total Number of Units | For Official Use Only | | | | |
|-------------|--------------------------------------|---------------------|---|----------------------------|---|----------------------------------|-----------------------|--|--|--|--|
| | (1) Amount (Specify) | (2) Unit of Measure | | | | | | | | | |
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Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

| Line Number (Enter #s in sequence with Item 7) | A. Process Code (From list above) | | | B. PROCESS DESIGN CAPACITY | | C. Process Total Number of Units | For Official Use Only | | | | |
|---|--------------------------------------|---------------------|---|----------------------------|---|----------------------------------|-----------------------|--|--|--|--|
| | (1) Amount (Specify) | (2) Unit of Measure | | | | | | | | | |
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9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5

- A. **EPA HAZARDOUS WASTE NUMBER** – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.
- B. **ESTIMATED ANNUAL QUANTITY** – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.
- C. **UNIT OF MEASURE** – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

| ENGLISH UNIT OF MEASURE | CODE | METRIC UNIT OF MEASURE | CODE |
|-------------------------|------|------------------------|------|
| POUNDS | P | KILOGRAMS | K |
| TONS | T | METRIC TONS | M |

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. Enter the first two as described above.
2. Enter "000" in the extreme right box of Item 9.D(1).
3. Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.

2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.
2. In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.

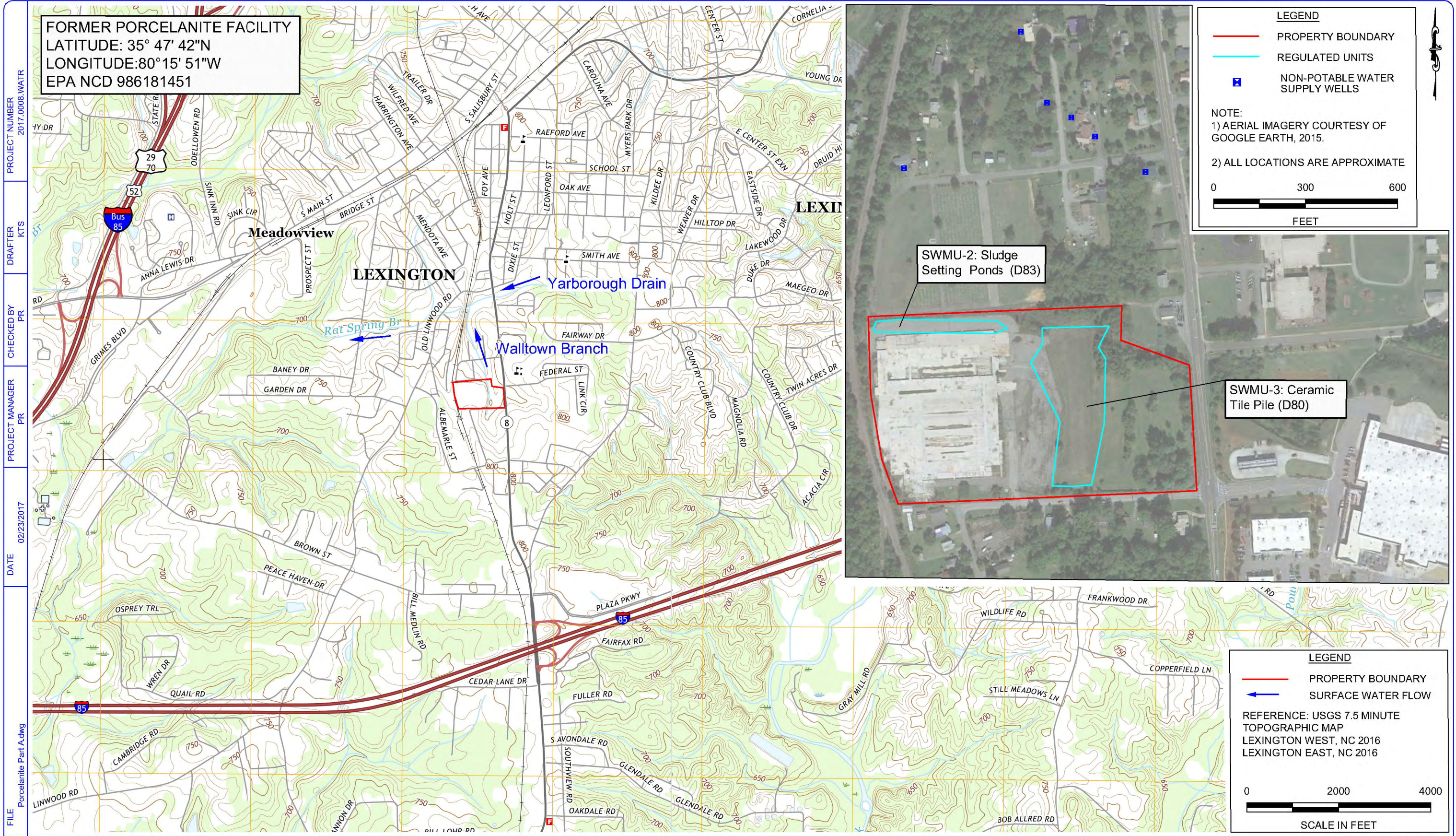
EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

| Line Number | A. EPA Hazardous Waste No. (Enter code) | | | | | B. Estimated Annual Qty of Waste | C. Unit of Measure (Enter code) | D. PROCESSES | | | | | | | | | | | | | | | |
|-------------|---|---|---|---|---|----------------------------------|---------------------------------|--------------|---|---|--|---|---|--|--|--|--|--|--|--|--|--|---------------------|
| | (1) PROCESS CODES (Enter Code) | | | | | | | | | | (2) PROCESS DESCRIPTION (If code is not entered in 9.D(1)) | | | | | | | | | | | | |
| X | 1 | K | 0 | 5 | 4 | 900 | P | T | 0 | 3 | D | 8 | 0 | | | | | | | | | | |
| X | 2 | D | 0 | 0 | 2 | 400 | P | T | 0 | 3 | D | 8 | 0 | | | | | | | | | | |
| X | 3 | D | 0 | 0 | 1 | 100 | P | T | 0 | 3 | D | 8 | 0 | | | | | | | | | | |
| X | 4 | D | 0 | 0 | 2 | | | | | | | | | | | | | | | | | | Included With Above |

9. Description of Hazardous Wastes (Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)

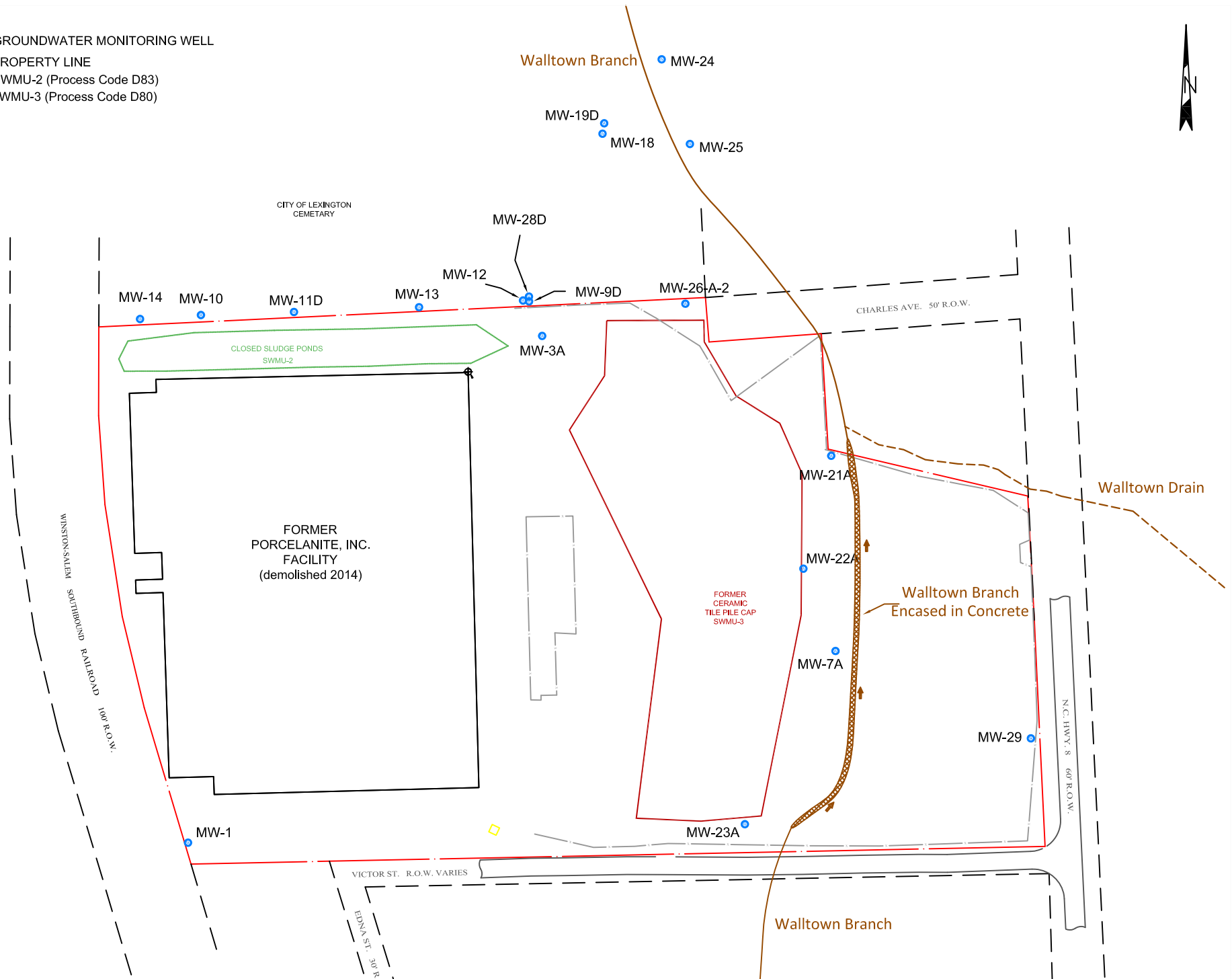
| Line Number | A. EPA Hazardous Waste No. (Enter code) | B. Estimated Annual Qty of Waste | C. Unit of Measure (Enter code) | D. PROCESSES | | | | | | | | | | | | | | | | |
|-------------|---|----------------------------------|---------------------------------|--------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | (1) PROCESS CODES (Enter Code) | | | | | (2) PROCESS DESCRIPTION (If code is not entered in 9.D(1)) | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | |
| 1 | 0 | | | | | | | | | | | | | | | | | | | |
| 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 1 | 2 | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | | | | | | | | | | | | | | | | | | | |
| 1 | 4 | | | | | | | | | | | | | | | | | | | |
| 1 | 5 | | | | | | | | | | | | | | | | | | | |
| 1 | 6 | | | | | | | | | | | | | | | | | | | |
| 1 | 7 | | | | | | | | | | | | | | | | | | | |
| 1 | 8 | | | | | | | | | | | | | | | | | | | |
| 1 | 9 | | | | | | | | | | | | | | | | | | | |
| 2 | 0 | | | | | | | | | | | | | | | | | | | |
| 2 | 1 | | | | | | | | | | | | | | | | | | | |
| 2 | 2 | | | | | | | | | | | | | | | | | | | |
| 2 | 3 | | | | | | | | | | | | | | | | | | | |
| 2 | 4 | | | | | | | | | | | | | | | | | | | |
| 2 | 5 | | | | | | | | | | | | | | | | | | | |
| 2 | 6 | | | | | | | | | | | | | | | | | | | |
| 2 | 7 | | | | | | | | | | | | | | | | | | | |
| 2 | 8 | | | | | | | | | | | | | | | | | | | |
| 2 | 9 | | | | | | | | | | | | | | | | | | | |
| 3 | 0 | | | | | | | | | | | | | | | | | | | |
| 3 | 1 | | | | | | | | | | | | | | | | | | | |
| 3 | 2 | | | | | | | | | | | | | | | | | | | |
| 3 | 3 | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | | | | | | | | | | | | | | | | | | | |
| 3 | 5 | | | | | | | | | | | | | | | | | | | |
| 3 | 6 | | | | | | | | | | | | | | | | | | | |

Part A Figures



LEGEND

- GROUNDWATER MONITORING WELL
- PROPERTY LINE
- SWMU-2 (Process Code D83)
- SWMU-3 (Process Code D80)



| | | | | |
|------------------|---------------------------|---------------|--------------------|--|
| Author plr | Drawing Part A Fig A-2 | Layers | Date 12.20.2016 | Title Facility Drawing |
| Job No. R1-21 | Revision 2.23.2017 | Figure A-2 | Scale 1" = 150' | Project Former Porelanite Facility Lexington, North Carolina |



| | | | | |
|---------|----------------|--------|------------|--|
| Author | Drawing | Layers | Date | Title |
| | Part A Fig A-3 | | 10.17.2016 | Facility Aerial Photograph |
| Job No. | Image Date | Figure | Scale | Project |
| R1-21 | 7.10.2010 | A-3 | unknown | Former Porcelanite Facility Lexington, North Carolina |

Part B

Facility Description

Part B – Facility Description

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- B-2 Documentation of Correspondence in accordance with NCAC 13A .0113(c)(3), and .0113(c)(5)

Acronym List

| | |
|--------------|--|
| ACL | Alternative Concentration Limits |
| AOC | Area of Concern |
| AQI | Air Quality Index |
| BGS | below ground surface |
| BDL | below detection limits |
| BQL | below quantitation limits |
| °C | Celsius |
| COCs | Constituents of Concern |
| DAQ | Division of Air Quality |
| DWM | Division of Waste Management |
| EP | Extraction Procedure |
| Ft/ft | Foot per foot |
| HWMU | Hazardous Waste Management Unit |
| HWS | Hazardous Waste Section |
| Mannington | Mannington Ceramic Tile |
| mg/kg | milligrams per kilogram or parts per million |
| NC | North Carolina |
| NCDCPCA, NHP | North Carolina Division of Conservation, Planning, and Community Affairs, Natural Heritage Program |
| NCDEHNR | North Carolina Department of Environment, Health and Natural Resources |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality (formerly NCDENR, and renamed effective September 18, 2015) |

| | |
|-----------------|---|
| NCDEQ, DWM, HWS | North Carolina Department of Environmental Quality Division of Waste Management, Hazardous Waste Section |
| NCDFR | North Carolina Division of Forest Resources |
| NCGS | North Carolina Groundwater Standards |
| NCDWR | North Carolina Division of Water Resources |
| NCDNCR | North Carolina Department of Natural and Cultural Resources |
| NPS | National Park Service |
| Porcelanite | Porcelanite, Inc. |
| PVC | Polyvinyl Chloride |
| RCP | reinforced concrete pipe |
| RCRA | Resource Conservation and Recovery Act |
| RFA | RCRA Facility Assessment |
| SAP | Sampling and Analysis Plan |
| SIC | Standard Industrial Classification |
| SVOC | Semivolatile Organic Compound |
| SWMU | Solid Waste Management Units |
| TCLP | Toxicity Characteristic Leaching Procedure |
| USACE | United States Army Corps of Engineers |
| USEPA | United States Environmental Protection Agency |
| USFWS | United States Fish & Wildlife Service |
| VOC | Volatile Organic Compound |
| VSI | Visual Site Inspection |
| Waters Edge | Waters Edge Environmental, LLC |

Part B – Facility Description

B-1 General Description

B-1-1 Site Location and Boundary Features

From the mid-1950's until the end of 1983, Mid-State Tile operated a ceramic tile manufacturing facility in Lexington, Davidson County, North Carolina (the “Facility”) (see Figures B-1 and B-2). Prior to use by Mid-State Tile, the property was undeveloped, forested land. In 1984 Mannington Ceramic Tile, Inc. acquired Mid-State Tile and began operations at the Facility. In 1994, Porcelanite, Inc. purchased the Facility by acquiring all the stock of Mannington Ceramic Tile, Inc. from Mannington Mills of Delaware, Inc. (now known as Maneto, Inc. [“Mannington”]) and changing the corporate name from Mannington Ceramic Tile, Inc. to P&M Tile, Inc. Porcelanite commenced operation of the Facility shortly thereafter. In 1999, manufacturing operations ceased. In 2014, all buildings on the site were demolished. The site is referenced as the Former Porcelanite Facility.

The Facility is located at 20 Victor Street, in Lexington, Davidson County, North Carolina, approximately 1 mile north of Interstate 85. The Tax Assessor’s Parcel Number (APN) is 113420000022. The geographical location of the Facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W, with elevations ranging from approximately 770 feet above MSL to approximately 730 feet above MSL at Walltown Branch. The Facility is located in a relatively rural area; however, the Facility is zoned for light industrial use. The Facility is bounded on the north by the Charles Avenue right-of-way, the Lexington City Cemetery, and undeveloped wooded property, and on the east by Cotton Grove Road (North Carolina Highway 8). The Facility is bounded on the south by Victor Street (State Road 1261) and on the west by the Winston-Salem southbound railway and undeveloped wooded property.

As shown on Figure B-2, the entire Facility occupies an area of approximately 13.3 acres. Formerly there was a 126,000-square foot building that was used for manufacturing and office space, a small maintenance garage, and a small security shack located at the site. These buildings have all been demolished and were removed in 2014. There are currently no building structures on the Facility property, and there are no immediate plans to redevelop the property, although potential Brownfields development has been explored.

The location of the Facility is shown on Figure B-1 and a 1,000-foot radius facility location map is shown on Figure B-2.

B-1-2 RCRA Related History of the Facility

We would begin this Section by noting there are numerous references to the previous names of the current NCDEQ including NCDENR and NCDEHNR; however, for consistency, we will use NCDEQ throughout this document. During ceramic tile manufacturing operations at the Facility by Mid-State Tile and Mannington, two areas were created to handle waste generated from the ceramic tile manufacturing process. These later became SWMUs described as the Sludge Settling

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Ponds (SWMU-2) and the Ceramic Tile Pile (SWMU-3) (see Figure B-3). The Sludge Settling Ponds were used to settle solids contained in wastewater from the tile manufacturing process prior to discharge to the Rat Spring Branch of the Yadkin-Pee Dee River Basin under an NPDES permit. The Ceramic Tile Pile was used for disposal of off-specification ceramic tile materials.

The following is a list of significant regulatory events at the Facility:

- Between 1972 and 1989, wastewater was treated by passing it through two Sludge Settling Ponds which allowed solids to settle prior to discharge of the water to the Rat Springs Branch of the Yadkin-Pee Dee River Basin pursuant to NPDES permit #NC0006459.
- Based on a site assessment prepared by Mannington (dated April 12, 1990) and the likelihood that soil and groundwater at the Facility had been adversely impacted, NCDEQ issued a Compliance Order with Administrative Penalty (Order) (Docket #90-164) to Mannington Ceramic Tile, Inc.
- On July 5, 1990, Mannington submitted a consolidated Hazardous Waste Permit Application, Part A, to the EPA. This permit application listed two HWMUs - an 8,240-cubic yard surface impoundment and a 69,300-cubic yard waste pile. Both units were listed as managing D008 wastes, which are wastes that exhibit the toxicity characteristic for lead. These two regulated units were identified as the Sludge Settling Ponds (SWMU-2) and the Ceramic Tile Pile (SWMU-3), respectively.
- On May 29, 1992, Mannington submitted a Hazardous Waste Permit Application, Part A, to the EPA. This permit application provided the same information as the previous permit application; however, it also indicated that the Facility had two other environmental permits. The first permit listed was a POTW discharge permit with the City of Lexington. The second permit was an Air Permit #5408R5, which was issued by NCDEQ DAQ. The permit application also listed a request for change in the air permit requirements.
- The 1990 Order was superseded by a Consent Agreement and Settlement Order (OAH File No. 90 HER 0689) on September 24, 1992. The 1992 Order required that Mannington:
 - a. Develop a plan to close the regulated units, identified as the two sludge settling ponds and the waste ceramic tile pile.
 - b. Investigate and assess subsurface contamination originating from the regulated units.
 - c. Implement a groundwater monitoring program.
- In May 1992, a Closure Plan for the Sludge Settling Ponds (SWMU-2) was submitted to NCDEQ, and was provisionally approved on August 13, 1992. To reflect the many subsequent modifications made to the closure plans for the Sludge Settling Ponds, the Closure Report contained several additional documents, including (a) the June 20, 1993,

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Closure Report for the Porcelanite Settling Ponds, (b) the proposed modification to the Closure Plan dated November 2, 2002, (c) the internal NCDEQ memo drafted by Ms. Sandra Moore to Ms. Rosemarie Roberts dated March 17, 2003, discussing the rationale for the amended closure performance standards, (d) the July 14, 2004, Revised Closure Plan, and (e) the August 9, 2005 report documenting additional soil excavation adjacent to the Sludge Settling Ponds which was placed on the Ceramic Tile Pile, prior to its closure. All the documents together satisfied closure and closure certification requirements for the Sludge Settling Ponds (SWMU-2). The Certification for Closure was submitted on November 9, 2005 and the Section accepted closure in place for the two Sludge Settling Ponds on February 1, 2006.

- In July 1992, initial construction work was performed to stabilize the tile pile/parking area. Phase II work was also completed to pipe the Walltown Branch (SWMU-7) along the eastern boundary of the Ceramic Tile Pile (SWMU-3).
- Between 1992 and 1998, numerous investigations of the Ceramic Tile Pile (SWMU-3) were conducted. These included assessments of soil and groundwater, investigation and characterization of the wastes stored in the Ceramic Tile Pile, and performing a treatability study to evaluate possible remediation techniques for the Ceramic Tile Pile (Aquaterra, 1997a, 1997b). Additional soil assessment outside and under the Ceramic Tile Pile was also conducted. Mannington submitted a Closure Plan for the Ceramic Tile Pile on February 11, 1997. The Closure Plan involved placing a RCRA-compliant technology cap over the Ceramic Tile Pile. The closure certification with waste in place was certified and submitted on April 26, 2004 and accepted by the NCDEQ on March 14, 2005.
- An RFA report was completed on April 29, 2004 by Booz Allen and was detailed in a February 16, 2005 NCDEQ *RCRA Facility Assessment*. The RFA identified eleven (11) SWMUs and three (3) AOCs. SWMU-2 was identified as the two Sludge Settling Ponds and SWMU-3 was identified as the Ceramic Tile Pile (regulated units). These two SWMUs as well as the remaining SWMUs and AOCs are discussed individually in greater detail in Part L of this report.
- The Facility is currently in post-closure monitoring with the intent of the sampling program to conform with 40 CFR 265 Subparts F and G. Waters Edge, environmental consultant for the Facility, is currently continuing the semi-annual post-closure monitoring of groundwater monitoring wells MW-1, MW-9, MW-12, MW-22A, MW-26A-2, and MW-28 for analysis of boron, cadmium, chromium, cobalt, lead, manganese, and zinc in accordance with the most recently approved October 2007 Revised SAP.

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B-1-2-1 Part B Permit

On September 7, 2016, Ms. Julie S. Woosley, Section Chief, with the NCDEQ, DWM, HWS, issued a *Call for RCRA Part B Permit Application* letter jointly to Mannington Mills, Inc. and Condumex, Inc. for the Former Porcelanite Facility. This RCRA Part B Post-Closure Permit Application is in response to that Call.

B-1-2-2 Solid Waste Management Units

An RFA report was completed on April 29, 2004 by an EPA contractor (Booz Allen, 2004) and submitted on February 16, 2005 (see Appendix B-1). The RFA identified eleven (11) SWMUs and three (3) AOCs as depicted on Figure B-4. The RFA identified the original Hazardous Waste Regulated Units as SWMU-2 (two Sludge Settling Ponds) and SWMU-3 (Ceramic Tile Pile). Based on the 2005 RFA, Table B-1 lists the SWMUs and AOCs identified along with the recommended course of action in 2004 and after reevaluation in 2016. Portions of the following SWMU and AOC descriptions and past investigation summaries are directly referenced from the February 2005 RFA.

**Table B-1
SWMU/AOC Identification and Past and Current Status**

| Unit | Name | 2004 | 2016 |
|-------------|---|-------------|--|
| SWMU-1 | Wastewater Pretreatment System | CS | Considering Alternative Options |
| SWMU-2 | Sludge Settling Ponds (Regulated) | RFI | NFA-Certified Closed 2006 Under Assessment |
| SWMU-3 | Ceramic Tile Pile (Regulated) | RFI | NFA-Certified Closed 2005 Under Assessment |
| SWMU-4 | 20 cubic yard Sludge Roll-Off Container | NFA | NFA |
| SWMU-5 | 20 cubic yard Floor Sweeping Roll-Off Container | NFA | NFA |
| SWMU-6 | Baghouse | CS | NFA |
| SWMU-7 | Walltown Branch | RFI | Recommend Assessment |
| SWMU-8 | Off-Spec Tile Accumulation Roll-Off | NFA | NFA |
| SWMU-9 | Filter Cake Waste Pile Area | NFA | NFA |
| SWMU-10 | Maintenance Building Waste Management | NFA | NFA |
| SWMU-11 | Spray Line Area Sumps | CS | NFA |
| AOC-1 | Area of Discharge from Tile Pile | RFI | Recommend Assessment |

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| | | | |
|-------|-----------------------------|-----|----------------------|
| AOC-2 | Broken Ceramic Tile Roadway | CS | Recommend Assessment |
| AOC-3 | Former UST and AST Area | NFA | NFA |

Notes:

CS = Confirmatory Sampling

NFA = No Further Action

RFI = Recommended Further Investigation

B-1-3 Current Site Operation

All manufacturing operations at the Facility ceased in 1999 and the facility continued for some period as a tile distribution warehouse. The buildings were demolished and removed in 2014. There are currently no building structures at the Facility.

B-1-4 Description of Regulated Units

B-1-4-1 Two Closed Sludge Settling Ponds (SWMU-2)

SWMU-2 consisted of two surface impoundments estimated at 130' (L) x 30' (W) each (based on preliminary assessment figures) located in the northwestern corner of the Facility, between the northern property boundary and the northern wall of the former Main Building (see Figure B-3). Previous calculations indicated a total volume for both ponds to be approximately 8,240 cubic yards, consisting of approximately 3,625 cubic yards in the Western Pond and approximately 4,615 cubic yards in the Eastern Pond. Prior to January 1, 1989 and dating back to approximately 1972, wastewater treatment conducted at the Facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU-2), allowing solids to settle prior to discharge. After wastewater passed through the second (eastern) settling pond, Mid-State Tile and subsequently Mannington discharged wastewater directly into Rat Spring Branch of the Yadkin-Pee Dee River Basin pursuant to NPDES permit #NC0006459 (ENSCI, 1993, 1994).

Prior to 1990, the clay and silica used at the Facility likely contained hazardous constituents such as lead. In addition, according to Facility representatives, the pH of the incoming wastewater was usually in the range of 4 to 6. A site assessment of the Facility, prepared by Mannington, and dated April 12, 1990, consisted of a field investigation in which samples were collected from the Sludge Settling Ponds. TCLP analyses detected leachable lead levels in the sludge ranging from 230 mg/L to 1,230 mg/L, which is above the 5.0 mg/L threshold for a characteristic hazardous waste. All VOCs and SVOCs were BDL with the exception of methylene chloride, acetone, and carbon disulfide, which are considered laboratory artifacts. As a result, the solid waste (i.e., sludge) disposed in the Sludge Settling Ponds was a characteristic hazardous waste (D008) (NCDEQ, 1990b; ENSCI, 1993, 1994).

In July 1993, Mannington completed closure of the Sludge Settling Ponds (SWMU-2) per the NCDEQ approved Closure Plan. Mannington submitted a certified closure report to NCDEQ on November 9, 2005, which NCDEQ subsequently accepted on February 1, 2006. As a result of closure activities, sludge was removed from both sludge ponds and stabilized with Portland Cement, such that the waste passed TCLP for lead. The stabilized material was placed back into the ponds and the area was capped with a RCRA compliant cap. According to Facility representatives, the cap included a 30-millimeter synthetic liner and an asphalt cap that serves as the top layer. Additionally, all piping associated with the sludge ponds was removed. Some of the surrounding soils north and west of the Sludge Settling Ponds were excavated and placed on the Ceramic Tile Pile (SWMU-3) prior to its closure in 1997. According to a September 1992 Consent Agreement, sludge from SWMU-2 was also deposited in SWMU-3. At the time of the September 2003 VSI, the asphalt cover appeared to be in good condition with no significant cracks, staining, or erosion identified (Booz Allen RFI, 2005).

B-1-4-2 Closed Waste Ceramic Tile Pile (SWMU-3)

The Closed Waste Ceramic Tile Pile (SWMU-3) is located east of the former Main Process Building and immediately west of Walltown Branch (SWMU-7). The Facility used SWMU-3 to store off-specification unfired and fired glazed ceramic tile beginning in the 1950s or 1960s until 1990. The unit extends approximately 12 feet north of the southern property fence line to the Area of Discharge from Tile Pile (AOC-1) to Rat Springs Branch as shown on Figure B-3. The total volume of the unit is estimated to be approximately 260,000 tons (*Transmittal of Revised Closure and Post-Closure Care Plans*, July 30, 1997). Additionally, in the early 1990s, soil north of SWMU-2 exhibiting elevated lead and zinc concentrations was excavated and placed on top of the Ceramic Tile Pile prior to closure of the unit, as was material from the Broken Tile Roadway (AOC-2). In 1990, Mannington ceased depositing waste tile material in SWMU-3 (NCDEQ, 1990d, 1990e, and 1990f).

Based on the site assessments conducted between 1989 and 1997 at the Facility, sample analyses results detected leachable lead levels in the Waste Ceramic Tile Pile considered to be a characteristic hazardous waste. As a result, the solid waste (i.e., ceramic tile) disposed on the Waste Ceramic Tile Pile was considered a characteristic hazardous waste (D008) in that samples from several different areas contained TCLP lead levels in excess of the regulatory limit (NCDEQ, 1990b).

In addition, impacted sludge/soil from SWMU-2 was also deposited in the Waste Ceramic Tile Pile prior to closure as follows:

- An unknown quantity of partially stabilized sludge and additional impacted soil located north and west of the Sludge Settling Ponds (SWMU-2) were excavated and deposited on the Ceramic Tile Pile (SWMU-3) prior to closure. According to the Closure Report for the Sludge Settling Ponds (SWMU-2), the partially stabilized sludge exceeded the NCGS via

TCLP for mercury and zinc (closure standards NCDEQ temporarily used during that period of time) and the TCLP regulatory limit for lead when it was deposited on the Ceramic Tile Pile (SWMU-3) (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This excavated area also included one soil sample location from the area northeast of SWMU-2 which slightly exceeded the lead TCLP threshold.

- Lead impacted soil from along former Charles Avenue north of the Ceramic Tile Pile near the northern property boundary was excavated and placed on the Ceramic Tile Pile.

After multiple phases of soil assessment, the Facility initiated closure with wastes in place of the Ceramic Tile Pile (SWMU-3) due to soils exhibiting leachable levels of lead that were considered a characteristic hazardous waste (D008). Consistent with the approved 1997 Closure Plan, wastes were left in place and the unit was closed with a RCRA-compliant cap. The unit is capped with a "flat top surface cap" and a "slope surface cap" using a RCRA-compliant cap including a vegetative cover, geotextile liner, HDPE liner, and another managed vegetative cap. The top portion of the unit is level with the facility parking lot and has gravel covering the majority of the top of the unit. The sloped sides of the unit are covered with native vegetation. The 1997 approved *Ceramic Tile Pile Closure Plan* also depicted an area which exceeded three (3) times background levels for the metals barium, boron, lead, manganese, and zinc. These other areas that exhibited elevated total inorganic values in excess of three (3) times background levels were covered with the silty clay cover material used to stabilize the RCRA cap as shown on Figure B-3. The silty clay cover was two (2) or more feet thick over these elevated total inorganic areas, thus preventing dermal contact and minimizing leaching of the metals from the soils to the groundwater. (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This closure plan was approved by NCDEQ on March 14, 2005.

B-2 Topographic Map

B-2a General Requirements

The following figures include map information as required by the Part B Application:

Figure B-1 is U. S. Geological Survey topographic quadrangle map (Lexington West) identifying the general Facility location. Figure B-2 is a more detailed topographic map of the Facility, and includes features 1,000-feet from the perimeter of the Facility, the Facility property boundary, surrounding tax parcel boundaries, surface water features, contour intervals, map scale, map date, 100-year floodplain, the two regulated units (SWMU-2 and SWMU-3), location of access control, and the location of storm and sanitary sewers. No buildings or structures remain on the property; therefore, there are no loading or unloading areas, process sewers, or fire control facilities. The concrete building foundation slab is the only remaining improvement. Figure B-2 also includes a wind rose from data collected from the nearest airport (Davidson County Airport [KEXX]).

The location of all remaining SWMUs and AOCs identified in Table B-1 is shown on Figure B-4.

The current groundwater flow direction and plume maps for the Facility are discussed in Part E-Groundwater Monitoring of this report. The most recently approved October 2007 SAP includes semi-annual (March and September) monitoring and sampling of six (6) monitoring wells for analysis of boron, cadmium, chromium, cobalt, lead, manganese, and zinc. Monitoring wells MW-1, MW-12, and MW-22A are installed in the saprolite/shallow aquifer, and wells MW-9D, MW-26A-2, and MW-28D monitor groundwater quality in the bedrock/deeper saprolite aquifer. The information is presented to the NCDEQ, DWM, HWS semi-annually in a *Semi-annual Groundwater Assessment Report*.

B2-b Additional Topographic Requirements for Land Storage, Treatment and Disposal Facilities

The Facility is not an active treatment and disposal facility; however, additional topographic map requirements as listed in Part E-Groundwater Monitoring include the following:

- Groundwater flow direction and rate (isometric graph)
- Point of compliance
- Groundwater monitoring wells
- The extent of any plume (horizontal and vertical)
- Hazardous waste management area
- Property boundary

This information is included in Part E-Groundwater Monitoring.

B-3 Traffic Information

As this is a closed facility, transportation of hazardous waste is not presently occurring, and there are no immediate future plans for the transportation of hazardous waste at the Facility; therefore, there is no information regarding the movement of hazardous waste at the Facility.

B-4 Location Information

B-4a Seismic Considerations

Information regarding seismic considerations is required for new facilities only. As this is not a new facility, no seismic information is provided.

B-4b Floodplain Standard

According to the FEMA, National Flood Insurance Program, Flood Insurance Rate Map (FIRM) Panel 6724, Map Number 3710672400J, effective date March 16, 2009, a portion of the Facility property that encompasses Walltown Branch (SWMU-7) and a portion of the Ceramic Tile Pile (SWMU-3) is located within the 100-year floodplain (identified as the 1% annual chance floodplain boundary). Base floodplain elevations range from 747 feet above MSL south of Victor Street to 734 feet above MSL immediately north of the confluence of Walltown Branch with Walltown Drain. The limits of the 100-year floodplain boundaries are shown on Figure B-2.

B-4b (1) Demonstration of Compliance

In order to prevent surface water runoff and groundwater migration from the Ceramic Tile Pile (SWMU-3) from impacting Walltown Branch (SWMU-7), located at the eastern toe of the Ceramic Tile pile, Walltown Branch was enclosed in pipe in 1992/1993 by the City of Lexington under a Nationwide 26 permit from the USACE. This permit was issued based on the determination by the USACE that no significant wetlands were present at the site (Booz Allen, 2004). The enclosure included construction of a 36-inch RCP surrounded by #57 stone, a geotextile layer cap, and a compacted silty clay to clayey silt cover. This area is inspected quarterly by Conduex/Mannington personnel as part of the Post-Closure Care Plan. It is also inspected annually by a NCDEQ RCRA Compliance inspector. At the time the piping was installed at Walltown Branch, a permanent 25-foot easement was conveyed to the City of Lexington.

B-4b(1)(a) Floodproofing and Flood Protection

As indicated in Section B-4b (1), Walltown Branch was enclosed in 36-inch RCP in 1992/1993 by the City of Lexington under a Nationwide 26 permit from the USACE. No additional information is provided regarding floodproofing or flood protection.

B-4b(1)(b) Flood Plan

As this is a closed facility, the closed surface impoundments (Sludge Ponds) and closed landfill (Ceramic Tile Pile) will remain in-place. These units are monitored and maintained to protect the integrity of the final cover. There are no plans to remove hazardous waste.

B-4b (2) Plan for Future Compliance with Floodplain Standard

The portion of the Facility within the 100-year flood zone is under local enforcement by the Davidson County Planning and Zoning Department who is responsible for the management of the permit. Any compliance issues would be handled by Davidson County.

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Lexington, Davidson County, North Carolina
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B-4b (3) Waiver for Land Storage and Disposal Facilities

This is not applicable as a waiver is not being sought.

B-4c Additional North Carolina Location Standards

The two regulated SWMUs located at the Facility were closed in accordance with NCDEQ approved Closure Plans. The Certification for Closure for SWMU-2 was submitted on November 9, 2005 and the Section accepted closure in place for the two Sludge Settling Ponds on February 1, 2006. The closure certification with waste in place for SWMU-3 was certified and submitted on April 26, 2004 and accepted by the NCDEQ on March 14, 2005. As both of these units have been closed in place, the Facility is not required to meet these requirements.

This section addresses specific North Carolina standards for hazardous waste management facilities as outlined in 15A NCAC 13A.0109(r)(2), .0113(c)(3), and .0113(c)(5).

| Regulation | Description | Meets Standard |
|-----------------------|---|--|
| 13A.0109(r)(2) (A) | 0.25-mile from institution | No, South Lexington School is located less than 0.25 mile to the northeast beyond NC Highway 8. |
| (B) | 50-foot separation from property line | No, both HWMUs are located just inside the northern property line. |
| (C)(i) | Hazardous waste 200 feet from the property line | No, both HWMUs are located just inside the northern property line. |
| (C)(ii) | 10 feet above historic high groundwater table | No, bottoms of both SWMU-2 and SWMU-3 are located within 10 feet of the historic high groundwater level. |
| (C)(iii) | Drinking water wells greater than 1,000 feet | Uncertain, there are wells currently located within 1,000 feet of the Facility, but by City Ordinance these are not to be used for drinking water, and municipal drinking water is supplied for use. |
| (D) | Liquid Waste | Facility waste is not applicable. |
| 13A.0109(r)(4)(A)(i) | Recharge Area of an aquifer which is a sole-source drinking water aquifer | Not Applicable, aquifer is not a sole-source drinking water aquifer. |
| 13A.0109(r)(4)(A)(ii) | Within 200 feet of a surface water stream | The HWMUs are within 200 feet of a surface water stream (e.g. Walltown Branch); however, they are closed and cannot be moved. |

*RCRA Part B Post-Closure Permit Application
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March 6, 2017*

| Regulation | Description | Meets Standard |
|------------------------|--|---|
| 13A.0109(r)(4)(A)(iii) | Discharge to WS-1, WS-11 or SA waters or Class III Reservoir | Walltown Branch is the discharge feature from the Facility and is considered a Class C surface water stream and not WS-1, WS-11, or SA waters or Class III Reservoir. |
| 13A.0109(r)(A)(4)(iv) | Discharge to watershed for a WS-1, WS-11 or SA waters or Class III Reservoir | Walltown Branch is the discharge feature from the Facility and is considered a Class C surface water stream and does not discharge to a watershed for a WS-1, WS-11, or SA waters or Class III Reservoir. |
| 13A.0109(r)(A)(4)(v) | 200 feet of a 100-year flood hazard | The HWMUs are located within 200 feet of a 100-year flood hazard; however, they are closed and cannot be moved. |
| 13A.0109(r)(A)(4)(vi) | Within 200 feet of a seismically active area | The HWMUs are not located within 200 feet of a seismically active area. |
| 13A.0109(r)(A)(4)(vii) | Within 200 feet of a mine, cave, or cavernous bedrock | The HWMUs are not located within 200 feet of a mine, cave, or cavernous bedrock. |

In order to obtain additional information regarding the location of the Facility as outlined in 15A NCAC 13A .0113(c)(3), and .0113(c)(5), the following state and/or local agency representatives were contacted and asked to provide information regarding wetlands, endangered species habitats, parks, forests, wilderness areas, historical sites, mines and air quality:

- The NCDPCPA, NHP was contacted by electronic mail on January 23, 2017 for information regarding endangered species habitats, parks, forests, wilderness areas, and historical sites. As of March 1, 2017, the NCDPCPA, NHP has not responded to this request in sufficient time to be included in this report.
- Ms. Anita Barnett with the NPS, Public Affairs Office, was contacted by electronic mail on January 23, 2017 and by telephone on January 30, 2017 for information regarding National Seashore, Lakeshore, and River Recreational Areas, National Parks and Monuments, and Federal Designated Wild & Scenic Rivers. As of March 1, 2017, an NPS representative has not responded to this request in sufficient time to be included in this report.
- Ms. Heather Luczak with the US Forest Service, was contacted by telephone and electronic mail on January 23, 2017 and January 24, 2017, respectively for information regarding Designated and Proposed Federal Wilderness and Natural Areas, National Preserves and Forests, Federal Land Designated for the Protection of Natural Ecosystems. Ms. Luczak

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March 6, 2017*

responded by electronic mail stating none of these sensitive environments were located within a 1.0-mile radius of the Facility.

- Ms. Melanie Williams with the NCDWR, was contacted by electronic mail on January 24, 2017 for information regarding State-designated areas for protection or maintenance of aquatic life (Clean Water Act 305b Report). As of March 1, 2017, an NCDWR representative has not responded to this request in sufficient time to be included in this report.
- Mr. Tom James with the NCDFR, was contacted by telephone on January 23, 2017 for information regarding State Preserves and Forests. As of March 1, 2017, an NCDFR representative has not responded to this request in sufficient time to be included in this report.
- Ms. Leigh Mann with the USFWS was contacted by electronic mail on January 23, 2017 for information regarding endangered species. Mr. Allen Ratzlaff, a Fish and Wildlife Biologist with the USFWS, responded electronically stating “no federally listed species or their habitats occur in the project area. Therefore, we believe the requirements under Section 7 of the Endangered Species Act of 1973 are fulfilled.”
- The NCDNCR was contacted by electronic mail on January 24, 2017 for information regarding National and State Historical Sites. Ms. Ramona M. Bartos responded electronically stating “We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.”
- Mr. David Cox with the NC Wildlife Resources Commission was contacted by electronic mail on January 24, 2017 for information regarding any National or State Wildlife Refuges, State lands designated for wildlife or game management, Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or areas in lakes in which fish spend extended periods of time, or spawning areas critical for the maintenance of fish/shellfish species within river or lake waters. Ms. Olivia Munzer, Western Piedmont Habitat Conservation Coordinator, responded electronically stating “There are no national refuges or state-owned, wildlife-designated or management lands within 1.0 mile of the site. However, lands managed by Davidson County as Open-Space are located with 1.0 mile of the site. There are no migratory or feeding grounds for anadromous fish or spawning areas critical for the maintenance of fish/shellfish species, or large lakes or reservoirs with areas that fish spend extended periods of time occur[sic] within 1.0 mile of the site. There is a historical record of the Carolina birdfoot-trefoil (*Acmispon helleri*), a state species of special concern-vulnerable, within 1.0 mile of the site. A current record of the northern-long eared bat (*Myotis septentrionalis*), a state significantly rare and

federally threatened species, occurs in Davidson County with no specific location identified. Therefore, the northern-long eared bat may be present or within 1.0 mile of the site. As such, consultation with the USFWS may be required.”

- Ms. Bridget Munger with the NC Department of Energy, Mineral and Land Resources was contacted by electronic mail on January 25, 2017 for information regarding any active or inactive mines within a 1.0-mile radius of the Facility. Ms. Munger returned a letter by electronic mail including a list of active and inactive mines in Davidson County. None of the mines listed appear to be located within a 1.0-mile radius of the Facility.
- Ms. Jean Gibby with the USACE was contacted by telephone on January 30, 2017 for information regarding the 1992 Permit for piping in Walltown Branch and any wetlands within a 1.0-mile radius of the Facility. Ms. Gibby returned a letter by electronic mail stating “I have looked at the map and there is no record in our system about the town ever having acquired a permit for the fill at the referenced facility. As I had mentioned to you, we had permits back in 1992 that would have allowed such activities. There is a site off of Cotton Grove Road that had a permit and that stream flows from that property through the referenced property. In our conversation, I missed the fact that you desire to know about jurisdictional features within a 1-mile radius of the project. I am unable to do anything more than what you likely could do which is to review USGS topo maps and NRCS soil maps along with NWI maps.”
- Air quality information for the Lexington area was obtained from www.usa.com. The website indicates the AQI for the calendar year 2009, the most recent data available, was 39. This AQI is used by the US EPA in issuing standardized public health warnings. AQI values between 0 and 50 are considered good.

Documentation of all correspondence is provided in Appendix B-2.

B-5 Additional North Carolina Requirements

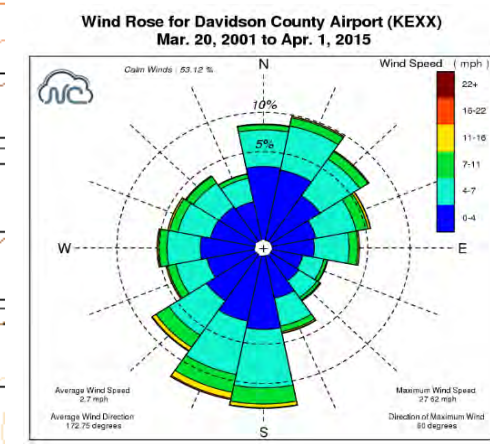
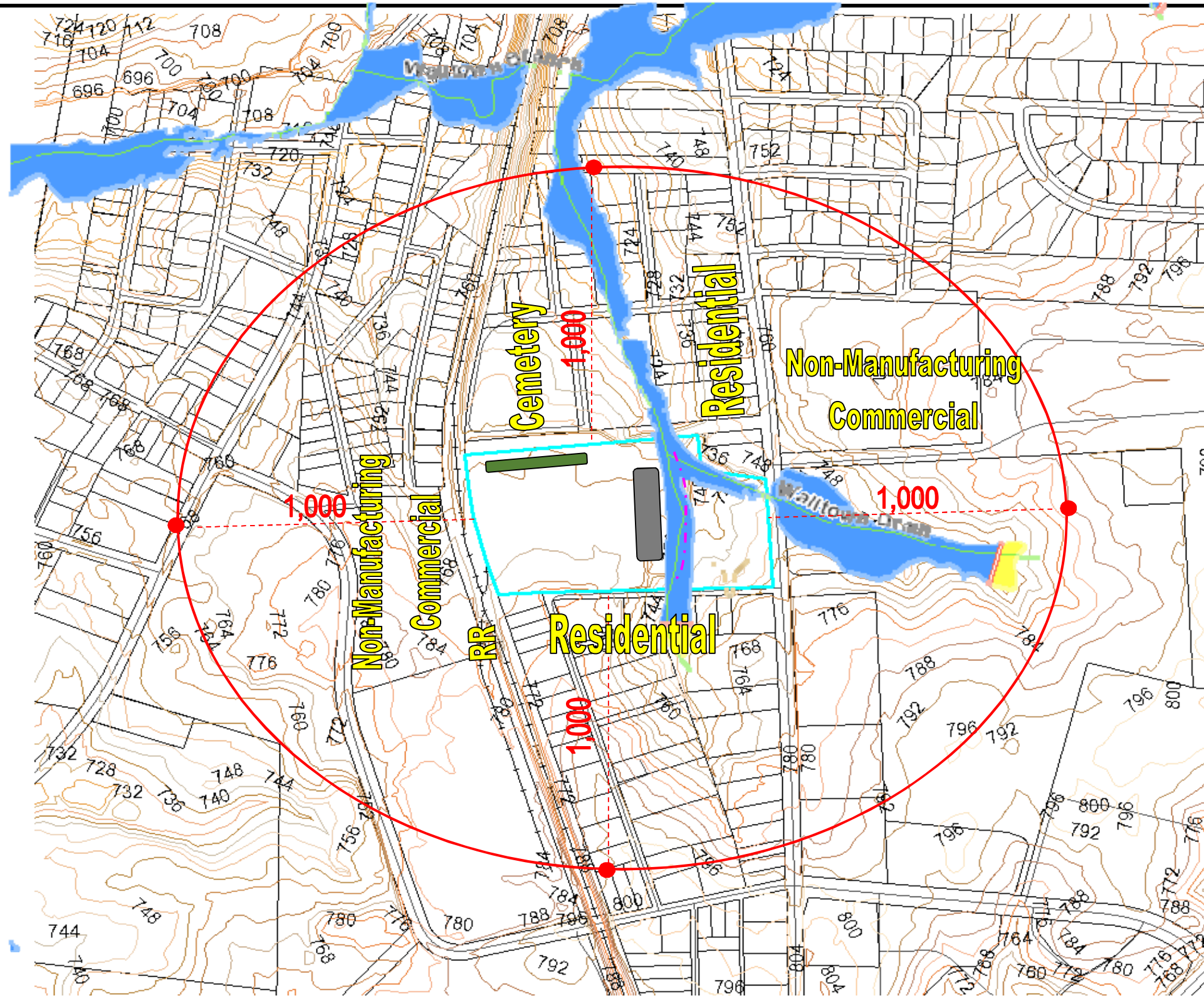
B-5b Public Participation for New Facilities

This section is not applicable as this is not a new facility.

Part B Figures



| | | | |
|-----------------------------|-----------------------------|-------------------|---|
| Job No. R1-21 | Topo Quad Lexington West | Date 2.21.2017 | Title Project Location Map |
| File Name Part B Fig B-1 | Figure B-1 | Scale | Project Former Porcelanite Facility Lexington, North Carolina |



LEGEND

- Former Sludge Pond Area
- Former Ceramic Tile Pile
- Walltown Branch
- 100-Year Floodplain
- Property Boundary



| | | | | | | | |
|-----------|---------|-------------|---------------------|-------|-----------|---------|--|
| Job No. | R1-21 | Base Figure | Davidson County GIS | Date | 2/22/2017 | Title | 1,000-Foot Radius Facility Location Map |
| File Name | R15-004 | Figure | B-2 | Scale | as shown | Project | Former Porcelanite Facility Lexington, North Carolina |



WATERS EDGE ENVIRONMENTAL, LLC

| | | | | |
|----------------|-------------------|---------------|--------------|--|
| <i>Author</i> | <i>Drawing</i> | <i>Layers</i> | <i>Date</i> | <i>Title</i> |
| | 15-006 F05 | | 2/24/2017 | SWMU-2 and SWMU-3 Location Map |
| <i>Job No.</i> | <i>Image Date</i> | <i>Figure</i> | <i>Scale</i> | <i>Project</i> |
| R1-21 | 7.10.2010 | B-3 | unknown | Former Porcelanite Facility Lexington, North Carolina |



| | | | | |
|---------|----------------|--------|-----------|--|
| Author | Drawing | Layers | Date | Title |
| | 15-006 Fig B-4 | | 2/24/2017 | SWMU and AOC Location Map |
| Job No. | Image Date | Figure | Scale | Project |
| R1-21 | 7.10.2010 | B-4 | unknown | Former Porcelanite Facility Lexington, North Carolina |

Part B Appendices

Appendix B-1
Booz Allen 2005 RFA



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

February 16, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Tony Shaw
Environmental/ Safety Manager
Porcelanite, Inc.
1327 Lincoln Drive
High Point, NC 27260-9945

Re: RCRA Facility Assessment Report
Porcelanite, Inc.
Lexington, North Carolina
EPA ID# NCD 986 181 451

Dear Mr. Shaw:

Enclosed is the RCRA Facility Assessment (RFA) Report for Porcelanite, Inc. This RFA was prepared by EPA Region 4.

If you have any questions, please contact Karim Pathan at (919) 733-4996 extension 228.

Sincerely,

Karim Pathan
Project Manager
Facility Management Branch
Hazardous Waste Section

Enclosures

cc: Jon Johnston, US EPA, Region 4
Ernie Lawrence

rc: Harold McCarty
Robert L. Glaser
Karim Pathan

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-733-4996 \ FAX 919-715-3605 \ Internet <http://wastenotnc.org>

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RCRA FACILITY ASSESSMENT REPORT

Porcelanite, Inc.
NCD 986 181 451

20 Victor Street
Lexington, North Carolina

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

| | |
|----------------------|---------------------|
| Work Assignment No.: | R04804-1 |
| Contract No.: | 68-W-02-17 |
| Prepared By: | Booz Allen Hamilton |
| Booz Allen WAM: | Jeremy Hogard |
| Telephone No.: | 404-658-8054 |
| EPA WAM: | Robert Morris |
| Telephone No.: | 404-562-8470 |

January 19, 2005

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Attachment 1 – Solid Waste Management Unit (SWMU) and Area of Concern (AOC) List

Attachment 2 – Photographic Log

Attachment 3 – VSI Logbooks

1.0 EXECUTIVE SUMMARY

The first step in the Resource Conservation and Recovery Act (RCRA) corrective action process is the RCRA Facility Assessment (RFA). The RFA is conducted to assess if a release of hazardous waste or hazardous constituents has occurred from solid waste management units (SWMUs) and to identify potential area of concern (AOCs) at the facility. The main components of an RFA are to identify and gather information on releases at the RCRA facility; to evaluate SWMUs for releases to all media (groundwater, surface water, air, and soil); and to make preliminary determinations regarding releases of concern and the need for further action and interim measures at the facility.

An RFA is currently being conducted for the Porcelanite, Inc., (Porcelanite) facility located in Lexington, North Carolina. A file search of U.S. Environmental Protection Agency (EPA) Region 4 and North Carolina Department of Environment and Natural Resources (NCDENR) file material for the site was conducted in November 2003. Following completion of the file search, a preliminary review (PR) of the file material was conducted to develop an understanding of the site prior to conducting the visual site inspection (VSI). A VSI of the Porcelanite facility was conducted on September 30, 2003, to address information gaps identified during the PR and to identify and document information associated with all SWMUs identified in the PR. Each SWMU identified during the PR was inspected and a meeting with facility representatives was conducted to obtain additional information. This report outlines the findings of the PR and the VSI.

The Porcelanite facility is an inactive ceramic tile manufacturing facility located at 20 Victor Street, Lexington, North Carolina, in Davidson County. The geographical location of the facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The location of the facility is shown on Figure 1. The Porcelanite facility is bounded on the north by the Charles Avenue right of way and the Lexington City Cemetery; on the east by Cotton Grove Road (North Carolina Highway 8); on the south by Victor Street (State Road 1261); and on the west the Winston-Salem southbound railway and undeveloped wooden property. Several residential homes are located immediately to the south of the facility property, across Victor Street. The entire Porcelanite property comprises approximately 7.5 acres and includes a 126,000 square foot process building that was used for manufacturing and office space, a small maintenance garage, and a small guard shack. The facility property is surrounded by a seven-foot chain-link fence topped with barbed wire and access is controlled by a key-coded security gate (Aquaterra, 1997b; Booz Allen, 2003).

Mid-State Tile began operations at the Porcelanite property in approximately 1960. Prior to use by Mid-State Tile, the property was undeveloped, forested land. According to facility representatives, Mannington Ceramic Tile (Mannington) began operating at the site in 1985. Mannington ceased operations at the Porcelanite site and sold the property to P&M Tile, Inc., in 1994. P&M Tile, Inc., was later renamed Porcelanite, Inc. Porcelanite is currently the owner of the facility and property; however, Mannington retained responsibility for closure of the Ceramic Tile Pile (SWMU 3) and the Sludge Settling Ponds (SWMU 2). The tile manufacturing

operations at the Porcelanite facility were shut down in 1999. Shortly after the operations were terminated by Porcelanite, the tile manufacturing equipment was dismantled, sold, and removed from the property (Aquaterra, 1997b; Booz Allen, 2003).

According to facility representatives, the tile manufacturing process conducted at the Porcelanite property began when raw materials, such as clay, silica, feldspar, zinc oxide, limestone, zirconium silicate, and glass frit, were trucked to the site and stored in silos. These materials were then blended in various proportions and sent via belt conveyors to the Ball Mills, where they were mixed with water. After mixing, the materials were transferred to the spray dryer for drying. Using belt conveyors, the materials were then sent to the tile presses where they were formed into various sizes of tile. Three automatic presses for floor tile and as many as twenty small presses for producing trim tile were operated at the facility. After pressing, the green tiles were heated to remove moisture to less than one percent and then sent to the spray lines to receive color. From the spray lines, the tiles were sent through one of three kilns where they were fired at approximately 2000 degrees Fahrenheit. Tiles removed from the kilns were allowed to cool before being boxed for shipment. The finished products were sold to retail tile outlets. The Standard Industry Classification (SIC) code listed on the facility's permit application was 3253 and the facility was operated for the production of glazed ceramic floor and wall tile (Aquaterra, 1997b; Booz Allen, 2003, Mannington, 2004).

Based on the PR and information gathered during the VSI, a total of 11 SWMUs and three areas of concern (AOCs) were identified at the Porcelanite facility. The names of these SWMUs and AOCs are listed in Attachment 1 and their locations are identified on Figure 2. In addition, an overview description of the SWMUs and AOCs is provided in Tables 1 and 2 and a more detailed discussion is provided in Section 6.0.

**Table 1
Solid Waste Management Units**

| SWMU # | SWMU Name | Type of Unit | Period of Operation | Waste Managed | Recommendation |
|----------------|--|--|---------------------------|--|-----------------------|
| 1a, 1b, 1c, 1d | Wastewater Pretreatment System | a. Precipitating Tanks b. Filter Press c. Holding Tanks d. Sump | 1989 to present | Wastewater containing RCRA metals such as lead | Confirmatory Sampling |
| 2a, 2b | Sludge Settling Ponds | a. Pond 1 b. Pond 2 | 1972 to 1989 | Wastewater containing RCRA metals such as lead | NFA |
| 3 | Ceramic Tile Pile | Waste Pile | 1950s or 1960s to present | Tile fragments containing metals such as lead and chromium; sludge from Sludge Settling Ponds (SWMU 2) containing RCRA metals such as lead | NFA |
| 4 | 20 Cubic Yard Sludge Roll-Off Container | Roll-Off Container | Unknown to present | Sludge from Sludge Settling Ponds (SWMU 2) containing RCRA metals such as lead | No Further Action |
| 5 | 20 Cubic Yard Floor Sweepings Roll-Off Container | Roll-Off Container | Unknown to 1999 | Floor sweepings including tile fragments containing RCRA metals such as | No Further Action |

| SWMU # | SWMU Name | Type of Unit | Period of Operation | Waste Managed | Recommendation |
|----------|--|---|---------------------------|--|-----------------------|
| 6 | Baghouse | Baghouse | 1960s to 1999 | Dust generated during tile pressing operations containing RCRA metals such as lead | Confirmatory Sampling |
| 7 | Walltown Drain | Drainage Ditch | 1960s to present | Surface water runoff from the Ceramic Tile Pile (SWMU 3) potentially containing RCRA metals such as lead | RFI |
| 8 | Off-Specification Tile Accumulation Roll-off Container | Roll-Off Container | Unknown to 1999 | Broken and off-specification tile | No Further Action |
| 9 | Filter Cake Waste Pile Area | Waste Pile | 1988 or 1989 to present | Filter cake of solids contained in wastewater treated by Wastewater Pretreatment System (SWMU 1) | No Further Action |
| 10a, 10b | Maintenance Building Waste Management Areas | a. Drum Storage Area b. Parts Washer | 1960s to 1999 | Used oil and degreasing solvents | No Further Action |
| 11 | Spray Line Area Sumps | Sumps | 1960s or 1970s to present | Wastewater containing RCRA metals such as lead | Confirmatory Sampling |

**Table 2
Areas of Concern**

| AOC # | AOC Name | Type of Unit | Period of Operation | Waste Managed | Release Potential |
|-------|---|-----------------|---|--|-----------------------|
| 1 | Area of Discharge from Settling Ponds into Rat Springs Branch | NPDES Discharge | 1972 to present (No wastewater discharge received after 1990) | Wastewater and runoff containing RCRA metals such as lead | RFI |
| 2 | Broken Ceramic Tile Roadway | Road | Unknown to present | Tile fragments containing RCRA metals such as lead | Confirmatory Sampling |
| 3 | Former UST and AST Area | USTs and ASTs | Unknown (Suspected 1960s) to 1989 | No wastes managed but stored gasoline, fuel oil #2, and diesel | No Further Action |

2.0 INTRODUCTION

The 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provide authority in the RCRA program to assist the U.S. Environmental Protection Agency (EPA) in implementing corrective action at RCRA facilities. RCRA facilities include all facilities that currently treat, store, or dispose of hazardous waste (or have done so in the past) as regulated under RCRA. The first step in the RCRA corrective action process is the RCRA Facility Assessment (RFA). The RFA is conducted to assess if a release of hazardous waste or hazardous constituents has occurred from solid waste management units (SWMUs) and to identify potential area of concern (AOCs) at the facility. A SWMU is defined as any discernable waste management unit at a RCRA facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for management of solid and/or hazardous waste. An AOC is an area where evidence of spills or other releases of waste have occurred resulting from waste management activities that may not fit the definition of a SWMU release. The main components of an RFA are to identify and gather information on releases at the RCRA facility; to evaluate SWMUs for releases to all media (groundwater, surface water, air, and soil); and to make preliminary determinations regarding releases of concern and the need for further action and interim measures at the facility.

Under Work Assignment No. R04804-1, EPA Region 4 requested that Booz Allen Hamilton (Booz Allen) conduct an RFA at the Porcelanite, Inc., (Porcelanite) facility located in Lexington, North Carolina. This RFA report outlines the findings of the preliminary review (PR) and the visual site inspection (VSI). The purpose of the RFA was to identify, gather information on, and evaluate the potential for releases to the environment from AOCs, including SWMUs, where releases of hazardous constituents may have occurred in the past.

The specific objectives of the RFA are to:

- Perform a PR of the file material and conduct a VSI to assess the potential for release of hazardous wastes or hazardous constituents from each SWMU and AOC
- Identify all SWMUs and AOCs located at the Porcelanite facility in Lexington, North Carolina
- Make preliminary determinations regarding releases of concern and the need for further actions, including confirmatory sampling (CS), RCRA facility investigations (RFIs) and/or interim measures (IMs) for each SWMU at the facility
- Rank each facility as a high, medium, or low priority facility utilizing the RCRA National Corrective Action Prioritization System (NCAPS).

2.1 File search and Visual Site Inspection

A file search of EPA Region 4 and North Carolina Department of Environment and Natural Resources (NCDENR) file material for the site was conducted in November 2002. Following the completion of the file search, a PR of the file material was conducted in July and August 2003 to develop an understanding of the site prior to conducting the VSI. A list of references used to prepare this report is provided in Section 7.0.

Primarily, the PR focused on past and current facility waste management practices involving waste generation, treatment, and storage and/or disposal. The PR also included a review of other activities and areas, not involving waste, which may have exhibited a potential for releasing contaminants to the environment (e.g., drum, raw materials, or product storage areas, fuel storage or transfer areas; and other areas of contamination). As a result of the PR, a tentative list of SWMUs was identified and used to plan the VSI. The PR also identified additional information that needed to be gathered during the VSI to fully assess the potential for releases from SWMUs.

On September 30, 2003, a three-person EPA/contractor team (John Johnston, EPA Region 4, and John Belin and Jeremy Hogard, Booz Allen Hamilton) performed the VSI. Also present were Bob Glazer and **Karim Pathan** from NCDENR. The primary facility participants were Tony Shaw for Mannington and Phil Rhan, a consultant for Mannington from Waters Edge Environmental, LLC. The purpose of the VSI was to address information gaps identified during the PR and to identify and document information associated with all SWMUs identified in the PR. Each SWMU identified during the PR was inspected and a meeting with facility representatives was conducted to obtain additional information (Booz Allen, 2003).

3.0 FACILITY DESCRIPTION

The EPA ID Number for the facility is NCD 986 181 451. The Porcelanite facility is an inactive ceramic tile manufacturing facility located at 20 Victor Street, Lexington, North Carolina, in Davidson County. The geographical location of the facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The location of the facility is shown on Figure 1. The Porcelanite facility is bounded on the north by the Charles Avenue right of way and the Lexington City Cemetery; on the east by Cotton Grove Road (North Carolina Highway 8); on the south by Victor Street (State Road 1261); and on the west the Winston-Salem southbound railway and undeveloped wooden property. Several residential homes are located immediately to the south of the facility property, across Victor Street. The entire Porcelanite property comprises approximately 7.5 acres and includes a 126,000 square foot process building that was used for manufacturing and office space, a small maintenance garage, and a small guard shack. The facility property is surrounded by a seven-foot chain-link fence topped with barbed wire and access is controlled by a key-coded security gate (Aquaterra, 1997b; Booz Allen, 2003).

4.0 DESCRIPTION OF SITE ACTIVITIES AND HISTORY

Mid-State Tile began operations at the Porcelanite property in approximately 1960. Prior to use by Mid-State Tile, the property was undeveloped, forested land. According to facility representatives, Mannington Ceramic Tile (Mannington) began operating at the site in 1985. Mannington ceased operations at the Porcelanite site and sold the property to P&M Tile, Inc., in 1994. P&M Tile, Inc., was later renamed Porcelanite, Inc. Porcelanite is currently the owner of the facility and property; however, Mannington retained responsibility for closure of the Ceramic Tile Pile (SWMU 3) and the Sludge Settling Ponds (SWMU 2). The tile manufacturing operations at the Porcelanite facility were shut down in 1999. Shortly after the operations were terminated by Porcelanite, the tile manufacturing equipment was dismantled, sold, and removed from the property (Aquaterra, 1997b; Booz Allen, 2003).

According to facility representatives, the tile manufacturing process conducted at the Porcelanite property began when raw materials, such as clay, silica, feldspar, zinc oxide, limestone, zirconium silicate, and glass frit, were trucked to the site and stored in silos. These materials were then blended in various proportions and sent via belt conveyors to the Ball Mills, where they were mixed with water. After mixing, the materials were transferred to the spray dryer for drying. Using belt conveyors, the materials were then sent to the tile presses where they were formed into various sizes of tile. Three automatic presses for floor tile and as many as twenty small presses for producing trim tile were operated at the facility. After pressing, the green tiles were heated to remove moisture to less than one percent and they were sent to the spray lines to receive color. From the spray lines, the tiles were sent through one of three kilns where they were fired at approximately 2000 degrees Fahrenheit. Tiles removed from the kilns were allowed to cool before being boxed for shipment. The finished products were sold to retail tile outlets. The Standard Industry Classification (SIC) code listed on the facility's permit application was 3253 and the facility was operated for the production of glazed ceramic floor and wall tile (Aquaterra, 1997b; Booz Allen, 2003; Mannington, 2004).

4.1 Waste Management Practices

Currently, the site is inactive and the only waste management unit that is operational is the Wastewater Pretreatment System (SWMU 1), which manages limited quantities of sanitary sewage before it is discharged directly to the City of Lexington sewer system.

Historically, the facility generated several waste streams when it was operated by Mannington and Porcelanite to produce ceramic tile. It should be noted that prior to March 1990, the raw materials (i.e., clay) and glazes used by Mannington in their ceramic tile manufacturing operations contained various metals, primarily lead and chromium, which were considered hazardous. Several different waste characterizations performed on the waste tile fragments generated by the facility prior to March 1990 confirmed that leachable lead concentrations exceeded regulatory levels for the toxicity characteristic using either the Extraction Procedure (EP) Toxicity Test or the Toxicity Characteristic Leaching Procedure (TCLP). Therefore, the

waste tile fragments are characteristic for lead (D008). By March 1990, Mannington had modified its processes to utilize raw materials and glazes that contained only de minimis quantities of metals.

According to a 1990 report entitled "Existing Waste Stream, Solid Waste Determination" prepared by NCDENR, the waste streams generated by the facility in 1990 were categorized into five separate waste streams:

- Unfired Glaze Ceramic Tile – This waste stream consisted of unfired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. Prior to 1990, this waste stream was disposed of in the Ceramic Tile Pile (SWMU 3). From 1990 until the facility stopped operating in 1999, this waste stream was stored on site before it was disposed of in an off-site landfill. According to correspondence from NCDENR to Mannington in 1990, ceramic tile manufacturing operations generated as much as 20,000 pounds per week of unfired glaze ceramic tile.

- Fired Glaze Ceramic Tile – This waste stream consisted of fired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. Prior to 1990, this waste stream was disposed of in the Ceramic Tile Pile (SWMU 3). From 1990 until the facility stopped operating in 1999, this waste stream was stored on site before it was disposed of in an off-site landfill. According to correspondence from NCDENR to Mannington in 1990, ceramic tile manufacturing operations generated as much as 110,000 pounds per week of fired glaze ceramic tile.

- Ceramic Process Glaze Overspray Liquid Wastewater – This waste stream consists of cooling and wash water from the various tile manufacturing process. The wastewater contains high concentrations of solids, which contain metals. Between 1972 and 1989, the liquid wastewater was passed through two Sludge Settling Ponds (SWMU 2) before it was discharged to Rat Springs Branch. After 1989, a Wastewater Pretreatment System (SWMU 1) processed the liquid wastewater before discharging it to the City of Lexington sewer system.

- Liquid Wastewater Pretreatment System Filter Cake – Prior to discharge, the liquid wastewater passes through the Wastewater Pretreatment System (SWMU 1), which includes a filter press as the final pretreatment step. The filter cake is generated by the filter press and is stored on site before it is disposed of in an off-site landfill. According to correspondence from NCDENR to Mannington in 1990, ceramic tile manufacturing operations generated as much as 22,000 pounds per week of filter cake waste.

- Floor Sweepings – This waste stream consists of daily sweepings from the floor of the process area in the main building. This waste stream was stored on site before it was disposed of in an off-site landfill. According to correspondence from NCDENR to Mannington in 1990, ceramic tile manufacturing operations generated as much as 5,000

pounds per week of floor sweepings.

In 1990, samples were collected from each of these waste streams. The samples were analyzed for RCRA primary metals in extracted leachate (EP Toxicity Test via EPA Method 1310), volatile organic compounds (VOCs) (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The samples collected from the fired glaze ceramic tile waste stream did not contain any constituents at concentrations above detection limits. The unfired glaze ceramic tile and the filter cake waste stream samples contained bis(2-ethylhexyl)phthalate at concentrations of 5.6 mg/kg and 1.5 mg/kg, respectively. The floor sweepings samples contained 1,1,1-trichloroethane (0.087 mg/kg), bis(2-ethylhexyl)phthalate (15 mg/kg), and benzyl butyl phthalate (3.6 mg/kg). In addition, the extractable leachate from the floor sweepings sample also contained 0.84 mg/L of lead. All other constituents in all of the waste stream samples were not detected above detection limits (NCDENR, 1990b, 1990c, 1990d, 1993; Aquaterra, 1990b, 1997b).

Prior to January 1, 1989, wastewater treatment conducted at the Porcelanite facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU 2), which allowed solids to settle prior to discharge. Wastewater was generated, primarily during the glazing of ceramic tile at the spray lines. After wastewater had passed through the second settling pond, Mannington discharged wastewater directly into Rat Spring Branch of the Yadkin-Pee Dee River basin, pursuant to National Pollutant Discharge Elimination System (NPDES) permit #NC0006459 (ENSCI, 1992).

On January 1, 1989, after installation of the Wastewater Pretreatment System (SWMU 1), Mannington stopped discharging to Rat Springs Branch and commenced discharging to the City of Lexington sewer system. The pretreatment system installed by Mannington consisted of wastewater holding tanks and open-top solids precipitation tanks with pH control. The solids generated by the precipitation tanks are processed by a filter press. According to facility representatives, the filter cake is stored on site before it is transported to the Davidson County Sanitary Landfill for disposal. According to facility representatives, the solids generated by the filter press are characterized annually to ensure that the wastes are nonhazardous (NCDENR, 1990b, 1990c, 1990d, 1993; Aquaterra, 1990b, 1997b).

Once the wastewater system was operational, the Sludge Settling Ponds (SWMU 2) were no longer needed. As a result, after soil, sludge, and groundwater samples were collected, the Sludge Settling Ponds (SWMU 2) were closed in 1993 by removing the sludge, stabilizing the sludge, returning some of the sludge to SWMU 2, and constructing a cap over the unit to include an asphalt roadway used by facility personnel. According to the closure plan, some of the sludge from the Sludge Settling Ponds (SWMU 2) was deposited in the Ceramic Tile Pile (SWMU 3) and some was taken to the Davidson County landfill. A closure report for the Sludge Settling Ponds (SWMU 2) was submitted to NCDENR in May 1992 and was approved in August 1992 (ENSCI, 1992; NCDENR, 1990b, 1990c, 1990d, 1993; Aquaterra, 1990b, 1997b).

The Ceramic Tile Pile (SWMU 3) received glazed and unglazed, fired and unfired ceramic tile scraps and wastes generated by the manufacturing process operated by Mannington and Porcelanite. In addition, some sludge from the two former Sludge Settling Ponds (SWMU 2) was deposited in SWMU 3 during closure activities. Both the sludge from the Sludge Settling Ponds (SWMU 2) and the glazed and unglazed, fired and unfired ceramic tile scraps and wastes deposited in the Ceramic Tile Pile prior to March 1990 contained significant concentrations of metals, primarily lead and chromium, that are considered hazardous. According to the available file material, as much as 20,000 pounds per week of unfired glaze ceramic tile and 110,000 pounds per week of fired glaze ceramic tile were deposited in the Ceramic Tile Pile (SWMU 3). Since 1990, waste tile has been stored on site in the Off-Speculation Tile Accumulation Roll-Off Container (SWMU 9) before it is disposed of off site in a solid waste landfill. Several assessments of the tile pile waste materials conducted by Porcelanite indicated that lead, methylene chloride, and bis(2-ethylhexyl)phthalate were the primary constituents detected in the tile pile waste materials. Several radionuclides were also detected, including gross alpha, gross beta, radium 226, radium 228, and uranium 238; however, concentrations of these constituents were found to be consistent with concentrations detected in background soil samples from the area (NCDENR, 1990b, 1990c, 1990d, 1993; Aquaterra, 1990b, 1997b).

4.2 Regulatory History

The following is a list of significant regulatory events at the Porcelanite facility:

Prior to January 1, 1989, wastewater treatment conducted at the Porcelanite facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU 2), which allowed solids to settle prior to discharge. After wastewater treatment, Mannington discharged wastewater directly into Rat Spring Branch of the Yadkin-Pee Dee River basin, pursuant to NPDES permit #NC0006459 (ENSCI, 1992).

On February 26, 1990, Charles T. Main, Inc., performed a preliminary site assessment. Based on the findings of this site assessment and the fact that soil and groundwater at the site had likely been impacted, on June 11, 1990, NCDENR issued a Compliance Order with Administrative Penalty (NCDENR, 1990b).

On July 5, 1990, Mannington submitted a consolidated Hazardous Waste Permit Application, Part A to EPA. This permit application listed two hazardous waste management units – a 69,300 cubic yard waste pile and a 8,240 cubic yard surface impoundment. Both units were listed as managing D008 wastes, which are wastes that exhibit the toxicity characteristic for lead. These two units are reported to be the Ceramic Tile Pile (SWMU 3) and the Sludge Ponds (SWMU 2), respectively (Mannington, 1990).

On September 24, 1991, NCDENR issued a Notice of Violation to Mannington for several violations of groundwater monitoring requirements documented during a comprehensive groundwater monitoring evaluation conducted on February 19, 1991 (NCDENR, 1991a).

On May 29, 1992, Mannington submitted a Hazardous Waste Permit Application, Part A, to EPA. This permit application provided the same information as the previous permit application; however, it also indicated that Mannington had two other environmental permits. The first permit listed was a publicly owned treatment works (POTW) permit with the City of Lexington. The second permit was Air Permit #5408R5, which was issued the City of Lexington. The permit application also lists a request for change in the air permit requirements. No other information regarding these permits is provided (Mannington, 1992).

In May 1992, Porcelanite submitted a Closure Plan for the Sludge Settling Ponds (SWMU 2) to NCDENR. On August 13, 1992, NCDENR provisionally approved the Closure Plan for the Settling Ponds. In July 1993, closure of the Sludge Settling Ponds (SWMU 2) was completed and a certified closure report was submitted to NCDENR. No approval of the certified closure report by NCDENR was identified in the available file material (ENSCI, 1992).

In July 1992, Phase I construction work was performed to stabilize the tile pile area/parking area. Phase II work was completed to pipe the Walltown Drain (SWMU 7) (Aquaterra, 1997a, 1997b).

Between 1992 and 1998, numerous investigations of the Ceramic Tile Pile (SWMU 3) were conducted. These included assessments of soil and groundwater, investigation and characterization of the wastes stored in SWMU 3, and performing a treatability study to evaluate possible remediation techniques for the Ceramic Tile Pile (SWMU 3) (Aquaterra, 1997a, 1997b).

According to facility representatives, "dirty" closure of the Ceramic Tile Pile (SWMU 3) was initiated in 1997, prior to approval from NCDENR, and was completed in 1999. The closure of SWMU 3 involved covering and grading the area around the unit to make it level with the facility parking lot, and installation of a vegetated/gravel cap over the impacted area. Recent correspondence to NCDENR from Porcelanite's consultants dated January 28, 2004, indicates that the closure plan is currently being reviewed and has gone through the public notice process (Aquaterra, 1997a, 1997b; Mannington, 2004).

5.0 ENVIRONMENTAL SETTING

5.1 Site Location and Setting

The Porcelanite facility is located at 20 Victor Street, Lexington, North Carolina, in Davidson County. The geographical location of the facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The location of the facility is shown on Figure 1. The Porcelanite facility is bounded on the north by the Charles Avenue right of way, the Lexington City Cemetery, and undeveloped wooded property, and on the east by Cotton Grove Road (North Carolina Highway 8). The facility is bounded on the south by Victor Street (State Road 1261) and on the west by the Winston-Salem southbound railway and undeveloped wooded property. The property is located in a relatively rural area but is zoned for light industrial use. The entire Porcelanite property

comprises approximately 7.5 acres and includes a 126,000 square foot building that was used for manufacturing and office space, a small maintenance garage, and a small security shack. The buildings located on the property are not currently in use (Aquaterra, 1997b; Booz Allen, 2003).

5.1.2 Land Use

The Porcelanite facility is currently inactive and has not been used for manufacturing activities in approximately four years. As a result, workers do not regularly occupy the property. According to facility representatives, the only workers who access the property at any time are remediation workers and consultants working on closure activities. In addition, there are no plans to reuse the property in the immediate future (Booz Allen, 2003).

The nearest residences to the facility property are located to the south, across Victor Street. Additionally, a residence and small convenience store is located on the property adjacent to the northeast corner of the facility property. These residences are located approximately 100 feet from the Ceramic Tile Pile (SWMU 3). A middle school is located across Cotton Grove Road, approximately 750 feet northeast of the Ceramic Tile Pile (SWMU 3) (Booz Allen, 2003).

According to the North Carolina Division of Parks and Recreation, no records of any rare or threatened species or critical habitats have been identified at the Porcelanite site. The closest recreational areas are Washington Park and Pool facility and a golf course located approximately 3,200 feet east of the facility (Aquaterra, 1997b).

5.1.3 Topography and Surface Water

The Davidson County area is characterized by gently rolling hills divided by small streams. The Porcelanite facility is situated on a hillside, above a small stream called Walltown Drain (SWMU 7). The elevation of the site varies from approximately 770 feet above mean sea level (MSL) to approximately 730 feet MSL at the Walltown Drain (SWMU 7). Walltown Drain (SWMU 7), a creek that flows northward through the eastern portion of the property, was previously piped to prevent surface water runoff from the Ceramic Tile Pile (SWMU 3) from entering the creek. At the time the piping was installed at Walltown Drain (SWMU 7), a permanent 25-foot easement was conveyed to the City of Lexington. A sanitary sewer line and storm sewer lines also run parallel to Walltown Drain (SWMU 7) northward across the eastern portion of the property and a permanent 25-foot easement for these lines was also conveyed to the City of Lexington (Aquaterra, 1997b).

Runoff from the site discharges primarily to the Walltown Drain (SWMU 7). The Walltown Drain runs north approximately 0.5 miles to Rat Springs Branch, which flows to the northwest approximately 2 miles to Swearing Creek, a tributary of the Yadkin River. As of 1997, the Winston-Salem Regional Water Quality Office classified Rat Springs Creek as a "C" surface water designation, which is applied to freshwater protected for secondary recreation, fishing, aquatic life propagation and survival, and wildlife (Aquaterra, 1997b).

The Walltown Drain (SWMU 7), located at the toe of the Ceramic Tile Pile (SWMU 3), was enclosed in pipe in 1992/1993 under a Nationwide 26 permit from the U.S. Army Corps of Engineers (USACE). This permit was issued based on the determination by the USACE that no significant wetlands were present at the site (Aquaterra, 1997b).

5.1.4 Geology and Hydrogeology

The Porcelanite site is located in the Lexington area of Davidson County, North Carolina, which lies within the eastern portion of the Charlotte litho-tectonic belt in the Piedmont Physiographic Province. This is a zone of regionally metamorphosed amphibolite facies igneous rocks, bounded on the east and west sides by shear zones. The site is underlain by Late Proterozoic-aged undivided metavolcanic rocks. Bedrock lithologies at the site consist of massive, quartz-potassium feldspar-muscovite granite to granodiorite that could be associated with the Pennsylvanian to Permian-aged Churchland Pluton or the Devonian-aged Yadkin Pluton. No significant ores deposits have been recognized or mined extensively in the immediate Lexington area. However, silver, lead, cobalt, zinc, gold and copper have been recognized and mined in areas located 5 to 20 miles south and east of the site (USEPA, 2002).

The predominant lithology at the site has been described as pink to tan, silty sand-textured residual soils (saprolite) weathered in place from the underlying bedrock. The saprolite grades from intensely weathered rock near the surface to slightly weathered rock at depth. In some areas, sandy clay and clayey sand soils have developed in the upper 5 to 10 feet of saprolite (USEPA, 2002).

Groundwater occurs in two interconnected zones underlying the site. These zones included the unconsolidated (saprolite) water table aquifer and the underlying fractured bedrock aquifer. Groundwater in the water table aquifer is transmitted in a generally laminar fashion through the B- and C- soil zone horizons. These zones tend to have a fairly uniform porosity and permeability and have a relatively large storage capacity in the regolith overlying fractured bedrock. The two water-bearing zones do not appear to have a confining unit separating them. The saprolite/regolith zone acts as the storage reservoir for the underlying bedrock zone, and recharges the bedrock aquifer in response to water withdrawal (USEPA, 2002).

Based on previous site investigations, groundwater saturated soils in the uppermost aquifer occur at a depth of about 5.5 to 24 feet below ground surface (bgs) and extend to the top of the partially weathered rock unit at a subsurface depth of between 27 and 50 feet. From previous investigations, groundwater in the water table aquifer was found to be flowing from the southwest towards the northeast under a hydraulic gradient of about 0.024 to 0.038 feet/foot. There is a pronounced flattening of the gradient in the area under the building, the parking lot, and the capped Ceramic Tile Pile (SWMU 3) before the gradient generally steepens on the northeastern side of the property as groundwater approaches the tributary stream known as the Walltown Drain branch (ENSCI, 1993).

According to a memorandum by NCDENR dated January 12, 1998, 19 residences were identified immediately north of the facility and at least seven of these residences have groundwater wells. Sampling data indicate that these wells have not been impacted; however, they are located hydraulically downgradient from the facility (NCDENR, 1998a).

Initially, groundwater monitoring wells were installed in September 1989 in response to a request by NCDENR to investigate possible groundwater contamination. It appears that these wells included MW-1 through MW-6. Prior to May 1992, MW-5 and MW-6 were abandoned. In April 1990, MW-7 and MW-8 were installed and MW-9 thru MW-13 were drilled at some point between 1990 and 1992. Well logs indicate that wells MW-14 through MW-26 were installed in August or September 1992. Well MW-28 was installed in June 1993. Wells MW-3A, MW-7A, MW-21A, MW-22A, and MW-23A were installed in September 1998. These wells were installed to replace wells that had been previously abandoned. MW-26A was installed in May 1999 to replace well MW-26, which was abandoned in 1996 or 1997 (USEPA, 2002).

Of the eighteen monitoring wells currently on site, fourteen are completed into the saprolite/shallow aquifer and wells MW-9, MW-11, MW-19, and MW-28 are completed in the bedrock/deeper saprolite aquifer. The wells are all 2-inch PVC with 5 to 15 feet of 0.010 slotted PVC screen (USEPA, 2002).

In November 1992, single slug tests were conducted on fifteen monitoring wells. Results from the tests indicated a derived aquifer permeability of 0.40 ft/d. Groundwater flow velocity was calculated to range from 0.030 ft/d to 0.054 ft/d. Groundwater flows toward the northeast at an average hydraulic gradient of 0.04 ft/ft. The gradient steepens on the northeastern side of the property as groundwater approaches the tributary stream known as Walltown Drain. Recharge to the water table zone apparently occurs as surface water infiltration over the topographically higher regions southwest of the site (USEPA, 2002).

The most recent groundwater sampling event conducted at the site occurred in March 2003 and involved sampling of 19 wells (MW-1, MW-3A, MW-7A, MW-8, MW-9D, MW-10, MW-11D, MW-12D, MW-12, MW-14, MW-18, MW-19D, MW-21A, MW-22A, MW-23A, MW-24, MW-25, MW-26A, and MW-28D). It should be noted that MW-13 could not be sampled because the well was found to be dry. Groundwater samples were analyzed for boron, cobalt, fluoride, lead, sulfate, iron, and aluminum. Results from analysis of the groundwater samples indicate that boron was detected in nine wells at concentrations exceeding the 15 North Carolina Administrative Code 2L drinking water standards (NC 2L DWS) of 0.32 mg/L (MW-3A, MW-9, MW-12, MW-14, MW-22A, MW-23A, MW-25, MW-26A, and MW-28). The maximum detected concentration was 32.1 mg/L in MW-26A, which is located northeast of the Sludge Settling Ponds (SWMU 2). In addition, lead was detected above the NC 2L DWS of 0.015 mg/L in one well (MW-14) at a concentration of 0.028 mg/L (Mannington, 2004).

6.0 SWMU AND AOC DESCRIPTIONS

Based on the PR and information gathered during the VSI, a total of 11 SWMUs and three areas of concern (AOCs) were identified at the Porcelanite facility. The names of these SWMUs and AOCs are listed in Attachment 1 and their locations are identified on Figure 2. Photographs of the SWMUs taken during the VSI are included in Appendix B.

6.1 SWMU 1 - Wastewater Pretreatment System

- a. Holding Tanks
- b. Precipitation Tanks
- c. Filter Press
4. Sump

TYPE OF UNIT: Wastewater Pretreatment System

PERIOD OF OPERATION: January 1989 to present

PHOTOGRAPH NUMBER(S): 24 through 30

PHYSICAL DESCRIPTION AND CONDITION:

Historically, wastewater generated by the tile manufacturing operations was discharged to the Sludge Settling Ponds (SWMU 2). In 1988, a substantial modification of the wastewater treatment system at the Porcelanite facility occurred – all wastewater that had previously been discharged to the Sludge Ponds (SWMU 2) was channeled to a new Wastewater Pretreatment System (SWMU 1) (ENSCI, 1993).

The Wastewater Pretreatment System (SWMU 1) is located in a 60-foot long by 30-foot wide by 25-foot high room in the northwest corner of the main process building. The floor of this room was covered in tile, and a sump six inches wide and 12 inches deep bisects the room into eastern and western halves. According to facility representatives, this sump collects wastewater that is spilled during treatment so it can be pumped back into the holding tanks. The two halves of the room form two distinct areas – the holding tank area in the eastern half and the precipitation tank/filter press area in the western half. The holding tank area is a rectangular area surrounded by a six-foot high, concrete secondary containment wall that is 55 feet long and 25 feet wide. This area contains two 3,000-gallon fiberglass tanks that receive wastewater from the process area. According to facility representatives, wastewater is primarily generated by spray lines used to cool the fired tile that exits the kilns. The tiles were conveyed from the tile presses via a conveyor belt to the spray lines where water, glaze and stains were applied to green tile before it was sent to the kilns. The water from the spray heads were captured beneath the conveyor belt through floor grates that covered a series of subsurface trenches. This wastewater is conveyed to the holding tanks by a series of open trenches and grate-covered sumps that make up the Spray

secondary containment walls. Also, a significant amount of liquid was observed in the sump and on the tile floor. The source of the liquid could not be determined; however, it appeared that the liquid was untreated or partially treated wastewater that had spilled or leaked from the precipitating tanks. Finally, the bung on the metal drum containing PolySep 1127 was open and a significant amount of rust was observed on the top and sides of the drum. In general, very poor housekeeping procedures were observed associated with the Wastewater Pretreatment System (SWMU 1) (Booz Allen, 2003).

RECOMMENDATION: No Further Action ()
 Confirmatory Sampling (X)¹
 RFI Necessary ()

COMMENTS:

¹ Because of the extremely poor housekeeping procedures associated with this unit, the poor structural condition of the floor (e.g., cracks), and the extensive staining that was observed, it is recommended that sampling be performed to further investigate the potential for release of hazardous constituents. Most likely, this sampling should include wipe sampling of the floor and walls in the areas of staining, an investigation to determine the integrity of the sump and floor of the unit, and, if it is determined that the sump or floor integrity has been compromised, sampling of the soils beneath the unit. Samples should be analyzed for RCRA metals, specifically lead.

6.2 SWMU 2 - Sludge Settling Ponds

TYPE OF UNIT: Surface Impoundments

PERIOD OF OPERATION: 1972 to 1989

PHOTOGRAPH NUMBER(S): 11

PHYSICAL DESCRIPTION AND CONDITION:

SWMU 2 consisted of two surface impoundments of unknown dimensions located in the northwestern corner of the property, between the northern property boundary and the northern wall of the main building. Calculations indicate a total volume for both ponds to be approximately 8,240 cubic yards, consisting of approximately 3,625 cubic yards in the western pond and approximately 4,615 cubic yards in the eastern pond. Prior to January 1, 1989, wastewater treatment conducted at the Porcelanite facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU 2), which allowed solids to settle prior to discharge. After wastewater passed through the second (eastern) settling pond, Mannington discharged wastewater directly into Rat Spring Branch of the Yadkin-Pee Dee River basin pursuant to NPDES permit #NC0006459 (ENSCI, 1993, 1994).

In July 1993, closure of the Sludge Settling Ponds (SWMU 2) was completed according to the approved closure plan and a certified closure report was submitted to NCDENR. As a result of closure activities, sludge was removed from both sludge ponds, some of the surrounding soils were excavated, all piping associated with the sludge ponds was removed, and an asphalt cap was placed over the area. According to facility representatives, the cap installed during closure of the Sludge Settling Ponds (SWMU 2) included a 30-millimeter synthetic liner and an asphalt top layer. According to a September 1992 Consent Agreement, sludge from the Sludge Settling Ponds (SWMU 2) was deposited in the Ceramic Tile Pile (SWMU 3). At the time of the VSI, the asphalt cover appeared to be in good condition with no significant cracks, staining, or erosion identified (ENSCI, 1993, 1994).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The Sludge Settling Ponds (SWMU 2) received process wastewater generated by spray lines associated with the tile manufacturing operation. According to facility representatives, the wastewater contained high concentrations of solids – primarily clay and silica raw materials used to make the tile – and overspray from the glazing of fired tile. Prior to 1990, the clay and silica contained hazardous constituents such as lead and chromium. In addition, according to facility representatives, the pH of the incoming wastewater is usually in the range of 4 to 6. A site assessment of the facility, prepared by Mannington, and dated April 12, 1990, consisted of a field investigation in which samples were collected from the sludge ponds. TCLP analysis results detected leachable lead levels in the sludge from the sludge ponds ranging from 230 mg/L to

1,230 mg/L. All VOCs and semi-volatile organic compounds (SVOCs) were below detection limits with the exception of methylene chloride, acetone, and carbon disulfide. As a result, the solid waste (i.e., sludge) disposed of in the sludge ponds is a characteristic hazardous waste (D008) because samples from three different areas contain TCLP lead levels in excess of the regulatory limit of 5.0 mg/L (NCDENR, 1990b; ENSCI, 1993, 1994).

RELEASE PATHWAYS: Air (L) Surface Water (M) Soil (H)
Groundwater (H) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

Prior to initiating closure activities at this unit, groundwater monitoring results indicated the presence of cadmium, iron, lead, manganese, nickel, and zinc in shallow and deep wells at concentrations that exceeded the North Carolina (NC) 2L Drinking Water Standards (DWSs). Specifically, groundwater samples collected from monitoring wells MW-9, MW-11, MW-12, and MW-13 all contained exceedances of the NC 2L DWSs during the 1990, 1991, and/or 1992 groundwater sampling events (ENSCI, 1993, 1994; NCDENR, 1999a, 1999b, 1999d).

In addition, sample analysis results detected leachable lead levels in the sludge from the sludge ponds ranging from 230 mg/L to 1,230 mg/L. These concentrations exceed the TCLP regulatory limit of 5.0 mg/L, which supports the conclusion that lead in sludges from SWMU 2 may have been released to subsurface soils and, ultimately, to groundwater (ENSCI, 1993, 1994; NCDENR, 1999a, 1999b, 1999d).

The initial closure for the Sludge Settling Ponds (SWMU 2) involved stabilizing the sludges in the ponds using Portland cement. The stabilization process reduced the leachable (TCLP) concentrations of the metals in the sludge. After stabilization, an asphalt cap was placed over the former ponds. At the time of the VSI, the asphalt cover constructed over the Sludge Settling Pond (SWMU 2) area appeared to be in good condition with no significant cracks, staining, or erosion identified (ENSCI, 1993, 1994; NCDENR, 1999a, 1999b, 1999d; Aquaterra, 1997a, 1997c; Booz Allen, 2003). Confirmatory samples collected outside the capped ponds indicated the presence of contaminants of concern above the unrestricted use level. At one location SS-2 outside the northeastern fence line, the surface soil contained 6.64 mg/L of leachable lead, which exceeds the 5 mg/L TCLP regulatory limit. Based upon the results of the confirmatory sampling and a risk evaluation of the contaminants of concern remaining in the soil outside the capped area additional contaminated soil was removed. This removal action and risk evaluation is documented in the July 14, 2004 Revised Closure Plan for the Former Settling Ponds.

Soil sampling conducted in the Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch (AOC 1), which received wastewater discharged from SWMU 2 until 1990, identified concentrations of RCRA metals, primarily lead, above background

concentrations. Section 6.14 provides additional discussion of soil contamination associated with AOC 1.

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| RECOMMENDATION: | No Further Action | <input checked="" type="checkbox"/> |
| | Confirmatory Sampling | <input type="checkbox"/> |
| | RFI Necessary | <input type="checkbox"/> |

COMMENTS:

¹ A No Further Action recommendation for SWMU 2 is contingent upon continued compliance with the approved closure and post-closure plans.

6.3 SWMU 3 - Ceramic Tile Pile

TYPE OF UNIT: Waste Pile

PERIOD OF OPERATION: 1950s or 1960s to Present (off line-1993; capped-1995)

PHOTOGRAPH NUMBER(S): 2 through 5

PHYSICAL DESCRIPTION AND CONDITION:

The Ceramic Tile Pile (SWMU 3) is located east of the main process building and immediately west of the Walltown Drain (SWMU 7). The unit extends from approximately 12 feet from the southern fence line to the Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch (AOC 1). The total volume of the unit is approximately 260,000 tons (Transmittal of Revised Closure and Post-Closure Care Plans, July 30, 1997). The facility used the unit to store waste glazed and unglazed ceramic tile, fired and unfired ceramic tile scraps, and some sludge from the Sludge Settling Ponds (SWMU 2). The facility initiated "dirty" closure (i.e., wastes were to be left in place) of the unit in 1997 (Closure and Post-closure Care Plan, April 1, 1997). The unit is currently capped with a "flat top surface cap" and a "slope surface cap" using a clayey silt to silty clay soil. The top portion of the unit is level with the facility parking lot and has gravel covering the majority of the top of the unit. The sloped sides of the unit are covered with native vegetation (Aquaterra, 1997b; Mannington, 2004; NCDENR, 1997a, 1997b; Booz Allen 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

Prior to 1990, these waste streams were disposed of in the Ceramic Tile Pile:

- Unfired Glaze Ceramic Tile – This waste stream consisted of unfired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. According to correspondence from NCDENR to Mannington in 1990, as much as 20,000 pounds per week of unfired glaze ceramic tile were generated by ceramic tile manufacturing operations.

- Fired Glaze Ceramic Tile – This waste stream consisted of fired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. According to correspondence from NCDENR to Mannington in 1990, ceramic tile manufacturing operations generated as much as 110,000 pounds per week of fired glaze ceramic tile.

In 1990, Mannington stopped depositing waste tile material in SWMU 3 (NCDENR, 1990d, 1990e, 1990f).

MW-19, MW-22, MW-23, MW-24, MW-25, MW-26A, and MW-28). Cobalt was detected in three wells (MW-1, MW-12, and MW-13). Manganese was detected above the standards in five wells (MW-9, MW-12, MW-13, MW-14, and MW-28). Zinc was detected above the standards in two wells (MW-9 and MW-12). Titanium was detected above the standards in four wells (MW-7, MW-21, MW-25, and MW-26A). Vanadium was detected above the standards in three wells (MW-7, MW-22 and MW-25). Fluoride was not detected above the standards during the 1999 sampling events. Only MW-10 has consistently shown any exceedence for fluoride. Gross Beta was detected above the standards in four wells (MW-9, MW-12, MW-13, and MW-14). Gross beta is routinely detected in every sample including MW-1, which is upgradient of the site. Three of these compounds (cobalt, gross beta and vanadium) do not have a codified standard so the method detection limit is considered the standard. VOCs were not detected in any constituents during the September sampling period in 1999 (Aquaterra, 1997b, 2000; Mannington, 2004; NCDENR, 1997a, 1997b; USEPA, 2002; Booz Allen 2003).

Finally, although limited sampling data were identified in the available file material, it is likely that runoff from the Ceramic Tile Pile (SWMU 3) to the Walltown Drain (SWMU 7), which drains to the Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch (AOC 1), is a concern. This runoff is likely to have resulted in a release of hazardous constituents to soil/sediment and surface water associated with SWMU 7 and AOC 1. Sections 6.7 and 6.14 provide additional discussion of the releases associated with these units.

| | | |
|------------------------|-----------------------|-------------------------------------|
| RECOMMENDATION: | No Further Action | <input checked="" type="checkbox"/> |
| | Confirmatory Sampling | <input type="checkbox"/> |
| | RFI Necessary | <input type="checkbox"/> |

COMMENTS:

¹ A No Further Action recommendation for SWMU 3 is contingent upon continued compliance with the approved closure and post-closure plans.

unit have ever occurred. Finally, at the time of the VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)
Confirmatory Sampling ()
RFI Necessary ()

COMMENTS:

6.5 SWMU 5 - 20 Cubic Yard Floor Sweeping Roll-Off Container

TYPE OF UNIT: Roll-Off Container

PERIOD OF OPERATION: Unknown to 1999

PHOTOGRAPH NUMBER(S): 8

PHYSICAL DESCRIPTION AND CONDITION:

This unit was located adjacent to the eastern central wall of the main process building and consisted of a 20 cubic yard steel roll-off container placed on the asphalt parking area. Floor sweepings from the main process building, containing dust, small tile pieces, and other wastes spilled on the floor during tile manufacturing operations, and were swept up daily and deposited in SWMU 5. According to facility representatives, a tarpaulin was used to cover the top of the roll-off container. At the time of the VSI, the area where the roll-off container formerly was placed appeared to be in good condition (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The waste stream managed by this unit consisted of daily sweepings from the floor of the process area in the main building. According to correspondence from NCDENR to Mannington in 1990, as much as 5,000 pounds per week of floor sweepings were generated by ceramic tile manufacturing operations.

In 1990, samples were collected and were analyzed for RCRA primary metals using the EP Toxicity Test (EP Toxicity via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The floor sweepings samples contained 1,1,1-trichloroethane (0.087 mg/kg), bis(2-ethylhexyl)phthalate (15 mg/kg), and benzyl butyl phthalate (3.6 mg/kg). In addition, the extractable leachate from the floor sweepings sample also contained 0.84 mg/L of lead. Based on these sampling results, it was determined by NCDENR that the floor sweepings were not hazardous waste (USEPA, 1993; NCDENR, 1990d, 1990e, 1990f).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

No evidence of a release from this unit was identified in the available file material. In addition, according to facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. Finally, at the time of the VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)
Confirmatory Sampling ()
RFI Necessary ()

COMMENTS:

was observed. However, it is important to note that facility representatives and the file material provided very limited information on this unit.

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|------------------------|-----------------------|-------------------------------------|
| RECOMMENDATION: | No Further Action | <input checked="" type="checkbox"/> |
| | Confirmatory Sampling | <input type="checkbox"/> |
| | RFI Necessary | <input type="checkbox"/> |

COMMENTS:

6.7 SWMU 7 - Walltown Drain

TYPE OF UNIT: Surface Water Drainage Ditch

PERIOD OF OPERATION: 1960s to present

PHOTOGRAPH NUMBER(S): 6, 9, and 10

PHYSICAL DESCRIPTION AND CONDITION:

Walltown Drain runs north approximately 0.5 miles to Rat Springs Branch, which flows to the northwest approximately 2 miles to Swearing Creek, a tributary of the Yadkin River. As of 1997, the Winston-Salem Regional Water Quality Office classified Rat Springs Creek as a "C" surface water designation (Aquaterra, 1997 - Tile Pile closure plan). The Walltown Drain was enclosed in pipe in 1992/1993 under a Nationwide 26 permit from the USACE. This permit was issued based on the determination by the USACE that no significant wetlands were present at the site (Aquaterra, 1997 - Tile Pile closure plan). The piping was installed to prevent surface water runoff from the Ceramic Tile Pile (SWMU 3) to discharge into the creek. At the time the piping was installed at Walltown Drain, a permanent 25-foot easement was conveyed to the City of Lexington. A sanitary sewer line and storm sewer lines also run parallel to Walltown Drain (SWMU 7) northward across the eastern portion of the property and a permanent 25-foot easement for these lines was also conveyed to the City of Lexington (Aquaterra, 1997b, 2000; Booz Allen, 2003; Mannington, 2004).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

This unit was not designed to manage or handle waste. This unit is a tributary that was located on the facility property prior to the property being purchased. The Ceramic Tile Pile (SWMU 3) is located southwest and adjacent to the Walltown Drain. The ceramic tile pile is up gradient of the Walltown Drain. Prior to its enclosure, runoff from the ceramic tile pile and facility entered into the Walltown Drain. As a result, SWMU 7 may have received hazardous constituents from the waste tile fragments primarily consisting of RCRA metals such as lead (Booz Allen, 2003).

RELEASE PATHWAYS: Air (L) Surface Water (H) Soil (H)
Groundwater (M) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

There are four groundwater monitoring wells located adjacent to the Walltown Drain, which were installed primarily to monitor the Ceramic Tile Pile (SWMU 3) but are located in the vicinity of SWMU 7. The four wells are identified as MW-7, MW-8, MW-21, and MW-22. Groundwater samples, taken during the Spring and Summer 1994 monitoring event, revealed exceedances of manganese, iron, and tin. While these exceedances were for nonhazardous

constituents only, the NCDENR requested that the facility obtain surface water and sediment samples from the area of the Walltown Drain tributary in 1998. Specifically, the facility was asked to sample the up gradient and downgradient areas of the Walltown Drain (before and after the enclosed areas). The facility conducted the sampling event March 1999 in response to the NCDENR request. The sample results for the surface water identified increases in levels of RCRA metals and other identified elements in the downgradient (DG) samples versus the up gradient (UG) samples. The increases identified include levels of barium at 0.059 mg/l UG to 0.127 mg/l DG; boron at below detection limit (BDL) UG to 1.06 mg/l DG (which exceeds the North Carolina (NC) 2L levels); copper at 0.010 mg/l UG to 0.110 DG; iron at 1.34 mg/l UG to 2.58 mg/l DG (which exceeds the NC 2L levels); and zinc at 0.035 mg/l UG to 0.142 mg/l DG. The sample results for the sediment identified increases in levels of RCRA metals, metals, and other identified elements in the downgradient samples versus the up gradient samples. The increases identified include levels of barium at 49.9 mg/l UG to 93.9 mg/l DG; boron at 13.7 mg/l UG to 33.0 mg/l DG (which exceeds the North Carolina soil screening levels (SSL)); chromium at 12.9 mg/l UG to 20.7 mg/l DG; lead at 48.6 mg/l UG to 125 mg/l DG; nickel at 4.00 mg/l UG to 5.03 mg/l DG; barium TCLP at 0.349 mg/l UG to 0.988 mg/l DG; and lead TCLP at 0.013 mg/l UG to 0.130 mg/l DG. These levels of increase identify potential releases originating from the facility that have impacted the Walltown Drain and its recipient waters (NCDENR, 1998b, 1999c; Aquaterra, 1997b; USEPA, 2002; Mannington, 2004).

Results of a 1997 surface soil sampling investigation detected lead at a maximum concentration of 12,700 mg/kg in soils in the northern edge of SWMU 7. In addition, the maximum detected leachable lead concentration from a soil sample was 93.5 mg/L, which exceeds the regulatory limit of 5 mg/L. The location of these maximum detected concentrations is in the northeastern corner of the property (Aquaterra, 1997b; Mannington, 2004; NCDENR, 1997a, 1997b; Booz Allen 2003).

| | | |
|------------------------|-----------------------|------------------|
| RECOMMENDATION: | No Further Action | () |
| | Confirmatory Sampling | () |
| | RFI Necessary | (X) ¹ |

COMMENTS:

¹ Because elevated levels of RCRA metals, specifically lead, have been identified in the soil in the northern portion of this unit, a more thorough investigation of the Walltown Drain (SWMU 7) is recommended to determine the extent of contamination. Specifically, it is important to more fully investigate the downgradient contamination to determine the furthest extent of the release.

6.8 SWMU 8 - Off-Specification Tile Accumulation Roll-Off Container

TYPE OF UNIT: Roll-Off Container

PERIOD OF OPERATION: Unknown to 1999

PHOTOGRAPH NUMBER(S): 12

PHYSICAL DESCRIPTION AND CONDITION:

This unit was located on the asphalt roadway covering the area formerly occupied by the Sludge Settling Ponds (SWMU 2), adjacent to the north central wall of the main process building. This unit consisted of a 40 cubic yard roll-off container placed on an asphalt surface. According to facility representatives, once waste tile was no longer deposited in the Ceramic Tile Pile (SWMU 3), this unit was used to store broken and off-specification tile from the manufacturing operation before it was disposed of off site. At the time of the VSI, the roll-off container associated with this unit was no longer present at the facility; however, a metal frame with corrugated metal roof was observed in the unit location. Facility representatives indicated that the metal frame roof had been installed to cover the roll-off container at an unknown date (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

According to several RCRA Inspection Reports, since closure of the Ceramic Tile Pile (SWMU 3) in 1990, ceramic tile wastes accumulated at the facility were stored in this unit before it was transported to the Davidson County landfill for disposal. The waste stream managed by this unit consisted of unfired and fired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. According to correspondence from NCDENR to Mannington in 1990, as much as 20,000 pounds per week of unfired glaze ceramic tile and 110,000 pounds per week of fired glaze ceramic tile were generated by ceramic tile manufacturing operations (USEPA, 1991; NCDENR, 1990d, 1990e, 1990f).

In 1990, samples were collected from each of the fired and unfired tile waste streams. The samples were analyzed for RCRA primary metals in extracted leachate (EP toxicity characteristic via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The samples collected from the fired glaze ceramic tile waste stream did not contain any constituents at concentrations above detection limits. The unfired glaze ceramic tile waste stream samples contained bis(2-ethylhexyl)phthalate at concentrations of 5.6 mg/kg. All other constituents in all of the waste stream samples were not detected above detection limits. Based on these sampling results, it was determined by NCDENR that the fired and unfired glaze ceramic tile waste streams were nonhazardous waste that could be disposed of in a Subtitle D landfill. As a result, waste from SWMU 8 was sent to the Davidson County landfill for disposal (USEPA, 1991; NCDENR, 1990d, 1990e, 1990f).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

No evidence of a release from this unit was identified in the available file material. In addition, according to facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. Finally, at the time of the VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)
Confirmatory Sampling ()
RFI Necessary ()

COMMENTS:

concrete floor and walls and on the soils directly in front of the unit at the time of the VSI (Booz Allen, 2003).

RECOMMENDATION: No Further Action ¹
 Confirmatory Sampling
 RFI Necessary

COMMENTS:

¹ Improved storage procedures are recommended to prevent further release of the filter cake solids to the soils in front of the unit.

6.10 SWMU 10 - Maintenance Building Waste Management Areas

TYPE OF UNIT: a. Drum Storage Area
b. Parts Washer

PERIOD OF OPERATION: 1960s to 1999

PHOTOGRAPH NUMBER(S): 18 and 19

PHYSICAL DESCRIPTION AND CONDITION:

The Maintenance Building Waste Management Areas (SWMU 10) is located in the southwest corner of the facility property, west of the Former UST and AST Area (AOC 3) and east of the Baghouse (SWMU 6). The maintenance building is a metal, enclosed building with two large rolling bay doors and a concrete floor. The building is approximately 40 feet long by 40 feet wide by 20 feet high. The facility reportedly ceased using this building in 2000. The building was used to store chemicals, such as wastewater treatment chemicals, bulk chemicals, solvents, used oil, and lubricants, used at the facility and perform maintenance on forklifts. The chemicals were stored primarily in 55-gallon drums, which were stored in various locations inside the maintenance building. Safety Kleen parts washing tank was also stored in the maintenance building. Finally, a subsurface work area that was used to allow mechanics better access to the forklifts is located in the western central portion of the maintenance building. The subsurface work area was approximately 4 feet wide by 8 feet long by 3 feet deep. Dark staining was observed on the concrete west of the two bay doors and some minor staining was observed in the subsurface work area (Booz Allen, 2003; USEPA, 1991, 1992a, 1993).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The facility used the maintenance building to store 55-gallon drums containing chemicals used at the facility. The chemicals stored include wastewater treatment chemicals, bulk chemicals, and used oil. According to a RCRA Inspection Report dated December 4, 1991, wastes generated at this unit included flammable waste petroleum naphthalene (D001) used in a Safety Kleen parts washing tank and used oil stored in drums generated by routine maintenance activities. Spent parts washing solvents and used oil were removed from the site monthly for recycling/reprocessing by Safety Kleen in High Point, North Carolina (RCRA Inspection 1991). According to a RCRA Inspection Report dated May 27, 1994, Mannington had discontinued the use of Safety Kleen parts washers, thereby eliminating the generation of flammable waste petroleum naphthalene (D001) (Booz Allen, 2003; USEPA, 1991, 1992a, 1993).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

6.11 SWMU 11 - Spray Line Area Sumps

TYPE OF UNIT: Wastewater Sumps

PERIOD OF OPERATION: 1960's or 1970's to present

PHOTOGRAPH NUMBER(S): 31 and 32

PHYSICAL DESCRIPTION AND CONDITION:

The spray lines and associated sumps were previously located in one of the large process rooms in the northern portion the main process building. According to facility representatives, the tiles were conveyed from the tile presses via a conveyor belt to the spray lines where water, glaze and stains were applied to green tile before they were sent to the kilns. The water from the spray heads was captured beneath the conveyor belt through several floor grates, which covered a series of subsurface trenches. The wastewater was then channeled, by use of sumps, to the Wastewater Pretreatment System (SWMU 1) or, historically, to the Sludge Settling Ponds (SWMU 3), to be treated and disposed of. According to facility representatives, some of the wastewater from the Wastewater Pretreatment System (SWMU 1) was also looped back into the spray lines. At the time of the VSI, the spray lines and equipment were no longer present. The equipment was reportedly removed in 2000 and transferred to another company facility. During the VSI, the area appeared to be in good condition; however, the unit was overflowing with water so the bottom and sides of the sump could not be inspected. The trenches were overflowing with water that, according to facility representatives, originated from leaks in the roof of the building (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

This unit managed wastewater generated by the spray lines. According to facility representatives, the wastewater contained high concentrations of solids – primarily clay and silica raw materials used to make the tile – and glaze and stain overspray from the coloring of unfired tile. The clay, silica, glaze, and stain have formerly contained metals such as lead and chromium. In addition, the wastewater entering the Wastewater Pretreatment System (SWMU 1) from the Spray Line Area Sumps (SWMU 11) had a pH in the range of 4 - 6 (Booz Allen, 2003; Mannington, 2004).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (M)
Groundwater (L) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

No evidence of a release from this unit was identified in the available file material. In addition, according to facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. Finally, at the time of the VSI, no visual evidence of a release (i.e.,

6.12 AOC 1 - Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch

TYPE OF UNIT: Discharge Area from Sludge Settling Ponds and the Ceramic Tile Pile

PERIOD OF OPERATION: 1972 to present (No wastewater discharge received after 1990)

PHOTOGRAPH NUMBER(S): 10

PHYSICAL DESCRIPTION AND CONDITION:

The Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch (AOC 1) is located adjacent to the northeast corner of the Porcelanite facility property line. This area is specifically located at the intersection of Rat Springs Branch and the Walltown Drain (SWMU 7). Rat Springs Branch is located parallel to the northern boundary of the facility property line and flows east to intersect with the Walltown Drain (SWMU 7). Rat Springs Branch continues to flow to the north approximately two miles to Swearing Creek, a tributary of the Yadkin-Pee Dee River. As of 1997, the Winston-Salem Regional Water Quality Office classified Rat Springs Creek as a "C" surface water designation (Aquaterra, 1997 - Tile Pile closure plan). Rat Springs Branch is reportedly an intermittent stream that flows only when rainfall is present (Booz Allen, 2003). The Walltown Drain (SWMU 7) is a creek that flows north, inside the Porcelanite facility property, adjacent to the closed Ceramic Tile Pile (SMWU 3). The total length of this creek flows approximately 0.05 miles across the Porcelanite property, until it intersects with Rat Springs Branch. The Walltown Drain (SWMU 7) was enclosed in pipe in 1992/1993 under a Nationwide 26 permit from the USACE. This permit was issued based on the determination by the USACE that no significant wetlands were present at the site (Aquaterra, 1997b; Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

The facility utilized several spray lines to spray the tile pieces with glazes and colorings on a conveyor line as part of the product process. Until 1990, the raw materials used to produce the tile contained metals that are considered hazardous, such as lead and chromium. The wastewater generated by the spray lines was then pumped to the wastewater processing unit located at the facility, which was conducted at the Sludge Settling Ponds (SWMU 2). The two settling ponds were utilized to allow the solids in the wastewater to settle out of the water before discharge. Sample analysis results detected leachable lead levels in the sludge from the sludge ponds, which discharged wastewater to AOC 1 (Aquaterra, 1997b; Booz Allen, 2003).

RELEASE PATHWAYS:

Air (L) Surface Water (M) Soil (M)
Groundwater (L) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OF RELEASE(S):

The facility conducted several site assessments to analyze the potential for releases of contamination located at or originating from the subject property. One such assessment of the facility, prepared by Mannington, and dated April 12, 1990, consisted of a field investigation in which samples were collected from the sludge ponds. Sample analysis results detected leachable lead levels in the sludge from the sludge ponds ranging from 230 mg/L to 1,230 mg/L. All VOCs and SVOCs were below detection limits with the exception of methylene chloride, acetone, and carbon disulfide. As a result, the solid waste (i.e., sludge) disposed of in the sludge ponds is a characteristic hazardous waste (D008) in that samples from three different areas contain extractable lead levels in excess of the regulatory limit of 5.0 mg/L. On August 28, 1991, the facility extracted groundwater samples from designated monitoring wells. The specific monitoring well located in the area of AOC 1 is MW-3. The groundwater samples resulted in the following detections: barium 0.28 mg/L, iron 9.8 mg/L, manganese 0.25 mg/L, sodium 30 mg/L, lead 0.014 mg/L, selenium 0.011 mg/L, chloride 33 mg/L, sulfate 130 mg/L, total organic carbon 4.9 mg/L, and mercury 0.0006 mg/L. A follow-up sample was obtained October 15, 1991, from MW-3 to confirm the selenium concentration. This sample contained 0.006 mg/L of selenium (NCDENR, 1990a; Aquaterra, 1997b; Booz Allen, 2003).

Additional soil samples collected from this area during a 1997 site investigation also identified several areas containing elevated metals concentrations. Specifically, hand auger soil samples collected north of the waste pile in AOC 1 contained significantly elevated concentrations of lead, barium, and boron. Lead concentrations in sampling locations 4HA-48, 4HA-47, and 2HA-23 were 5,140 mg/kg, 2,720 mg/kg, and 458 mg/kg, respectively. In addition, TCLP results for lead from soil samples from 4HA-48 and 4HA-47 were 91.0 mg/L and 93.5 mg/L, respectively. These sample locations appear to be located on the vegetated bank in the southern portion of this unit, adjacent to the northern property boundary of the site. Sampling locations 2HA-24, 2HA-25, and 2HA-26 were collected north of sampling locations 4HA-48 and 4HA-47 and detected lead concentrations were similar to background levels. Finally, hand auger samples were collected north of these locations in the AOC 1 area; however, sampling results were not identified in the available file material (NCDENR, 1990a, 1998b, 1999c; Aquaterra, 1997b; Booz Allen, 2003).

RECOMMENDATION:

| | |
|-----------------------|------------------|
| No Further Action | () |
| Confirmatory Sampling | () |
| RFI Necessary | (X) ¹ |

COMMENTS:

¹ Additional investigation of the soil contamination, specifically lead and leachable lead concentrations, identified in AOC 1 is recommended. This investigation should include a vertical and horizontal characterization of contaminant concentrations. While an RFI has been recommended for AOC 1, it is likely that the further investigation of AOC 1 will occur based on

an investigation of releases from SWMU 3, which is the potential source of contaminants detected in AOC 1.

and west of this sampling location did not exceed the regulatory limit for lead. Based on the figure provided with the sampling results, it does not appear that this sampling location is located beneath the asphalt cap installed associated with SWMU 2. As a result, the potential for additional migration still exists. In addition, it is unclear if samples were analyzed for other metals (Aquaterra, 1997c; NCDENR, 1990a; ENSCI, 1992; Booz Allen, 2003; ENSCI, 1994).

RECOMMENDATION: No Further Action ()
Confirmatory Sampling (X)¹
RFI Necessary ()

COMMENTS:

¹ Confirmatory sampling is recommended to fully characterize the horizontal and vertical extent of the lead contamination located outside the fence line in the railroad right-of-way. The intent of this confirmatory sampling is to determine if lead concentrations exceed either risk-based screening levels for human or ecological receptors and/or leachability criteria for the protection of groundwater.

6.14 AOC 3 - Former UST and AST Area

TYPE OF UNIT: USTs and ASTs

PERIOD OF OPERATION: Unknown (Estimated 1960s) to 1989

PHOTOGRAPH NUMBER(S): 20

PHYSICAL DESCRIPTION AND CONDITION:

The Former UST and AST Area (AOC 3) is located in the southwest portion of the property, between the road running parallel to the southern wall of the main building and Victor Street. The Maintenance Building Waste Management Areas (SWMU 10) are located immediately west of AOC 3. Currently, AOC 3 is a grass-covered area with a short concrete curb running along the northern edge of the area and the barbed-wire topped fence, marking the facility property boundary, on the southern edge of the area (Aquaterra, 1990a; NCDENR, 1990a; Booz Allen, 2003).

According to facility representatives, two steel, 2,000-gallon underground storage tanks (USTs) were installed at an unknown time that was estimated to be in the 1960's. These USTs were used to store gasoline and #2 fuel oil that was used in vehicles operated at the facility, such as forklifts. In November 1989, the USTs and associated piping were removed and soil samples were collected from the excavation. Initially, four soil samples were collected from the bottom of the excavation, which ranged from 9 to 15 feet deep. The samples were analyzed for total petroleum hydrocarbons (TPHs) by EPA Methods 3550 and 5030. The excavation was backfilled with clean fill. On May 29, 1990, NCDENR issued a letter indicating that the UST system had been closed in accordance with UST regulations (40 CFR §§ 280.71 and 280.72) (Aquaterra, 1990a; NCDENR, 1990a; Booz Allen, 2003).

According to facility representatives, in 1993, a 750-gallon steel aboveground storage tank (AST) was installed in the location formerly occupied by the USTs. The AST was surrounded by a steel secondary containment system. This AST was used to store diesel fuel for facility vehicles. At some point between 1999 and 2000, facility representatives indicated that the AST was removed and that no releases or staining were observed during removal activities; however, no sampling was conducted (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

No wastes were managed at this unit; however, the gasoline, #2 fuel oil, and diesel fuel stored in the USTs and ASTs all contain hazardous constituents, such as metals and benzene, toluene, ethylbenzene, and xylene (Aquaterra, 1990a; NCDENR, 1990a; Booz Allen, 2003).

RELEASE PATHWAYS: Air (L) Surface Water (L) Soil (L)
Groundwater (L) Subsurface Gas (L)

HISTORY AND/OR EVIDENCE OR RELEASE(S):

In November 1989, the USTs and associated piping were removed and soil samples were collected from the excavation. Initially, four soil samples were collected from the bottom of the excavation with ranged from 9 to 15 feet deep. The samples were analyzed for TPHs by EPA Methods 3550 and 5030. Results of the analysis indicated that elevated levels of TPH (2,600 mg/kg) were present in the westernmost soil sample at a depth of 13 feet bgs. As a result, additional excavation, both vertically and horizontally, was conducted in the western portion of the original excavation down to a depth of 21 feet bgs. Three additional soil samples were collected from the bottom of the excavation. Soil from the western end of the excavation extension showed low levels of TPH contamination (43 mg/kg); however, it was determined that this concentration was not sufficient to warrant additional action. The excavation was backfilled with clean fill. On May 29, 1990, NCDENR issued a letter indicating that the UST system had been closed in accordance with 40 CFR §§ 280.71 and 280.72 (Aquaterra, 1990a; NCDENR, 1990a; Booz Allen, 2003).

RECOMMENDATION: No Further Action (X)
Confirmatory Sampling ()
RFI Necessary ()

COMMENTS:

7.0 REFERENCES

- Aquaterra, Inc. 1990a. Underground Storage Tank Closure Assessment, Mannington Ceramic Tile. January 8, 1990.
- Aquaterra, Inc. 1990b. Existing Waste Streams, Solid Waste Determination, Mannington Ceramic Tile Facility, Lexington, Carolina. May 16, 1990.
- Aquaterra, Inc. 1997a. Transmittal of Revised Closure and Post-closure Care Plan, Tile Pile Unit. July 30, 1997.
- Aquaterra, Inc. 1997b. Ceramic Chip Tile Pile Closure Plan. July 11, 1997.
- Aquaterra, Inc. 1997c. Additional Closure Activities at Former Waste Water Treatment Ponds. June 10, 1997.
- Aquaterra, Inc. 2000. 1999 Annual Groundwater Assessment Report and Fourth Quarter 1999 Monitoring Report. January 31, 2000.
- Booz Allen Hamilton. 2003. Visual Site Inspection Logbook. September 30, 2003.
- ENSCI, Corporation. 1992. Revised Closure Plan for Settling Ponds, Mannington Ceramic Tile. June 24, 1992.
- ENSCI Environmental, Inc. 1993. Closure Verification for Settling Ponds at the Mannington Tile, Lexington, North Carolina Facility. November 15, 1993.
- ENSCI Environmental, Inc. 1994. Additional Closure Verification for Settling Ponds at the Mannington Tile, Lexington, North Carolina Facility. March 14, 1994.
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- Mannington Ceramic Tile. 1992. Hazardous Waste Permit Application, Part A. May 29, 1992.
- Mannington Mills, Inc. 2004. Response to RFA Information Request. April 1, 2004.
- North Carolina Department of Environment and Natural Resources (NCDENR). 1990a. Correspondence to Mannington Ceramic Tile Regarding Underground Storage Tank Closure. May 29, 1990.
- NCDENR. 1990b. Compliance Order with Administrative Penalty. June 11, 1990.

- NCDENR. 1990c. Correspondence to Mannington Ceramic Tile Regarding Disposal of Approximately 5,000 Pounds/Week of Floor Sweepings at the Davidson County Landfill. May 30, 1990.
- NCDENR. 1990d. Disposal of Approximately 20,000 Pounds/Week of Unfired Glaze-Ceramic Tile at the Davidson County Landfill. May 30, 1990.
- NCDENR. 1990e. Disposal of Approximately 20,000 Pounds/Week of Ceramic Process Glaze Overspray Filter Cake at the Davidson County Landfill. May 30, 1990.
- NCDENR. 1990f. Disposal of Approximately 110,000 Pounds/Week of Fired Glaze-Ceramic Tile at the Davidson County Landfill. May 30, 1990.
- NCDENR. 1990g. Compliance Order with Administrative Penalty. June 11, 1990.
- NCDENR. 1991a. Notice of Violation for Mannington Ceramic Tile. September 24, 1991.
- NCDENR. 1991b. RCRA Inspection Report for Mannington Ceramic Tile, Inc. December 4, 1991.
- NCDENR. 1993. Comprehensive Groundwater Monitoring Evaluation Report for Mannington Ceramic Tile. March 8, 1993.
- NCDENR. 1994a. Additional Closure Activities, Sludge Ponds, Mannington Ceramic Tile. February 24, 1994.
- NCDENR. 1994b. RCRA Inspection Report for Mannington Ceramic Tile, Inc. May 27, 1994.
- NCDENR. 1996a. March 26, 1996 Comprehensive Groundwater Monitoring Evaluation, Porcelanite, Inc. November 8, 1996.
- NCDENR. 1996b. Transmittal of Radiological Data. December 20, 1996.
- NCDENR. 1997a. Revised Post-Closure Care Plan Approval and Review of Revised Groundwater Sampling and Analysis Plan (SAP). April 29, 1997.
- NCDENR. 1997b. Review of Closure Plan Activities. September 12, 1997.
- NCDENR. 1998a. Memorandum: Porcelanite, Inc. Domestic Supply Wells Survey. January 12, 1998.
- NCDENR. 1998b. Memorandum: Porcelanite, Inc. Surface Water and Sediment Data. December 3, 1998.

NCDENR. 1999a. Sludge Pond Closure. January 4, 1999.

NCDENR. 1999b. Sludge Pond Closure. February 11, 1999.

NCDENR. 1999c. Memorandum: Additional Surface Water/Sediment Data. May 27, 1999.

NCDENR. 1999d. Sludge Pond Closure, Porcelanite, Inc. (PI). September 23, 1999.

United States Environmental Protection Agency (USEPA). 1990. Hazardous Waste Permit Application for Mannington Ceramic Tile. July 5, 1990.

USEPA. 1991. RCRA Inspection Report. December 4, 1991.

USEPA. 1992a. Hazardous Waste Permit Application, Part A for Mannington Ceramic Tile. May 29, 1992.

USEPA Region 4. 1992b. Comprehensive Monitoring Evaluation Inspection Report. December 17, 1992.

USEPA Region 4. 1993. Comprehensive Monitoring Evaluation Inspection Report. June 24, 1993.

USEPA Region 4. 2002. SESD-ES Comprehensive Groundwater Monitoring Evaluation for Porcelanite, Inc. April 26, 2002.

FIGURE 1

Location Map for the Porcelanite, Inc. Facility

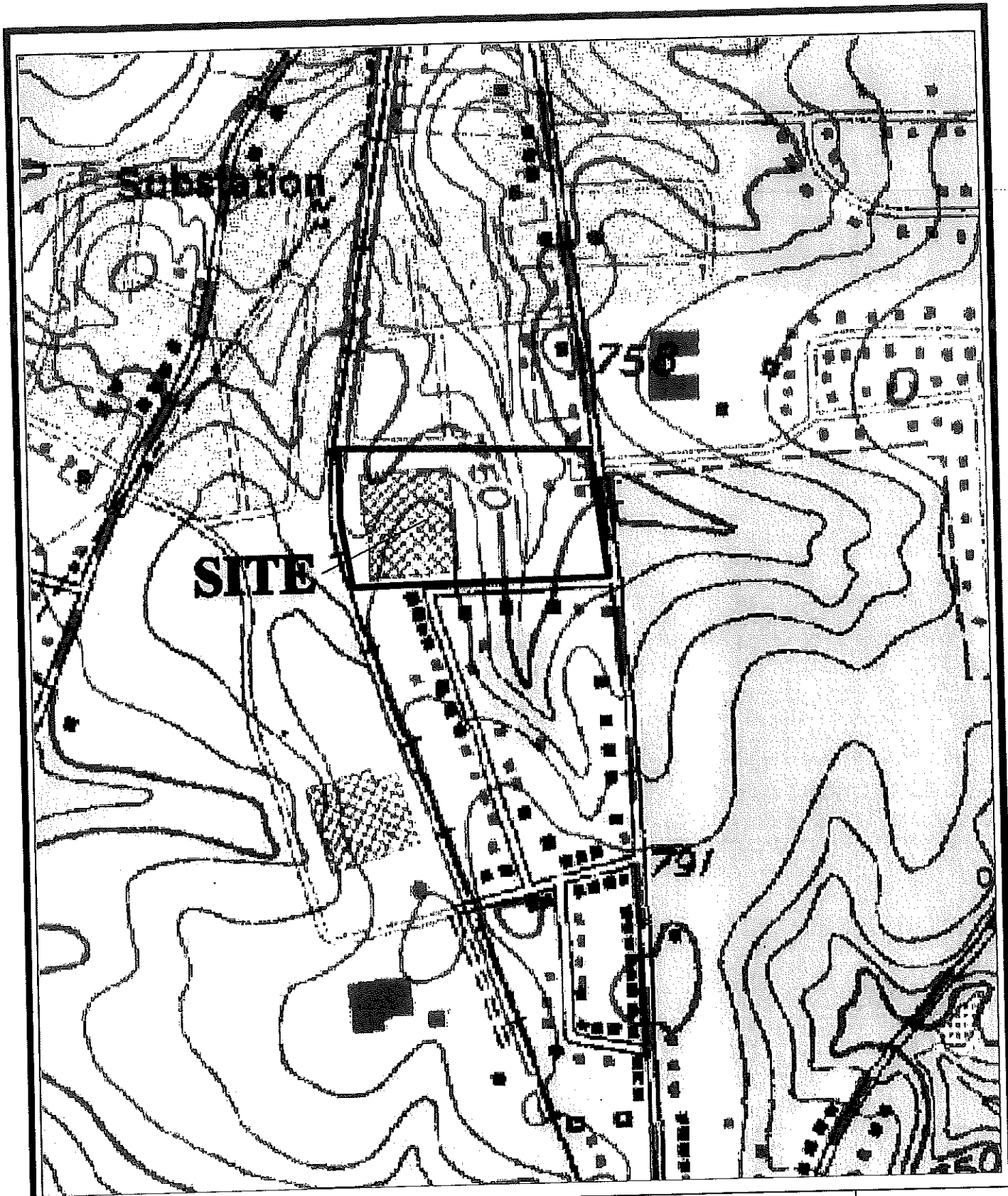


FIGURE 1
 LOCATION MAP FOR THE PORCELANITE, INC. PLANT
 LEXINGTON, NORTH CAROLINA

Date: DECEMBER 29, 2009

Drawn By: AER



(Based on 1:250,000 scale)
 NOT TO SCALE

BOOZ|ALLEN|HAMILTON

230 Peachtree Street N.W. Suite 2100
 Atlanta, Georgia 30303
 (404) 659-3600

FAX (404) 577-5709

FIGURE 2

Porcelanite, Inc. SWMU and AOC Map

BOOZ | ALLEN | HAMILTON

230 Peachtree Street N.E. Suite 2100
Atlanta, Georgia 30303
(404) 658-3800 FAX (404) 577-5709

PORCELANITE SWMU AND AOC MAP

Facility Name: PORCELANITE, INC.

Facility Address: 20 VICTOR STREET
LEXINGTON, NC

Drawn By: AER

Checked By: JB

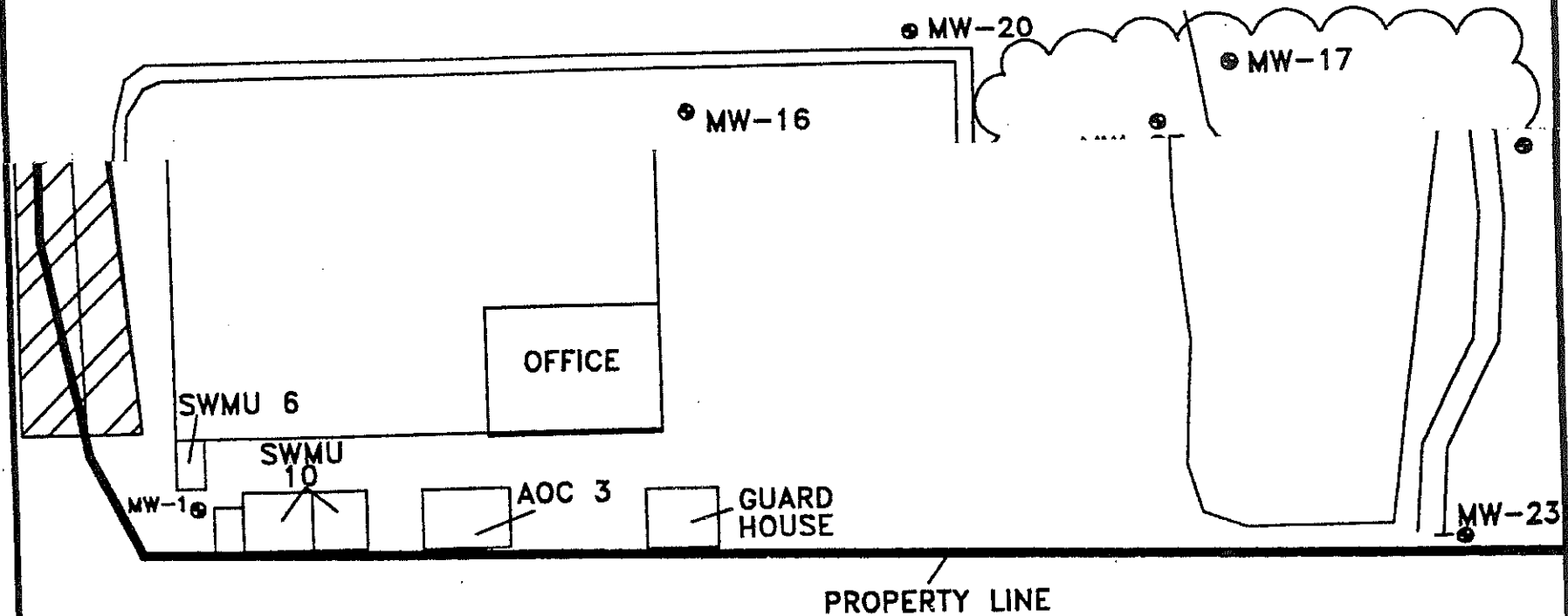
Figure:

2

* NOT TO SCALE

LEGEND

⊙ APPROXIMATE MONITORING
WELL LOCATIONS



ATTACHMENT 1

**Porcelanite, Inc.
Solid Waste Management Unit (SWMU) and
Areas of Concern (AOC) List**

Porcelanite, Inc.

**Solid Waste Management Unit (SWMU) and
Areas of Concern (AOC) List**

SWMU

1. Wastewater Pretreatment System
 - a. Precipitating Tanks
 - b. Filter Press
 - c. Wastewater Holding Tanks
 - d. Sump
2. Sludge Settling Ponds
 - a. Pond 1
 - b. Pond 2
3. Ceramic Tile Pile
4. 20 Cubic Yard Sludge Container
5. 20 Cubic Yard Floor Sweepings Roll-Off Container
6. Baghouse
7. Walltown Drain
8. Off-Specification Tile Accumulation Roll-Off Container
9. Filter Cake Waste Pile Area
10. Maintenance Building Waste Management Areas
 - a. Drum Storage Area
 - b. Parts Washer
11. Spray Line Area Sump

AOC

1. Area of Discharge from Settling Ponds into Rat Spring Branch
2. Broken Ceramic Tile Roadway
3. Former UST and AST Area

ATTACHMENT 2

Photographic Log



Photo Number: 1
Direction: Facing south
Description: Security fence and guardhouse at main entrance to property

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 2
Direction: Facing northeast
Description: Former location of the Ceramic Tile Pile (SWMU 3)

Photographer: Jeremy Hogard
Date: 9/30/2003

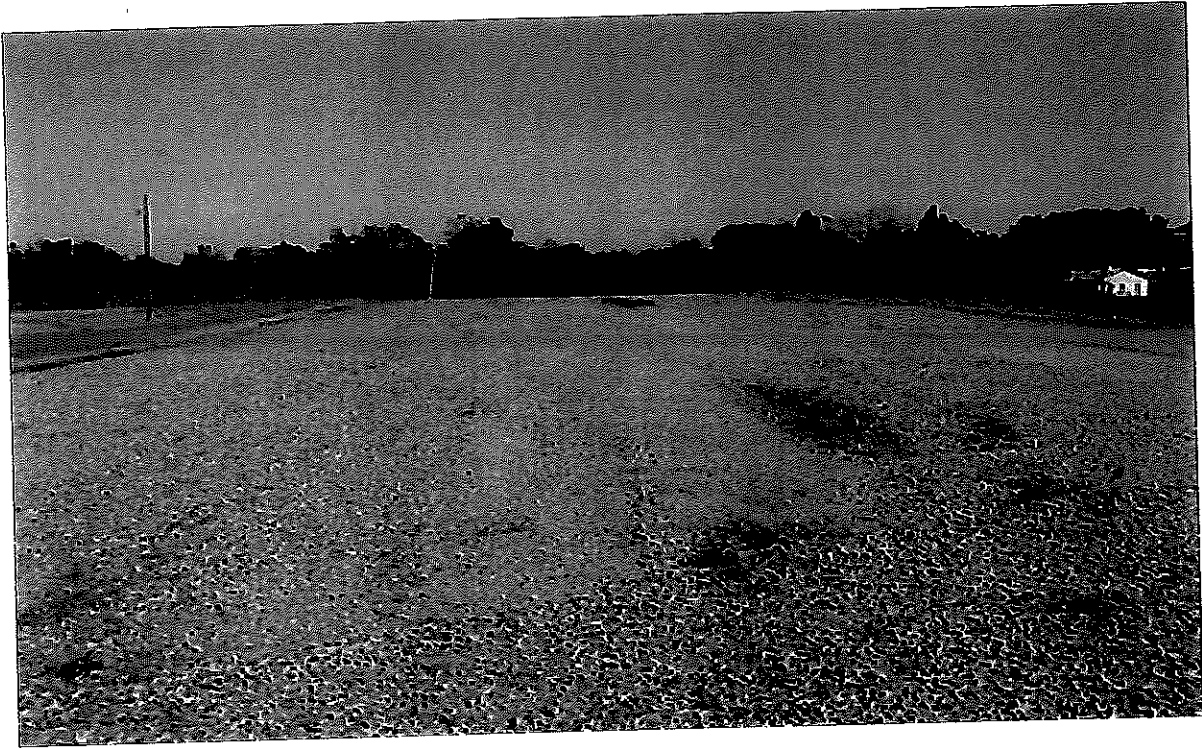


Photo Number: 3
Direction: Facing north
Description: Gravel cap installed over the Ceramic Tile Pile (SWMU 3)

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 4
Direction: Facing north
Description: Vegetated north side of the former Ceramic Tile Pile (SWMU 3)

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 5
Direction: Facing northwest
Description: Eastern side of the former Ceramic Tile Pile (SWMU 3)

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 6
Direction: Facing west
Description: View of the Walltown Drain (SWMU 7) area, which is covered with large gravel and vegetation

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 7

Direction: Facing northeast

Description: View of Walltown Drain (SWMU 7) area, which is covered with gravel and vegetation

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 8

Direction: Facing west

Description: Former location of the 20 Cubic Yard Floor Sweepings Roll-Off Container (SWMU 5)

Photographer: Jeremy Hogard

Date: 9/30/2003

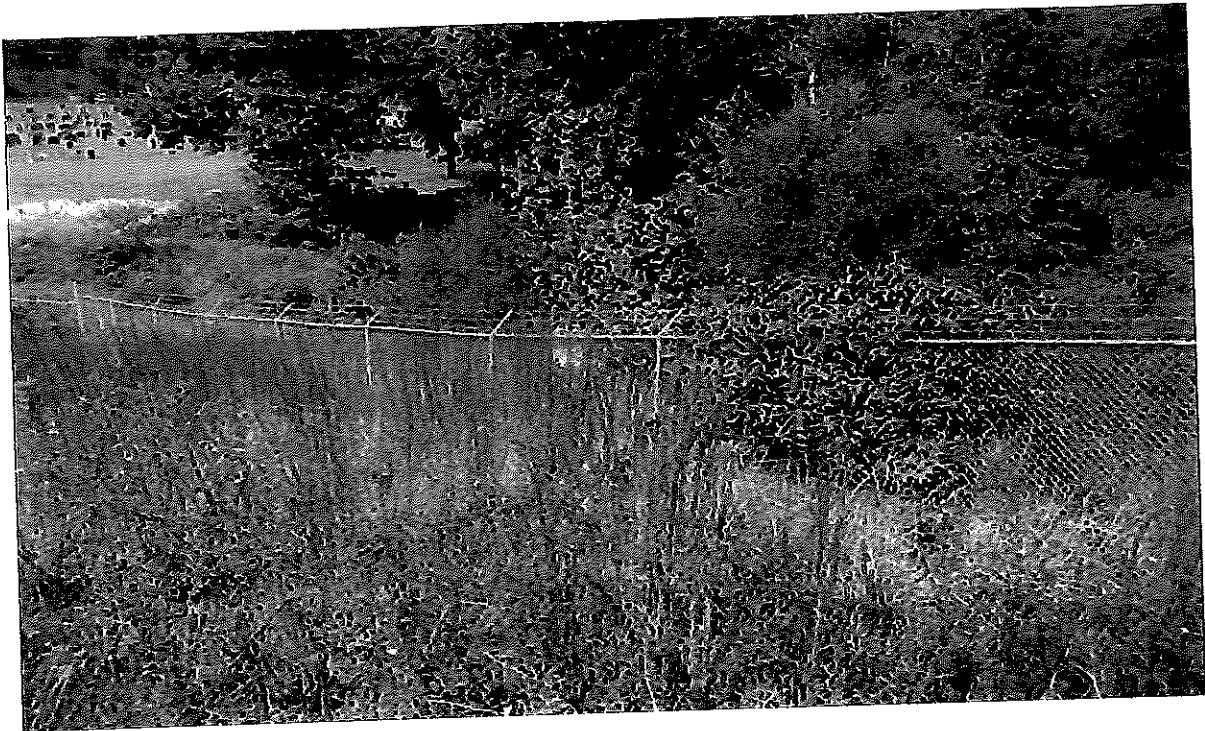


Photo Number: 9

Direction: Facing northwest

Description: View of the Rat Springs Branch and Walltown Drain (SWMU 7) intersection

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 10

Direction: Facing northeast

Description: View of the Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch (AOC 1)

Photographer: Jeremy Hogard

Date: 9/30/2003

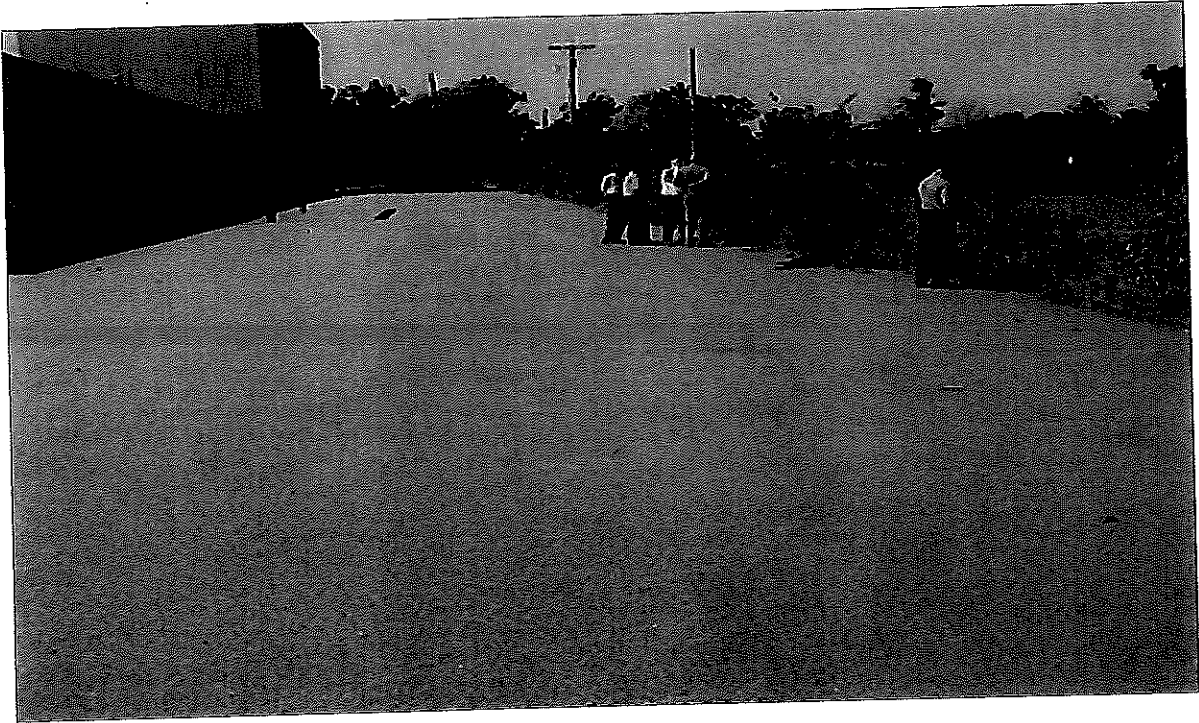


Photo Number: 11

Direction: Facing west

Description: View of the former location of the Sludge Settling Ponds (SWMU 2)

Photographer: Jeremy Hogard

Date: 9/30/2003

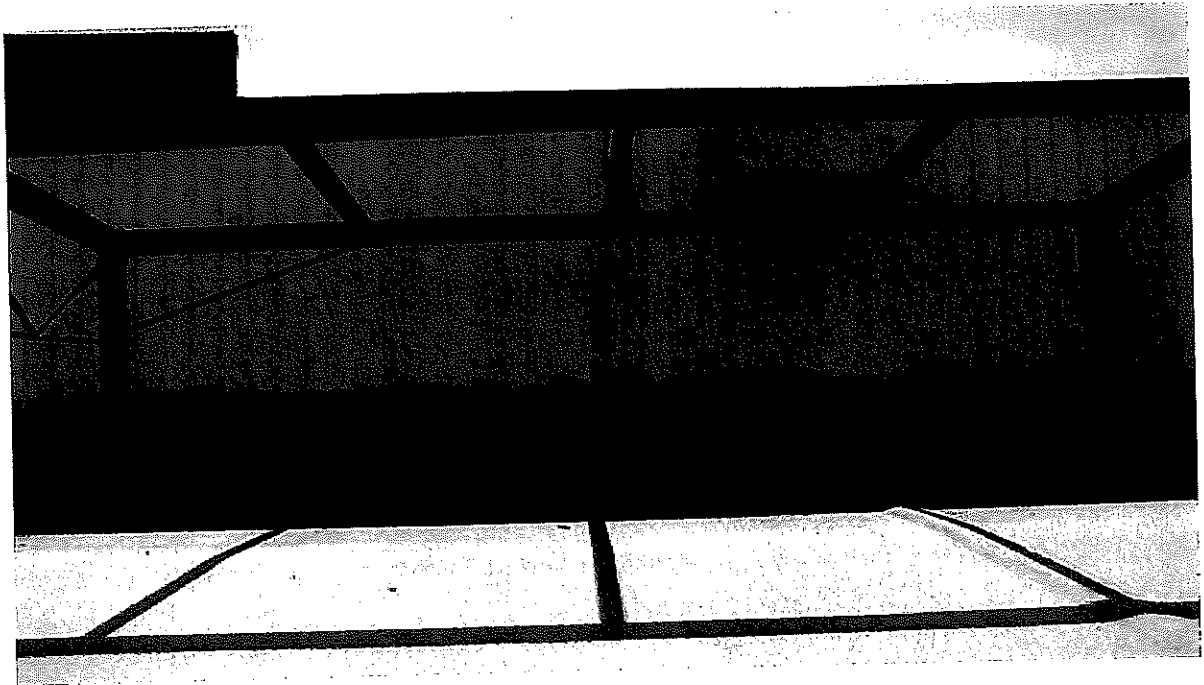


Photo Number: 12

Direction: Facing south

Description: View of the former location of the Off-Speculation Tile Accumulation Roll-Off Container (SWMU 8)

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 13

Direction: Facing east

Description: View of the northern bank of the cap covering the former Sludge Settling Ponds (SWMU 2)

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 14

Direction: Facing east

Description: View of the Filter Cake Waste Pile Area (SWMU 9)

Photographer: Jeremy Hogard

Date: 9/30/2003

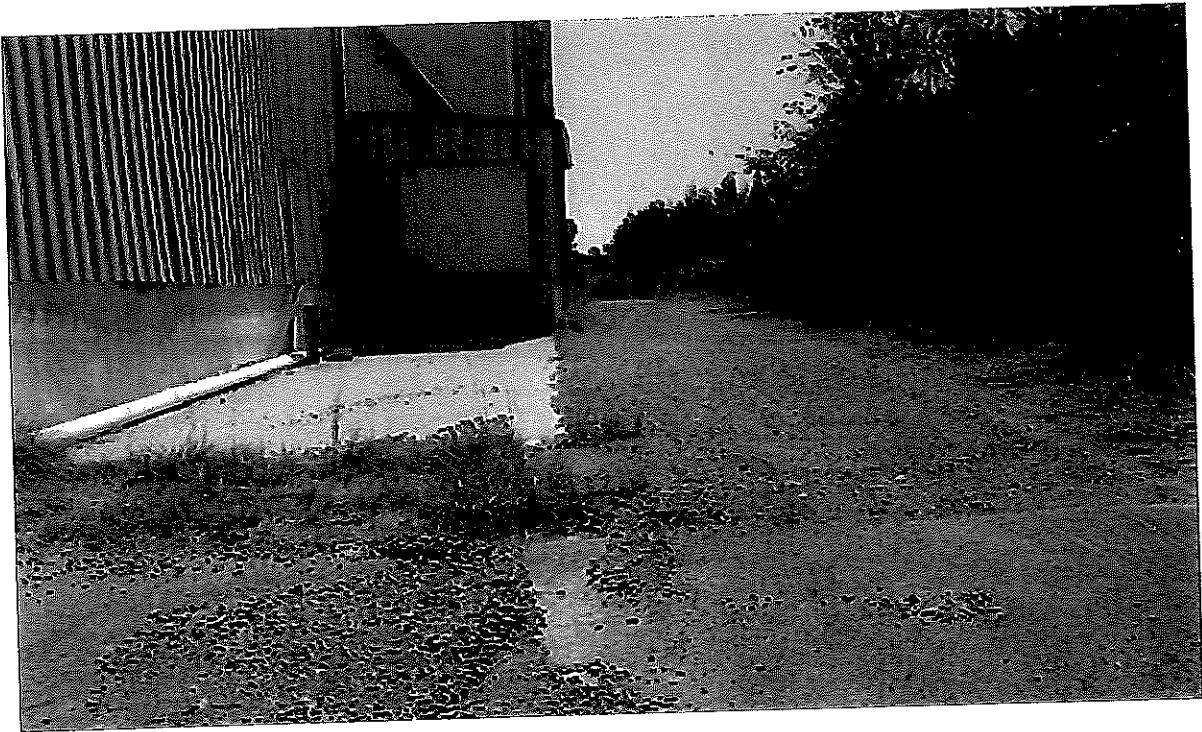


Photo Number: 15

Direction: Facing south

Description: View of the former location of the 20 Cubic Yard Sludge Roll-Off Container (SWMU 4) on the left and the Broken Ceramic Tile Roadway (AOC 2) on the right.

Photographer: Jeremy Hogard

Date: 9/30/2003

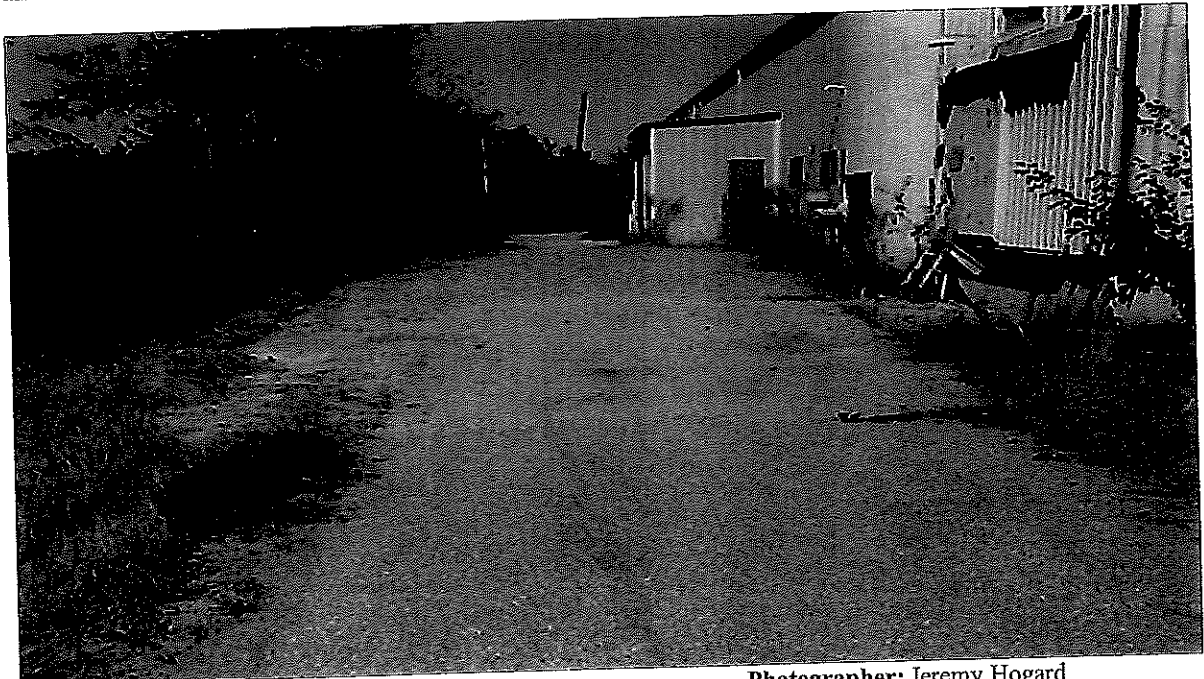


Photo Number: 16

Direction: Facing north

Description: View of the Broken Ceramic Tile Roadway (AOC 2)

Photographer: Jeremy Hogard

Date: 9/30/2003

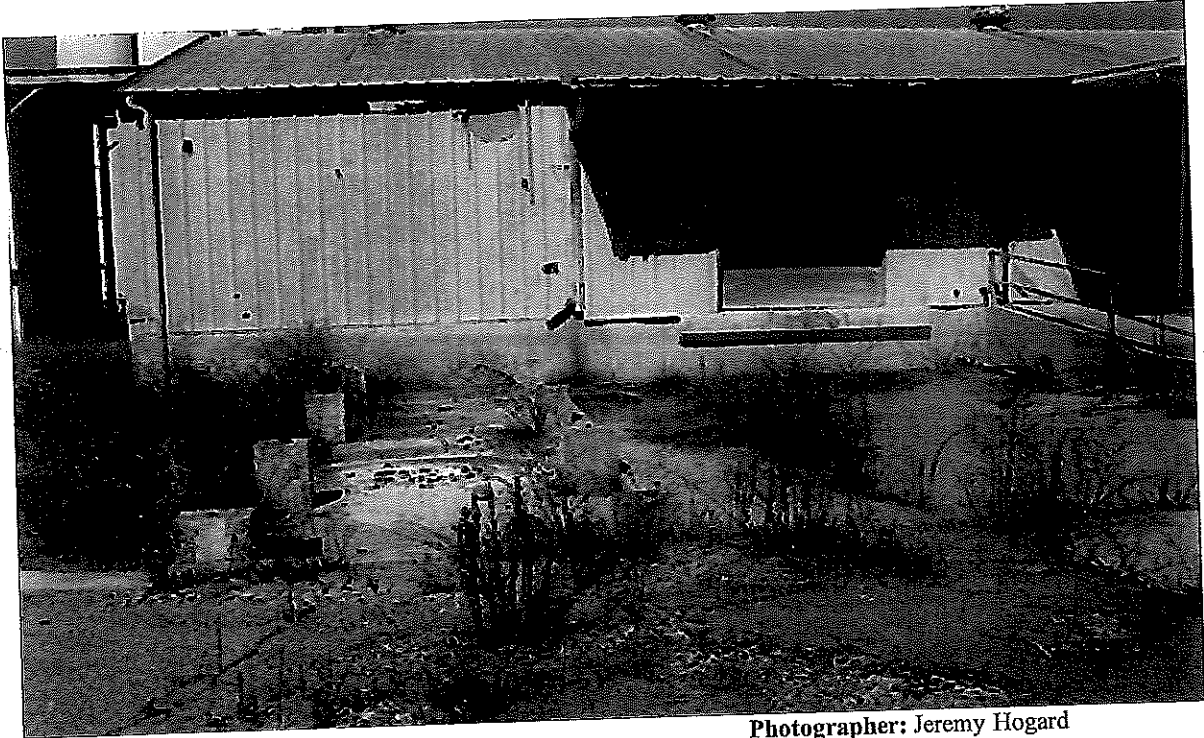


Photo Number: 17

Direction: Facing north

Description: View of the former location of the Baghouse (SWMU 6), which was situated on the concrete pilings shown in the left-central portion of the photograph.

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 18

Direction: Facing south

Description: View of the concrete equipment storage pad located in front of the Maintenance Building (SWMU 10)

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 19
Direction: Facing east
Description: View of the Maintenance Building (SWMU 10)

Photographer: Jeremy Hogard
Date: 9/30/2003

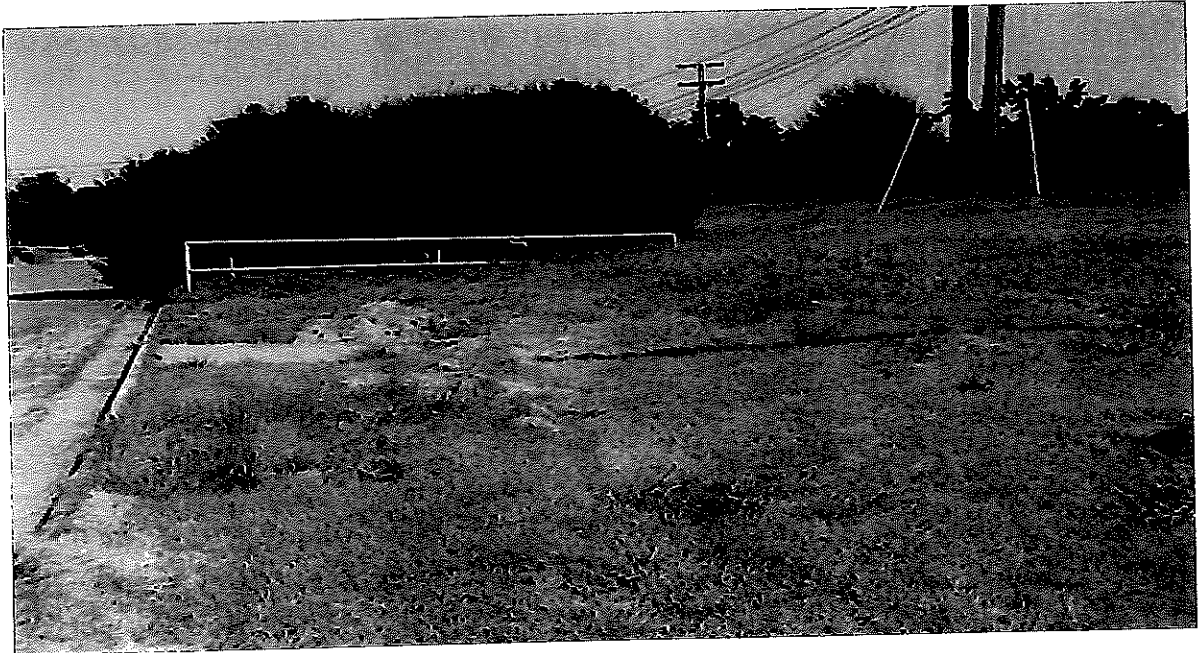


Photo Number: 20
Direction: Facing east
Description: View of the Former UST and AST Area (AOC 3)

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 21
Direction: Facing northwest
Description: View of the inside of the main process building

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 22
Direction: Facing southwest
Description: View of the inside of the main process building

Photographer: Jeremy Hogard
Date: 9/30/2003



Photo Number: 23

Direction: Facing west

Description: View of the inside of the main process building where one of the kilns was formerly located

Photographer: Jeremy Hogard

Date: 9/30/2003

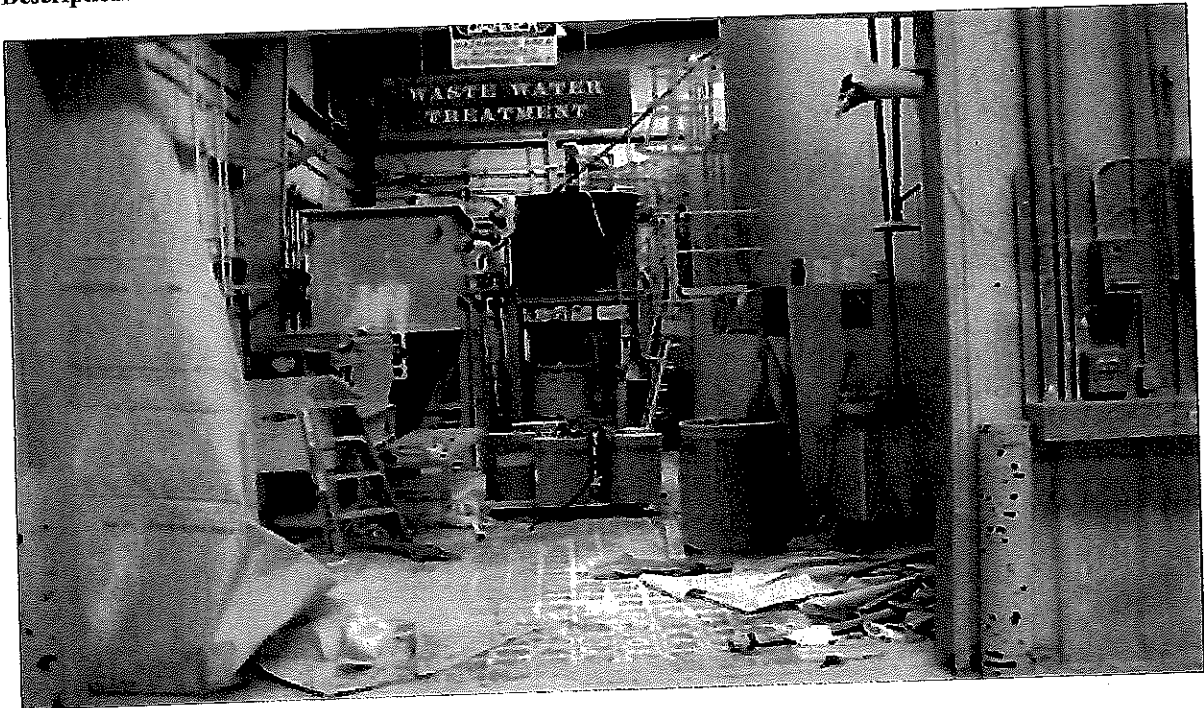


Photo Number: 24

Direction: Facing north

Description: View of the Wastewater Pretreatment System (SWMU 1) room

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 25

Direction: Facing north

Description: View of the Filter Press (SWMU 1c) showing the discharge point to the Filter Cake Waste Pile Area (SWMU 10)

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 26

Direction: Facing east

Description: View of four drums located in the Wastewater Pretreatment System (SWMU 1) room from right to left (Caustic soda, SelfLoc, Polysep1127, unknown caustic) and grate-covered sump (SWMU 1d)

Photographer: Jeremy Hogard

Date: 9/30/2003

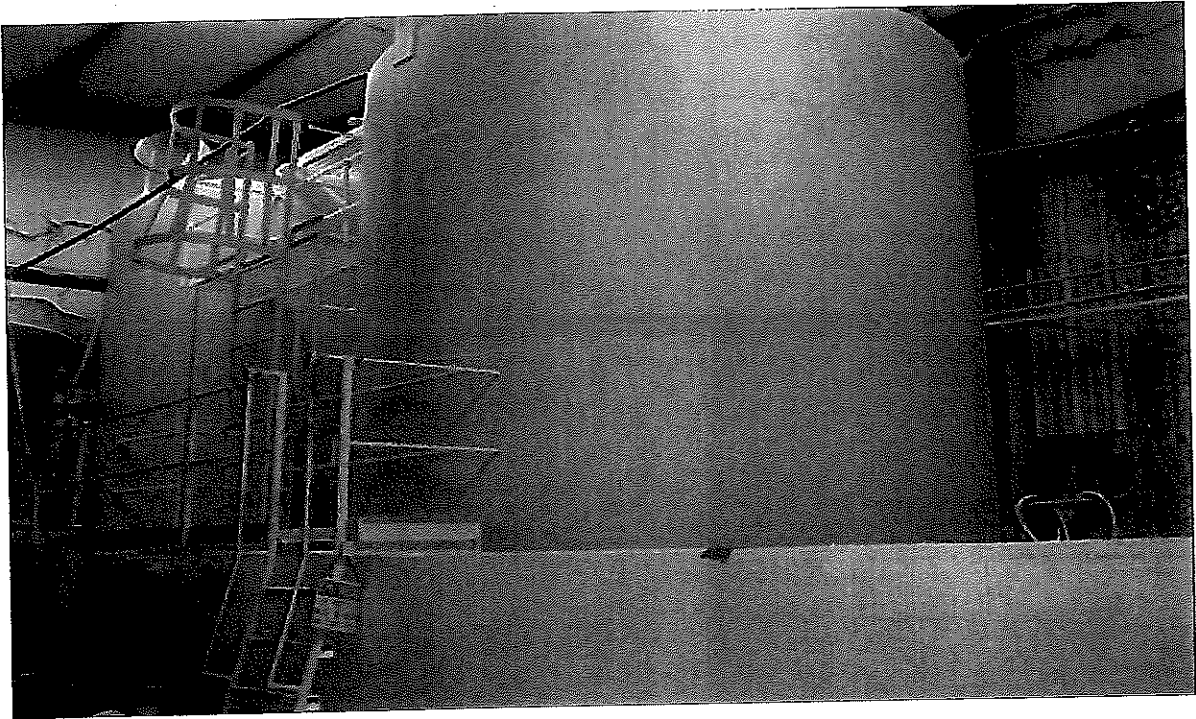


Photo Number: 27

Direction: Facing north

Description: View of Holding Tanks (SWMU 1a) associated with the Wastewater Pretreatment System (SWMU 1)

Photographer: Jeremy Hogard

Date: 9/30/2003



Photo Number: 28

Direction: Facing north

Description: View of Precipitation Tanks (SWMU 1b) associated with the Wastewater Pretreatment System (SWMU 1)

Photographer: Jeremy Hogard

Date: 9/30/2003

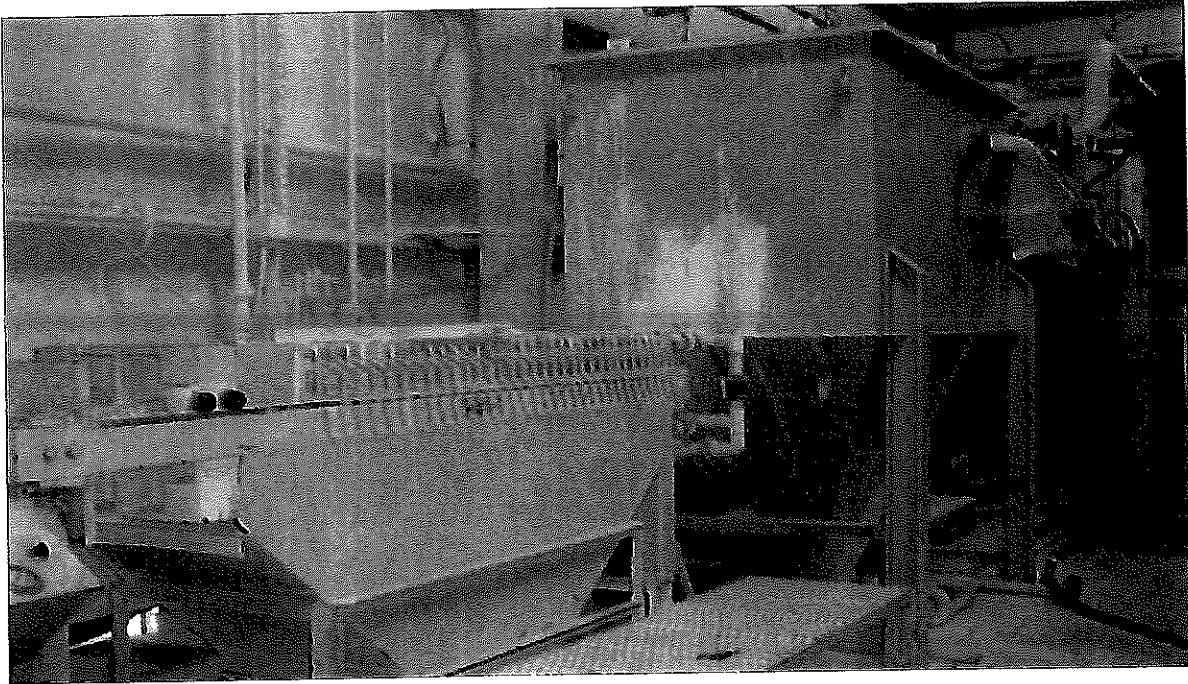


Photo Number: 29

Direction: Facing north

Description: View of the Filter Press (SWMU 1c) associated with the Wastewater Pretreatment System (SWMU 1)

Photographer: Jeremy Hogard

Date: 9/30/2003

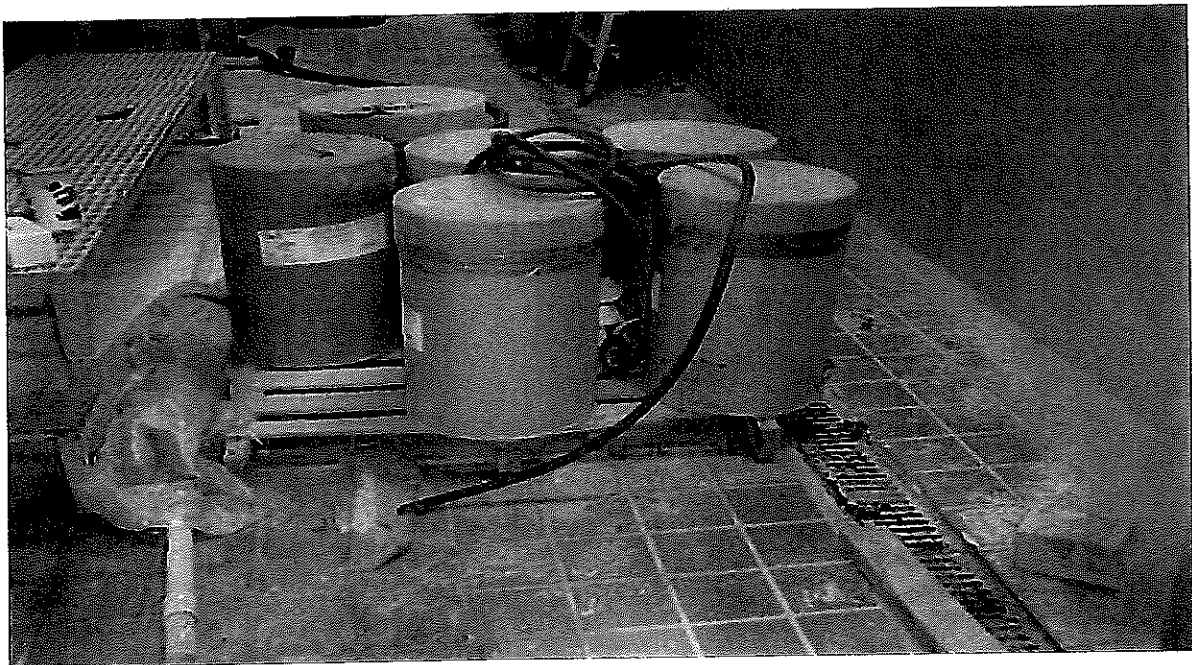


Photo Number: 30

Direction: Facing north

Description: View of the floor of the Wastewater Pretreatment System (SWMU 1) room showing the white staining and the generally poor housekeeping conditions of the area

Photographer: Jeremy Hogard

Date: 9/30/2003

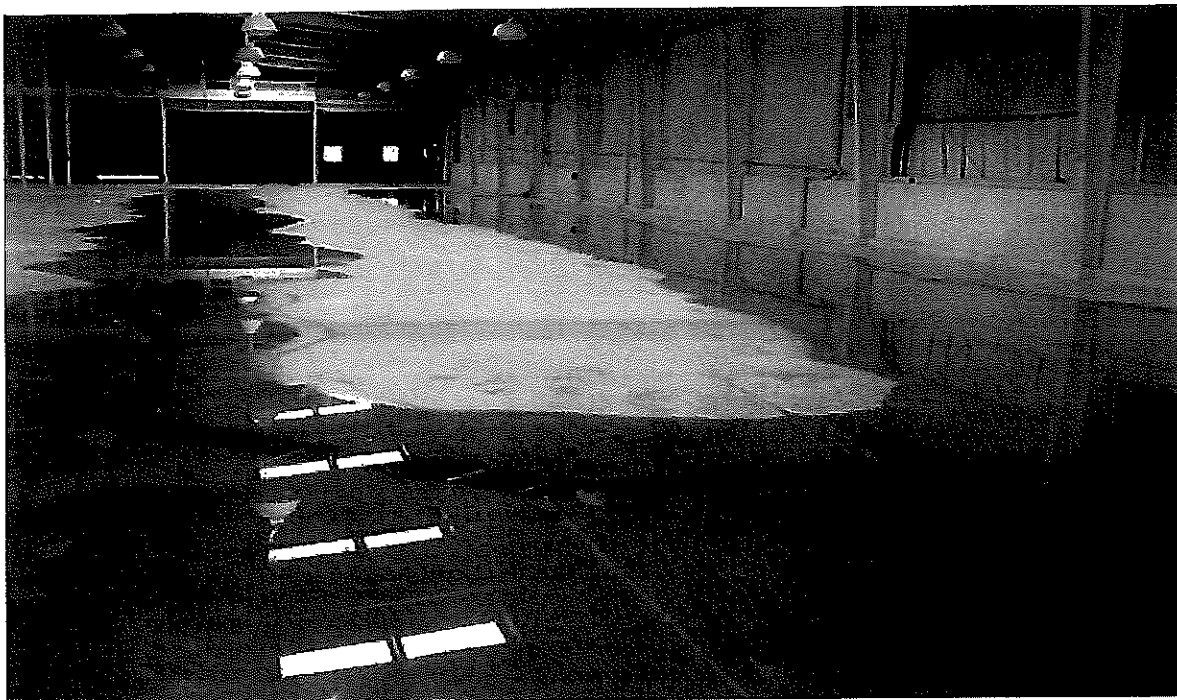


Photo Number: 31
Direction: Facing east
Description: View of the Spray Line Area Sumps (SWMU 11)

Photographer: Jeremy Hogard
Date: 9/30/2003

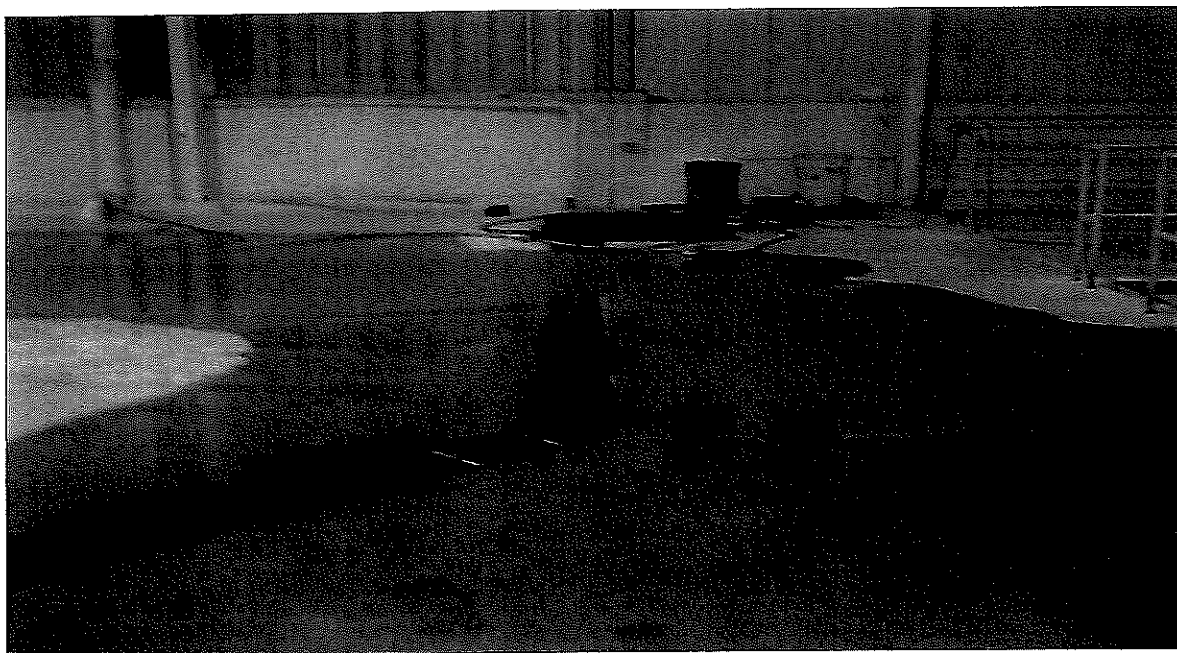


Photo Number: 32
Direction: Facing south
Description: View of the Spray Line Area Sumps (SWMU 11)

Photographer: Jeremy Hogard
Date: 9/30/2003

ATTACHMENT 3

VSI Logbooks

Appendix B-2

**Documentation of Correspondence
with NCAC 13A .0113(c)(3), and
.0113(c)(5)**

Susan Kite

From: Susan Kite <skite@charter.net>
Sent: Monday, January 23, 2017 11:30 AM
To: 'natural.heritage@ncdenr.gov'
Subject: Request for information, 20 Victor Street, Lexington, Davidson County, NC

Good Morning,

I would like to request any information that is available through your database with respect to the above-referenced address. The property is located on the Lexington, West quadrangle map. Please respond regarding the following:

- Endangered species habitats
- Parks
- Forests
- Wilderness areas
- Historical sites

If you have any questions, or need additional information, please contact me.

Thank You,

Susan

Susan Kite, PG
Senior Environmental Geologist
c: 678.640.5268
skite@charter.net

Susan Kite

From: Susan Kite <skite@charter.net>
Sent: Monday, January 23, 2017 11:35 AM
To: 'anitabarnett@nps.gov'
Subject: Request for information, 20 Victor Street, Lexington, Davidson County, NC

Good Morning,

I would like to request any information that is available through your database with respect to the above-referenced address. The property is located on the Lexington, West quadrangle map. Please respond regarding the following:

- National Seashore, Lakeshore, and River Recreational Areas
- National Parks or Monuments
- Federal Designated Wild & Scenic Rivers

If you have any questions, or need additional information, please contact me.

Thank You,
Susan

Susan Kite, PG
Senior Environmental Geologist
c: 678.640.5268
skite@charter.net

Susan Kite

From: Luczak, Heather L -FS <hluczak@fs.fed.us>
Sent: Tuesday, January 24, 2017 10:16 AM
To: Susan Kite
Subject: RE: Request for Information: 20 Victor Street, Lexington, Davidson County, NC

Ms. Kite,

There are no Designated and Proposed Federal Wilderness and Natural Areas, National Preserves and Forests, or Federal Land Designated for the Protection of Natural Ecosystems within 1.0 miles of the site located at 20 Victor Street Lexington, NC.

Have a wonderful day!

Heather Luczak
Forest NEPA Coordinator

Forest Service
National Forests in NC

p: 828-257-4817

f: 828-259-0567

hluczak@fs.fed.us

160 Zillicoa St. Suite A

Asheville, NC 28805

www.fs.fed.us



Caring for the land and serving people

From: Susan Kite [mailto:skite@charter.net]
Sent: Tuesday, January 24, 2017 6:30 AM
To: Luczak, Heather L -FS <hluczak@fs.fed.us>
Subject: Request for Information: 20 Victor Street, Lexington, Davidson County, NC

Good Morning,

At the request of the NC Department of Environmental Quality (DEQ), we are working on a RCRA Part B Permit Application for the closed Former Porcelanite Facility, located at 20 Victor Street, Lexington, Davidson County, NC, approximately 1 mile north of Interstate 85. The Assessor's Parcel Number (APN) is 113420000022. The geographical location of the Facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The property is located on the Lexington, West quadrangle map. I have attached a copy of the topo map for your use. I would like to request any information that is available through your database with respect to the above-referenced address. Please let me know if any Designated and Proposed Federal Wilderness and Natural Areas, National Preserves and Forests, or Federal Land Designated for the Protection of Natural Ecosystems are identified on or within a 1.0-mile radius of the property.

If you have any questions, or need additional information, please contact me.

Thank You,

Susan

Susan Kite, PG
Senior Environmental Geologist

c: 678.640.5268
skite@charter.net

This electronic message contains information generated by the USDA solely for the intended recipients. Any unauthorized interception of this message or the use or disclosure of the information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

Susan Kite

From: Susan Kite <skite@charter.net>
Sent: Tuesday, January 24, 2017 6:26 AM
To: 'melanie.williams@ncdenr.gov'
Subject: Request for Information: State-Designated Areas for Protection or Maintenance of Aquatic Life, 20 Victor Street, Lexington, Davidson County, NC
Attachments: img144.pdf

Good Morning,

At the request of the NC Department of Environmental Quality (DEQ), we are working on a RCRA Part B Permit Application for the closed Former Porcelanite Facility, located at 20 Victor Street, Lexington, Davidson County, NC, approximately 1 mile north of Interstate 85. The Assessor's Parcel Number (APN) is 1134200000022. The geographical location of the Facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The property is located on the Lexington, West quadrangle map. I have attached a copy of the topo map for your use. I would like to request any information that is available through your database with respect to the above-referenced address. Please let me know if any State-Designated Areas for Protection or Maintenance of Aquatic Life are identified on or within a 1.0-mile radius of the property (Clean Water Act 305b report).

If you have any questions, or need additional information, please contact me.

Thank You,
Susan

Susan Kite, PG
Senior Environmental Geologist
c: 678.640.5268
skite@charter.net

Susan Kite

From: Ratzlaff, Allen <allen_ratzlaff@fws.gov>
Sent: Wednesday, February 1, 2017 1:59 PM
To: skate@charter.net
Subject: 17-164 20 Victor Street, Lexington, Davidson County

Flag Status: Flagged

Dear Ms. Kite:

Subject: Site assessment for 20 Victor Street, Lexington, Davidson County, North Carolina

We received your email dated January 23, 2017, requesting information on federally listed species within 0.5 mile of the subject site. The following comments are provided in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

According to our records and a review of the information you provided, no federally listed species or their habitats occur in the project area. Therefore, we believe the requirements under section 7 of the Act are fulfilled. However, obligations under section 7 of the Act must be reconsidered if: (1) new information reveals impacts of these identified actions that may affect listed species or critical habitat in a manner not previously considered, (2) these actions are subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified actions.

We appreciate the opportunity to provide these comments and request that you continue to keep us informed as to the progress of this proposed project. If we can be of assistance or if you have any questions, please contact Mr. Allen Ratzlaff of our staff at 828/258-3939, Ext. 229. In any future correspondence concerning this project, please reference our Log Number 4-2-17-164.

--
Allen Ratzlaff
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
160 Zillicoa Street
Asheville, NC 28801

828-258-3939. x229



North Carolina Department of Natural and Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

February 17, 2017

Susan Kite
skite@charter.net

Re: Former Porcelanite Facility, 20 Victor Street, Lexington, Davidson County, ER 17-0156

Dear Ms. Kite:

Thank you for your email of January 24, 2017, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona M. Bartos



⊠ North Carolina Wildlife Resources Commission ⊠

Gordon Myers, Executive Director

January 30, 2017

Ms. Susan Kite
Waters Edge Environmental, LLC
Senior Geologist
4901 Waters Edge Dr # 201
Raleigh, North Carolina 27606

Subject: Request for Environmental Sensitive Areas
Condumex Facility, Lexington, Davidson County, NC
Waters Edge Environmental, LLC Project Number: R1-21

Dear Ms. Kite,

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the subject information. Comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e) and North Carolina General Statutes (G.S. 113-131 et seq.).

Waters Edge Environmental, LLC is requesting a review of environmentally sensitive areas within 1.0 mile of the Condumex Facility, located at 20 Victor Street, Lexington, Davidson County. At the request of the NC Department of Environmental Quality, Waters Edge Environmental LLC is working on a RCRA Part B Permit Application for the former Porcelanite Facility. The site is located on parcel number 1134200000022 and is approximately 12.4 acres in size. An unnamed tributary of Rat Spring Branch in the Yadkin – Pee Dee River basin flows through the site. Rat Spring Branch is classified as a Class C stream by N.C. Division of Water Resources (NCDWR).

There are no national refuges or state-owned, wildlife-designated or management lands within 1.0 mile of the site. However, lands managed by Davidson County as Open Space are located within 1.0 mile of the site. There are no migratory or feeding grounds for anadromous fish or spawning areas critical for the maintenance of fish/shellfish species, or large lakes or reservoirs with areas that fish spend extended periods of time occur within 1.0 mile of the site.

There is a historical record of the Carolina birdfoot-trefoil (*Acmispon helleri*), a state species of special concern – vulnerable, within 1.0 mile of the site. A current record of a northern-long eared bat (*Myotis septentrionalis*), a state significantly rare and federally threatened species, occurs in Davidson County with no specific location provided. Therefore, the northern long-eared bat may be present or within 1.0 mile of the site. As such, consultation with the USFWS may be required. For more information, please

Mailing Address: Habitat Conservation • 1721 Mail Service Center • Raleigh, NC 27699-1721

Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

January 30, 2017
Condumex Site
Lexington, Davidson County

see <https://www.fws.gov/Midwest/endangered/mammals/nleb/index.html> or contact the USFWS at (828) 258-3939 to ensure that potential issues related to this species are addressed.

The project footprint should be surveyed for wetlands and streams to ensure there are no impacts to surface waters. In addition to providing wildlife habitat, wetland areas and streams aid in flood control and water quality protection. United States Army Corps of Engineers Section 404 Permits and NCDWR Section 401 Certifications are required for any impacts to jurisdictional streams or wetlands. Furthermore, the NCWRC recommends maintaining a minimum 100-foot undisturbed, native, forested buffer along perennial streams, and a minimum 50-foot buffer along intermittent streams and wetlands. Wide riparian buffers are helpful in maintaining stream bank stability. In addition, these buffers provide a travel corridor for wildlife species.

Sediment and erosion control measures should be installed prior to any land clearing, construction or disturbance. The use of biodegradable and wildlife-friendly sediment and erosion control devices is strongly recommended. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines. Silt fencing or similar products that have been reinforced with plastic or metal mesh should be avoided as they impede the movement of terrestrial wildlife species. Excessive silt and sediment loads can have detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs and clogging of gills.

If I can provide further assistance, please call (336) 290-0056 or email olivia.munzer@ncwildlife.org.

Sincerely,

A handwritten signature in black ink, appearing to read 'O. Munzer', with a stylized flourish at the end.

Olivia Munzer
Western Piedmont Habitat Conservation Coordinator
Habitat Conservation Program

Susan Kite

From: Gibby, Jean B CIV USARMY CESAW (US) <Jean.B.Gibby@usace.army.mil>
Sent: Saturday, February 4, 2017 11:51 AM
To: Susan Kite
Subject: RE: [EXTERNAL] Request for Information: 20 Victor Street, Lexington, Davidson County, NC

Flag Status: Flagged

Susan,

I have looked at the map and there is no record in our system about the town ever having acquired a permit for the fill at the referenced facility. As I had mentioned to you, we had permits back in 1992 that would have allowed such activities. There is a site off of Cotton Grove Road that had a permit and that stream flows from that property through the referenced property.

In our conversation, I missed the fact that you desire to know about jurisdictional features within a 1-mile radius of the project. I am unable to do anything more than what you likely could do which is to review USGS topo maps, NRCS soil maps along with NWI maps. In order to access property, we must have permission from a property owner and in this case I don't have that. In addition, in light of the fact of the area you are desiring to gain this information, I suggest that you get an environmental consultant to obtain that information. Otherwise, you would have to personally contact all property owners within that 1-mile radius, get their permission for me to go on their property to look for jurisdictional features and I personally could only give you about 2 hours every 2 months to do such an effort. Even if a consultant were to perform the work, I would still need to have the necessary information to provide either a preliminary or approved jurisdiction. Instructions for that paperwork can be found on our website at www.saw.usace.army.mil, go to Regulatory and then look at the information under jurisdictional determinations. All of the necessary paperwork would need to be provided to our office prior to making a site visit as we are not allowed to trespass on property.

I wish I could have been more helpful, but that is all I can provide based upon the limited information that you have provided to me.

Should you have additional questions, please do not hesitate to contact me; however, I might not be in the office much this week as I am on-call for jury duty through the rest of the week and will not be released from that obligation until 9 Feb 17.

V/R,
Jean B. Gibby

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Jean B. Gibby
Chief, Raleigh Field Office
U.S. Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
(919) 554-4884, Ext. 24

e-mail: Jean.B.Gibby@usace.army.mil

-----Original Message-----

From: Susan Kite [mailto:skite@charter.net]

Sent: Monday, January 30, 2017 10:42 AM

To: Gibby, Jean B CIV USARMY CESAW (US) <Jean.B.Gibby@usace.army.mil>

Subject: [EXTERNAL] Request for Information: 20 Victor Street, Lexington, Davidson County, NC

Jean: Thank you for your time this morning.

Mannington Ceramic Tile, Inc. was the owner in 1992, but as I understand it, the City of Lexington obtained the permit and installed the pipe at Walltown Branch. The stream has also been referred to as Walltown Drain.

At the request of the NC Department of Environmental Quality (DEQ), we are working on a RCRA Part B Permit Application for the closed Former Porcelanite Facility, located at 20 Victor Street, Lexington, Davidson County, NC. The geographical location of the Facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The property is located on the Lexington, West quadrangle map. I have attached a copy of the topo map for your use. As we discussed I am looking for wetlands information regarding the Facility and a 1-mile radius of the property.

If you have any questions, or need additional information, please contact me.

Thank You,

Susan

Susan Kite, PG

Senior Environmental Geologist

c: 678.640.5268

skite@charter.net <mailto:skite@charter.net>

Susan Kite

From: Munger, Bridget <bridget.munger@ncdenr.gov>
Sent: Wednesday, January 25, 2017 4:17 PM
To: Susan Kite
Cc: Munger, Bridget
Subject: RE: Request for Information: 20 Victor Street, Lexington, Davidson County, NC
Attachments: Davidson County mines.xls

Hello Ms. Kite,

Here is a list of active and released Davidson County mines from the state mining program database. This should cover everything within the one-mile radius. The lat/long is listed for each location. Please let me know if you have any questions.

Thank you,

Bridget Munger

Public Information Officer
N.C. Department of Environmental Quality
Division of Energy, Mineral and Land Resources
Division of Water Resources

919-807-6363 office
919-207-7786 mobile
bridget.munger@ncdenr.gov

1612 Mail Service Center
Raleigh, NC 27699-1612



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Susan Kite [mailto:skite@charter.net]
Sent: Wednesday, January 25, 2017 10:34 AM
To: Munger, Bridget <bridget.munger@ncdenr.gov>
Subject: Request for Information: 20 Victor Street, Lexington, Davidson County, NC

Good Morning,

At the request of the NC Department of Environmental Quality (DEQ), we are working on a RCRA Part B Permit Application for the closed Former Porcelanite Facility, located at 20 Victor Street, Lexington, Davidson County, NC, approximately 1 mile north of Interstate 85. The Assessor's Parcel Number (APN) is 113420000022. The geographical location of the Facility is latitude 35° 47' 42" N and longitude 80° 15' 51" W. The property is located on the Lexington, West quadrangle map. I have attached a copy of the topo map for your use. I would like to request any information that is available concerning active and inactive mines within a 1.0-mile radius of the property.

If you have any questions, or need additional information, please contact me.

Thank You,
Susan

Susan Kite, PG

Senior Environmental Geologist

c: 678.640.5268

skite@charter.net

| PERMIT_NUMBER | Permittee_Bus_Name | LOCATION_ NAME | ORIG_ISSUE_ DATE | EXPIRATION_ DATE | Select Contact Person | Select Addr, City, State, Zip | Phone |
|---------------|---------------------------------|--------------------|---------------------|---------------------|---------------------------------|---|--------------|
| 29-03 | Martin Marietta Materials, Inc. | Thomasville Quarry | 08/10/1972 | 09/14/2022 | Jay Nivens | 413 South Chimney Rock RoadGreensboro, NC 27409 | |
| 29-04 | Jacob'S Creek Stone | Davidson Mine | 09/11/1972 | 05/21/2023 | Jeff Mckinney | P O Box 608Denton, NC 27239 | 336-857-2602 |
| 29-06 | Cunningham Brick Company | Davidson II Mine | 06/17/1975 | 03/30/2017 | Cunningham Brick Company | PO Box 2063Lexington, NC 27293 | |
| 29-13 | Hanson Aggregates Southeast LLC | Lexington Quarry | 11/02/1992 | 03/25/2025 | Hanson Aggregates Southeast LLC | 2101 Gateway Centre Blvd.Suite 100Morrisville, NC 27560 | |
| 29-01 | Cunningham Brick Co | Davidson Mine | 08/19/1972 | 07/20/1982 | Donald Beck | Route 2Thomasville, NC 27360 | 919-476-6181 |
| 29-02 | Martin Marietta Materials, Inc. | Lexington Quarry | 08/24/1972 | 06/24/1992 | Martin Marietta Materials, Inc. | P O Box 30013Raleigh, NC 27622-0013 | |
| 29-05 | White And Sink | I-85 Gravel Pit | 03/25/1973 | 07/06/1983 | Joe S. Sink | P O Box 1207Lexington, NC 27292 | 704-246-2310 |
| 29-07 | Cecile Crushed Stone | Pilot Quarry | 08/13/1976 | 07/15/1986 | Danny Cecile | Route 1 Box 143Germanton, NC 27109 | 919-767-0636 |
| 29-08 | Rea Construction Co | Sand Pit #115 | 07/09/1974 | 12/15/1993 | Claude Hildreth | P O Box 32487Charlotte, NC 28232 | 704-373-1331 |
| 29-09 | Triad Sand Co | Triad Sand Mine | 09/12/1987 | 06/19/1997 | Oscar L. Jones | 4565 Frye Bridge RoadClemmons, NC 27012 | 919-766-6508 |
| 29-10 | Walser Sand Co | Walser Sand Pit | 08/08/1987 | 10/01/1997 | Johnny Walser | 317 Frye Bridge RoadClemmons, NC 27012 | 919-764-4193 |
| 29-11 | Larco Construction | Larco #57 Mine | 04/19/1989 | 03/15/2010 | John Couture | P O Box 16279Winston Salem, NC 27115 | 336-767-3500 |
| 29-12 | Carolina Gold Mines | Conrad Hill Mine | 06/03/1989 | 06/09/1994 | Tom Kleeberg | 2316 Maple AvenueBurlington, NC 27215 | 336-570-1997 |

| ORIGINAL_APP_ RECEIVED_ DATE | PERMIT_ REVISION_ DATE | RELEASE_ DATE | MINE_ STATUS | COMMODITY_ CODE | TOTAL_ACRES_ PERMITTED | BONDED BOND_ TYPE_CODE | ARR_RECEIVED_ | BOND_AMOU | QUADRANGL E NAME | LATITUDE_ MEASURE | LONGITUDE_ MEASURE | ACRES_ CURRENT | LAST_ UPDATE_DATE |
|------------------------------|------------------------|---------------|--------------|-----------------|------------------------|-----------------------------|---------------|------------|------------------|-------------------|--------------------|----------------|-------------------|
| 08/07/1972 | 07/15/2013 | | Active | Crushed Stone | 350 | 159 Surety Bond - Mul | 01/13/2016 | 500,000.00 | Lexington East | 35.8497 | -80.1631 | 182 | 04/07/2016 |
| 03/30/1972 | 05/21/2013 | | Active | Flag Stone | 441 | 77 Letter of Credit - Iv | 02/03/2016 | 217,800.00 | Handy | 35.5297 | -80.1067 | 77 | 03/28/2012 |
| 04/07/1975 | 03/30/2007 | | Active | Brick Clay | 128 | 36 Surety Bond - Sing | 02/09/2016 | 97,200.00 | Fair Grove | 35.7779 | -80.11 | 29 | 03/08/2016 |
| 08/19/1991 | 03/25/2014 | | Inactive | Crushed Stone | 158 | 66 Surety Bond - Mul | 01/29/2016 | 500,000.00 | Lexington East | 35.77200 | -80.23840 | 1 | 11/16/2005 |
| 04/19/1972 | | 08/30/1982 | Released | Brick Clay | 140 | 0 Surety Bond - Single Site | | 25,000.00 | | 35.79500 | -80.12833 | 0 | 10/08/2003 |
| 04/24/1972 | 06/24/1982 | 06/04/1985 | Released | Crushed Stone | 187 | 0 Surety Bond - Single Site | | 25,000.00 | | 35.85166 | -80.23483 | 0 | |
| 11/25/1972 | | 09/01/1980 | Released | Sand and Gravel | 13 | 0 Surety Bond - Single Site | | 5,000.00 | | 35.87833 | -80.12833 | 0 | |
| 04/13/1976 | | 01/08/1982 | Released | Dimension Stone | 40 | 0 Surety Bond - Single Site | | 25,000.00 | | 35.86500 | -80.15500 | 0 | |
| 03/09/1974 | 12/15/1983 | 06/25/1986 | Released | Sand and Gravel | 2 | 0 Surety Bond - Single Site | | 25,000.00 | | | | 0 | |
| 05/12/1987 | | 06/05/1998 | Released | Sand Dredging | 2 | 0 Assignment - Sing | 01/23/1997 | 2,500.00 | | 35.9831 | -80.3605 | 0 | 10/08/2003 |
| 06/08/1987 | | 01/06/1992 | Released | Sand and Gravel | 2 | 0 Assignment - Sing | 02/02/1990 | 2,500.00 | | 35.97483 | -80.33833 | 0 | 10/08/2003 |
| 11/21/1988 | 08/14/2001 | 02/05/2008 | Released | Sand Dredging | 5 | 5 Surety Bond - Sing | 02/15/2008 | 10,000.00 | Welcome | 35.9355 | -80.3697 | 0 | 01/22/2008 |
| 02/03/1989 | | 05/31/2001 | Released | Gold | 73 | 0 Assignment - Sing | 01/01/2001 | 25,000.00 | | 35.7923 | -80.1602 | 0 | 11/16/2005 |

Part E

Groundwater Monitoring

Part E – Groundwater Monitoring

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- E-4 Cross-Sections (September 2016)

Acronym List

| | |
|-------------|---|
| ACL | Alternative Concentration Limits |
| BGS | below ground surface |
| BQL | below quantitation limits |
| CAP | Corrective Action Plan |
| °C | Celsius |
| COCs | Constituents of Concern |
| EP | Extraction Procedure |
| Ft/ft | Foot per foot |
| HWMU | Hazardous Waste Management Unit |
| HWS | Hazardous Waste Section |
| Mannington | Mannington Ceramic Tile |
| MCL | Maximum Contaminant Level |
| mg/kg | milligrams per kilograms or parts per million |
| NC | North Carolina |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality (formerly NCDENR, and renamed effective September 18, 2015). |
| NCGS | North Carolina Groundwater Standards |
| Porcelanite | Porcelanite, Inc. |
| PGW | Protection of Groundwater |
| PQL | Practical Quantitation Limit |
| PSRG | Preliminary Soil Remediation Goal |
| PVC | Polyvinyl Chloride |
| SAP | Sampling and Analysis Plan |
| SIC | Standard Industrial Classification |

| | |
|-------------|---|
| SWMU | Solid Waste Management Units |
| TCLP | Toxicity Characteristic Leaching Procedure |
| USEPA | United States Environmental Protection Agency |
| Waters Edge | Waters Edge Environmental, LLC |

Part E – Groundwater Monitoring

E-1 Interim Status Monitoring Data

Interim status groundwater monitoring was performed at the Facility both at the Settling Ponds and the Ceramic Tile Pile beginning in the late 1980s with one upgradient (MW-1) and seventeen (17) downgradient and cross-gradient monitoring wells (MW-3A, MW-7A, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14, MW-18, MW-19, MW-21A, MW-22A, MW-24, MW-25, MW-26-A-2, MW-28, and MW-29). The monitoring well data was evaluated and found to show exceedances of NCGS Standards which would also demonstrate a statistically significant variance in groundwater quality between the upgradient and downgradient wells. All data from past monitoring events are summarized in Table E-1A for 1005-2004 (summarized by primary COCs) and Table E-1B for 2005-2016 (summarized by monitoring wells routinely sampled as part of the most recently approved SAP) and all past groundwater monitoring reports referenced and annual reports listed in Appendix E-1.

We would state here that boron is not a RCRA regulated hazardous waste or hazardous constituent pursuant to: 40 CFR Part 261, Appendix VIII (Hazardous Constituents); 40 CFR §261.24, Table 1 (Toxicity Table); 40 CFR Part 264, Appendix IX (Groundwater Monitoring List); 40 CFR §264.94, Table 1 (SWMU Hazardous Constituent Concentration Limits), or any other applicable RCRA regulation. At the direction of NCDEQ, boron monitoring data, however, has been included hereafter for reference.

E-1a Description of Wells

There are currently eighteen (18) groundwater monitoring wells at the Facility as shown in Figure E-1. Fourteen (14) are Type II shallow groundwater monitoring wells and four (4) are Type III bedrock groundwater monitoring wells (MW-9 and MW-11, MW-19, and MW-28). Depth and screen intervals are contained in Table E-2 and well completion data for most of the monitoring wells are contained in Appendix E-2 including any water levels at the time of drilling and changes within 24 hours.

E-1b Description of Sampling /Analysis Procedures

The sample collection, sample preservation and shipment, analytical procedures, and chain-of-custody control are contained in the most recently approved SAP in Appendix E-3. Monitoring wells MW-1 (upgradient well for the Facility), MW-9D, MW-12, MW-22A, MW-26A-2, and MW-28D are sampled on a semiannual basis in accordance with the SAP. Details of the procedures are described below.

E-1b (1) Sample Collection

E-1b (1)-1 Groundwater Sample Collection Log Book

A groundwater sample collection log book is maintained to document each sampling event.

Information is entered for each item contained on the form shown in Appendix E-3. The Groundwater Sample Collection Log Book is maintained at the retired Facility manager's residence in a locked cabinet since there are no longer any structures at the Facility. This Log Book is made available to an Inspector during any onsite inspection at the Facility.

E-1b (1)-2 Water Level Monitoring

The water level is measured in each well using an Actat Olympic well probe or equivalent before beginning the well purging/sampling procedures. The distance to the water level is measured to +0.01 foot and recorded in the Groundwater Sample Collection Log Book. Measurements are collected from a reference point, established by a licensed surveyor, located at the top of the well casing with the locking cap off. These reference points have been established in relation to mean sea level and are listed in Table E-2.

E-1b (1)-3 Equipment for Well Purging/Sampling

Equipment for purging includes either a closed top, bottom loading Teflon bailer with a new nylon rope or a low flow electrical submersible Redi-Flo pump or its equivalent. Field measurements are collected to document pH, conductivity, and temperature.

E-1b (1)-4 Groundwater Sampling/Analysis Procedures

Purging

Prior to the purging procedure, water level measurements are taken for each well, using equipment and procedures described in the previous section, Section E-1b-2.

Well Purging/Sampling

Each well is purged to remove standing water so that water which is representative of the formation can replace the standing water. The order of groundwater purging and sample collection proceeds from the well with the most recent lowest concentrations of constituents to the well with the most recent highest constituent concentrations. This order of groundwater purging and sample collection helps to minimize the potential for cross contamination between wells. Clean, disposable nitrile gloves (powder free) worn by sampling personnel during water level monitoring, purging, sampling, and decontamination procedures. New gloves are utilized for each activity and each well.

Utilizing the well volume information gathered from the water level measurement procedures, three well volumes are calculated for each well to determine the minimum volume to be purged prior to sampling. Removal of the minimum three casing volumes and allowing the wells to stabilize insures that all of standing water in the well casing is removed. Newly installed wells will be allowed to stabilize for a minimum of one week following development before being purged and sampled.

A dedicated Grundfos Redi-FI02 brand electric submersible impeller pump is used to purge and sample each well if feasible. If this is not feasible due to obstructions in the well, disposable bailers are attempted. Table E-2 specifies the top of casing elevations (wellhead measuring points, and pump intake in relation to the top of well casing for all monitoring wells currently located at the facility.

An individual pump is dedicated to each well, thus eliminating the potential for cross contamination and eliminating the need for decontamination between sampling events. The pump is secured in the well with a stainless-steel cable. Discharge tubing is Teflon and is dedicated, eliminating the need for decontamination between sampling events.

The purging process involves pumping a minimum of three well volumes of water continuously at a low flow rate (approximately 0.25 gallons per minute). Pumping at the low flow rate reduces or eliminates the collection of well bore sediments and provides a more representative groundwater sample. Field parameters of pH, temperature and conductivity are measured for each well volume. The purging continues until field parameters and water level stabilize. Stabilization consists of three consecutive readings collected at approximate 5 minute intervals over a 15-minute period of time. Each well is purged until visibly clear water flows from the discharge hose of the pump. We also note the stabilized water level to ensure that the sample is entering the pump directly from the formation.

In the event that an existing well contains insufficient water to purge three well volumes or until field parameters have stabilized, the Redi-FI02 pump is operated until it will not yield water and the groundwater samples are obtained following sufficient recharge of the well.

Groundwater Sample Collection

The order of groundwater purging and sample collection proceeds from the well with the most recent lowest concentrations of constituents to the well with the most recent highest constituent concentrations. This order of groundwater purging and sample collection helps minimize the potential for cross contamination between wells. Clean, disposable nitrile gloves (powder free) are worn by sampling personnel during water level monitoring, purging, sampling, and decontamination procedures. New gloves are utilized for each activity and each well. Once the purging process is completed, the water is transferred into the appropriate sample containers without interrupting the pumping/purging process. Prior to commencement of field activities, the contracting laboratory prepares the appropriate sample containers for the sampling event. The target analyte list is contained in Table E-3. Containers are labeled for each well and sample parameter. If required, the laboratory facility adds preservatives to the appropriate sample containers. Sample containers, preservation techniques and holding times utilized in the sampling event are conducted in accordance with the methods presented in EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Table 2-33. Table E-4 specifies the sample container volume, preservative, holding time and analytical method to be employed to analyze the

sample at the laboratory.

E-1b (1)-5 Sample Identification and Shipment

Upon filling, the sample containers are immediately labeled. Legible labels will be affixed to each sample container to prevent the misidentifications of samples. The labels are sufficiently durable, to remain legible even when wet, and contain the following type of information:

- Sample of identification number
- Parameters

Containers are numbered according to well numbers. Samples are packed in an ice chest with ice pack and transferred to the laboratory within 24-hours of collection. The chain-of-custody program includes the following:

1. Sample labels which prevent misidentification of samples
2. Field log book (Groundwater Sample Collection Log Book) to record information about each sample collection during the groundwater monitoring programs (see Appendix E-3). This is maintained at the Facility manager's residence in a locked filing cabinet.
3. Chain of custody record to establish the documentation necessary to trace sample possessions from the time of collection to analysis

A field log book (Groundwater Sample Collection Log Book) is maintained by Waters Edge or equivalent. The log book is kept up-to-date at all times. To establish the documentation necessary to trace sample possession from time of collection, a chain-of-custody record is completed and accompanies every sample.

Chain-of-Custody Record

A form is supplied by the laboratory in a format for recording all pertinent sampling data to maintain a record of the chain of custody of samples collected. The form is completed in the field prior to delivery of the samples to the laboratory. Information included on the chain of custody record includes, at a minimum, the following:

- | | |
|--------------------------------|--|
| – project name | – preservatives & number of containers |
| – project number | – sampler identification |
| – sample location, well number | – custody signatures |
| – sampling date & time | – laboratory North Carolina Certification Number |
| – requested analysis | – inclusive dates of sample possession |

Once the sample has been transported and received in the laboratory, the sample custodian and/or laboratory personnel clearly document the processing steps applied to the sample. All sample preparation techniques and instrumented methods are identified in a laboratory log book.

Experimental conditions such as the use of specific reagents, temperatures, reaction times, and instrument settings are noted. The results of the analysis of quality control samples are identified specific to each batch of groundwater samples analyzed. The laboratory log book includes the time, date, and name of the person who performed each processing step.

E-1b (1)-6 Analytical Methods

The semiannual sampling analyses for compliance monitoring has been performed by Research & Analytical Laboratories located in Kernersville, North Carolina. The most recently approved SAP requires analysis of six metals (boron, cadmium, chromium, cobalt, lead, manganese, and zinc) which are analyzed according to EPA Method 200.7. We have included the monitoring parameters and schedule in Table E-3 and the container size, preservative, holding time and analytical methodology in Table E-4.

E-1b (1)-7 Reporting

A report is generated within 60 days of sample collection to document details of the sample collection event and laboratory results.

E-1c Monitoring Data

Since the Facility is in post-closure, we would conclude that providing interim status monitoring results (265.92(c)(1) and 265.92(d)), water levels (265.92(e)), and initial background arithmetic mean and variance for each indicator parameter based on replicate measurements from upgradient wells during the first year is not applicable. All available past monitoring data is included in Tables E-1A and E-1B and a listing of past monitoring reports summarized in Appendix E-1.

E-1d Statistical Procedures

Since the Facility is in post-closure, a description of the statistical procedures employed to make the required statistical comparisons between the upgradient and downgradient wells is not deemed applicable because there is documented impact and the statistical comparison was never completed during interim status.

E-1e Groundwater Assessment Plan

Since the semiannual plume monitoring continues to indicate continued plume migration, additional assessment of the groundwater is being considered. Additional assessment would follow this general plan outlined below.

Additional monitoring wells would be located ahead of the observed plume in order to delineate the contaminant plume to North Carolina 2L groundwater standards or ACL standards if accepted

by NCDEQ. Similarly, intermediate to deep monitoring wells may need to be installed to delineate the plume vertically.

E-1e (1) Well Construction Procedures

Three types of monitoring wells may be proposed as follows:

- shallow wells from 0 to 45 feet
- intermediate wells from 46 to 75 feet
- deep wells from 75 feet

Shallow wells (0 to 45 feet) would be constructed of Schedule 40 2-inch PVC casing and screen. The PVC casing and screen would be connected by flush-threaded end connections. No PVC solvent or glue would be used to connect the pipe. Screens would consist of a 10-foot length of PVC slotted screen with screen openings between 0.010 to 0.015 inches.

The intermediate wells (46 to 75 feet) and deep wells (76 feet plus) would be constructed of schedule 40 2-inch or 4-inch PVC casing and screen. All end connections would be flush-threaded. No PVC solvents or glues would be used. Screen length would be 10-foot and screen openings would be between 0.010 and 0.015 inches.

The drilling would be conducted with a hollow-stem auger or air rotary drill rig. The hole would be drilled to a diameter of approximately 7-7/8 to 8-1/4 inches. Cuttings would be collected every 5 feet and logged by a geologist. The geologist would also record drilling rates, rod drops, etc. to help develop the geology of the boring. Plastic would be placed around the proposed boring location with a hole for the drill rods and bit to pass. The plastic would collect the groundwater and drill cuttings during the drilling process. A plastic lined ditch would convey the groundwater to a small sump where it would be pumped into 55-gallon drums and eventually disposed as a non-hazardous waste.

If a highly-contaminated zone is encountered above the proposed screened interval, it may need to be cased to prevent the contamination from being carried down with the drilling process. A boring drilled to a diameter of approximately 10-12 inches would be completed through the contaminated zone. Then a 6 or 8-inch diameter casing would be installed and grouted in place to seal the contaminated zone. The drilling would then proceed using the smaller 5-7/8 or 7-7/8- inch bit until the desired screen depth is reached. Following the completion of the drilling, the monitoring well would be installed. All screens would have centralizers installed at their base and top to ensure that the screen would be centered within the boring. A sandpack consisting of clean washed sand would be tremied around the screen and carried from 2 to 4 feet above the screen top. Above the sandpack, bentonite would be placed to form a seal between the annular space and the well. After the seal, a cement grout or bentonite grout would be poured to within 30 feet of ground surface. From 30 feet to ground surface, a neat bentonite/cement grout would be poured.

A lockable protective steel casing would be installed around the well which would then be locked. The well location to the nearest foot and vertical elevations to the nearest 0.01 foot would be surveyed following well installation by a registered surveyor in the State of North Carolina.

After the well is installed, the well would be cleaned of all clay, silt, or sand that may have accumulated in the well. The well would be pumped or bailed for a sufficient length of time to settle the sandpack and remove any fines. The well would be considered developed when the water removed from the well is reasonably free of sand, silt, and clay. All development water would be containerized and eventually discharged into the City of Lexington POTW which has been accepted by that entity. No dispersing agents, acids, disinfectants, or other additives would be used during development or would at any other time be introduced to the well. The installed well shall be depicted in a well diagram. This diagram would graphically denote by depth from ground surface (unless otherwise specified):

- screen location
- bottom of boring
- granular backfill
- seals
- grout
- cave in
- height of casing stickup (above ground surface)
- protective casing details

Upon completion of the monitoring wells, Waters Edge would submit Well Completion Form GW-1 for the wells as required by North Carolina law. The originals would be submitted to the NCDEQ HWS and NCDEQ Groundwater Section or equivalent.

E-1e (2) Sampling and Analysis

The purging and sampling of any new monitoring wells would follow the most recently approved SAP contained in Appendix E-3 which is detailed in Part E-1b.

E-1e (3) Evaluation of Data

After any new monitoring wells have been sampled and the analytical results received, they would be evaluated to determine if the plume boundary has been defined. Any additional drilling and well locations would be reviewed with the HWS and the need for continued plume assessment determined.

E-1e (4) Reporting

A report would be prepared after the plume boundaries have been defined. The report would contain the following items:

- copies of all geologic logs, monitoring well construction logs, and well survey data
- updated geologic cross section based on the new monitoring wells
- a hydrogeology discussion that includes the geology, hydrogeology, and water quality for the entire plume and contains:
 - a shallow depth groundwater map
 - an intermediate depth groundwater map
 - a plume map using the nearest semiannual sampling results and the new monitoring well data for shallow and intermediate depth groundwater quality.

E-2 General Hydrological Information

E-2a Topography and Surface Water Bodies

The Davidson County area is characterized by gently rolling hills divided by small streams. The former Porcelanite facility is situated on a hillside, above a small perennial stream named Walltown Branch (see Figures E-1 and E-2). The elevation of the Facility varies from approximately 770 feet above MSL to approximately 730 feet above MSL at Walltown Branch. Walltown Branch is a small stream with its origin approximately 200' south of the Facility, and running to the north along the east side of the property. Walltown Drain is a creek with its origin approximately 1,100' east of the Facility, and running northwest, intersecting with the Walltown Branch on the northeast portion of the Facility. Walltown Branch was piped in 1992/1993 to prevent surface water runoff from the Ceramic Tile Pile (SWMU-3) from entering the creek. A sanitary sewer line and storm sewer lines also run parallel to Walltown Branch northward across the eastern portion of the property and a permanent 25-foot easement for these lines was also conveyed to the City of Lexington.

Runoff from the site primarily discharges toward the Walltown Branch feature; however, since the Walltown Branch has been piped in on the eastern portion of the Facility, much of the discharge no longer enters the actual surface water body east of the Ceramic Tile Pile until it reaches the northern extent of the piping at the Facility's northern boundary. There may also be some discharge which flows under the Walltown Branch east of the Ceramic Tile Pile which would enter into the groundwater. Additionally, there would be a component of groundwater migration from the western portion of the Facility which would enter the Walltown Branch north of the Facility. Walltown Branch migrates north approximately 1,600' and then west after the confluence with Yarborough Drain which discharges into Rat Springs Branch. Rat Springs Branch flows to the west/northwest approximately 2 miles to Swearing Creek, a tributary of the Yadkin River. As of

1997, the Winston-Salem Regional Water Quality Office classified Rat Springs Creek as a "C" surface water designation, which is applied to freshwater protected for secondary recreation, fishing, aquatic life propagation and survival, and wildlife. When the Walltown Branch was enclosed in pipe in 1992/1993 under a Nationwide 26 permit from the U.S. Army Corps of Engineers (USACE), it was determined there were no significant wetlands present at the site (Booz Allen, 2004).

Stream water is not classified as suitable for swimming or drinking water purposes. An updated description of the "C" surface water designation obtained from the NCDEQ website states "Waters protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner." Rat Springs Branch is not on the 303(d) list of impaired streams.

E-2b Geology

The former Porcelanite facility is located in the Lexington municipality, part of Davidson County, North Carolina. The Facility lies within the eastern portion of the Charlotte litho-tectonic belt in the Piedmont Physiographic Province. This is a zone of regionally metamorphosed amphibolite igneous rocks, bounded on the east and west sides by shear zones. The Facility is underlain by Late Proterozoic-aged undivided metavolcanic rocks. Bedrock lithologies at the site consist of massive, quartz-potassium feldspar-muscovite granite to granodiorite that could be associated with the Pennsylvanian to Permian-aged Churchland Pluton or the Devonian-aged Yadkin Pluton. No significant ore deposits have been discovered or mined extensively in the immediate Lexington area. However, silver, lead, cobalt, zinc, gold, and copper have been discovered and mined in areas located 5 to 20 miles south and east of the site.

E-2c Site Specific Geology and Hydrogeology

The predominant lithology at the site has been described as pink to tan, silty sand-textured residual soils (saprolite) weathered in-place from the underlying bedrock. The saprolite grades from intensely weathered rock near the surface to slightly weathered rock at depth. In some areas, sandy clay and clayey sand soils have developed in the upper 5 to 10 feet of saprolite.

Groundwater occurs in two interconnected zones underlying the site. These zones include the unconsolidated (saprolite) water table aquifer and the underlying fractured bedrock aquifer. Groundwater in the water table aquifer is transmitted in a generally laminar fashion through the B- and C- soil zone horizons. These zones tend to have a fairly uniform porosity and permeability and have a relatively large storage capacity in the regolith overlying fractured bedrock. The two water-bearing zones do not appear to have a confining unit separating them. The saprolite/regolith zone acts as the storage reservoir for the underlying bedrock zone, and recharges the bedrock aquifer in response to water withdrawal. Based on previous site investigations, groundwater

saturated soils in the uppermost aquifer occur at depths ranging from 5.5 to 24 feet bgs and extend to the top of the partially weathered rock unit at subsurface depths ranging from 27 to 50 feet bgs. Two geologic cross-sections and flow nets across the site are included in Appendix E-4.

In November 1992, single slug tests were conducted on fifteen (15) monitoring wells. Results from the tests indicated a derived aquifer permeability of 0.40 ft./d. Groundwater flow velocity was calculated to range from 0.030 ft./d to 0.054 ft./d. Groundwater flow is directed toward the northeast with an average hydraulic gradient of 0.04 ft./ft. (approximately though individual groundwater sampling events vary slightly (see the more recent groundwater contour map from September 2016 in Figure E-2). The gradient steepens on the northeastern side of the property as groundwater approaches the tributary stream known as Walltown Branch. Recharge to the water table zone apparently occurs as surface water infiltration over the topographically higher regions southwest of the site.

E-3 Topographic Map Requirements

A Topographic Map depicting the following information is included on Figure E-1:

- Groundwater monitoring wells
- Estimated extent of boron impacted groundwater (horizontal depicted in Figure E-1 with the vertical extent cross-sections diagrams estimated in Appendix E-4). Boron is considered the main COC.
- Hazardous waste management area for Settling Ponds and Ceramic Tile Pile
- Property boundary

The groundwater flow rate, boundaries and underlying interconnection of the uppermost saprolite and deeper bedrock aquifer, hydraulic downgradient direction, and waste management areas have been previously described in Section E-2.

E-4 Contaminant Plume Description

As depicted in Figure E-1 and cross-sections contained in Appendix E-4, the predominate metal detected is boron which has impacted both the shallow saprolite and the deeper bedrock aquifer in the vicinity of the closed Settling Ponds, the closed Ceramic Tile Pile, and hydraulically downgradient of these HWMUs to the northeast. Tabulated results of semiannual groundwater analysis collected from post-closure compliance monitoring wells in the plume between 2005 and 2017 are presented in Table E-1B.

The most recent extent of groundwater impact for the plume was presented in the September 2016 Groundwater Monitoring Report that was submitted to the NCDEQ on December 19, 2016. The following conclusions and recommendations are based on the most recent sampling event:

- During this semiannual sampling event, the six groundwater monitoring wells specified in the most recently accepted SAP (See Appendix E-3) were sampled and analyzed. Based on these results, there are inorganic exceedances above NCGS for monitoring wells MW-1 (upgradient well for the Facility), MW-9D, MW-12, MW-22A, MW-26A-2, and MW-28D with the main constituents being boron, manganese, and zinc.
- Most of the monitoring wells are depicting stable to slightly decreasing trends; however, increasing trends for inorganic constituents are noted for the following:
 1. Increasing trend for manganese for MW-1 (upgradient well) with the zinc trend considered widely fluctuating (large increases and decreases between sampling events)
 2. Widely fluctuating trend for boron (large increases and decreases between sampling events) for MW-12 and MW-26A-2
 3. Recent increasing trend for boron and manganese in MW-28D.
- Lead was analyzed and was ND or below the NCGS in all groundwater monitoring wells. The only detected value was at MW-9D at a concentration of 0.006 mg/L which is below the NCGS of 0.015 mg/L.

The horizontal and vertical extent of the boron contaminant plume is not yet fully defined. The necessity for corrective action and for a broader monitoring program would be determined once the plume has been further defined.

Inorganics in Surface Water

There have been numerous past surface water sampling events at the Facility which are summarized in Table E-5 with North Carolina 2B exceedances on Figure E-3. Based on the results of the past surface water sampling, we would conclude that while there is potential off-site contribution of boron into the surface water entering the Facility (upgradient boron concentrations detected include 0.084 mg/L [March 1996], BDL [March 1999], and BDL/0.104 mg/L [two Upgradient locations analyzed, west of SR 8 and south of Victor Street, respectively, February 2005]), there are increases in the boron concentration in the Downgradient samples collected at the property line (downgradient boron concentrations detected include 1.93 mg/L [March 1996], 1.06 mg/L [March 1999], 0.223 mg/L [December 2004], and 2.89 mg/L [February 2005]). The downgradient March 1996, March 1999, and February 2005 boron concentrations exceed the EPA screening value of 0.75 mg/L. We would add that the levels of copper, manganese (upgradient and downgradient), and zinc (downgradient only) also exceeded the North Carolina 2B Standard in the March 1999 sampling event. The 2005 RFA recommends determination of the downgradient extent of the potential surface water impact. Based on the above sample results, the existing data gap appears to be that the surface water exceeds the NCDEQ 2B Standards for copper, manganese, and zinc, and the EPA screening value for boron at the Onsite Downstream sampling locations, and copper and manganese exceeds the NCDEQ 2B Standards at the Onsite Upstream sampling

location. These sampling locations as well as the remainder of Walltown Branch to the confluence of Rat Springs Branch are being considered for further review and potential assessment.

Inorganics in Sediment

Based on the historic sediment sample results summarized in Table E-6 and past risk-based exceedances depicted Figure E-3, a conclusion could be that there are increases of individual constituents based on the history of sampling results. There are no current Health-based Industrial PSRG exceedances in all past sediment sampling results. There are individual PGW PSRG exceedances in the March 1999 investigation for cobalt and vanadium (both upgradient and downgradient); however, sample results for cobalt and vanadium are well below the range of background samples (2.02-47.2 mg/kg for cobalt and 5.01-199 mg/kg for vanadium- see Table E-6). There are individual PGW PSRG exceedances in the December 2004 investigation for boron; however, upgradient background levels (S-1, S-2, and S-3) are higher than downgradient levels. Also, results for boron are below the range of background samples (<10.5-123 mg/kg). As such, we do not conclude that further sediment assessment is warranted other than one sample at the former Onsite Downgradient sample location which would be analyzed for hexavalent chromium sample to assure that a trivalent chromium PSRGs is appropriate.

E-5 General Monitoring Program Requirements

A groundwater quality assessment program for the plume was initiated in 1990 and an assessment monitoring program was subsequently developed which is detailed in the most recently approved SAP (Appendix E-3) and in Part E-1b. Since there has been migration from the HWMUs to the uppermost and deeper aquifer, Porcelanite will not ask for a waiver.

E-5a Description of Wells

This is previously described in Section E-1a.

E-5b Description of Sampling/Analysis Procedures

This is previously described in Sections E-1b.

E-5c Procedure for Establishing Background Quality

Monitoring well MW-1 will be used as a background well for comparing results from POC and other monitoring wells. Per 40CFR 264.97(a)(1), we would conclude that the results from MW-1 “represent the quality of background groundwater that has not been affected by leakage from a regulated unit”. Per 40CFR264.97(g), “in detection monitoring or where appropriate in compliance monitoring, data on each hazardous constituent specified in the permit will be collected from background wells and wells at the compliance point(s). The number and kinds of samples collected to establish background shall be appropriate for the form of statistical test employed, following

generally accepted statistical principles. The sample size shall be as large as necessary to ensure with reasonable confidence that a contaminant release to groundwater from a facility will be detected. The owner or operator will determine an appropriate sampling procedure and interval for each hazardous constituent listed in the facility permit which shall be specified in the unit permit upon approval by the Regional Administrator. This sampling procedure shall be:

- (1) A sequence of at least four samples, taken at an interval that assures, to the greatest extent technically feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants, or
- (2) an alternate sampling procedure proposed by the owner or operator and approved by the Regional Administrator.”

Analytical data have been tabulated since the 1995 with no indication that the well is showing contamination from the HWMUs. The analytical results for MW-1 are summarized in Tables E-1A and E-1B. We would choose to use the background arithmetic mean for each constituent at MW-1 utilizing all past sampling data documented in Tables E-1A and E-1B. It is our understanding that this would have to be approved by the Regional Administrator before it can be utilized.

E-5d Statistical Procedures

Since there is contaminated groundwater associated with the HWMUs and the site downgradient from the HWMUs, there is no need for a groundwater monitoring program to detect contamination or measure compliance with the groundwater protection standards. Porcelanite does need a monitoring program to track the contaminant plume and to potentially evaluate the effectiveness of the corrective action program which will be submitted at a later date.

Even though the contaminants were fixated in the Settling Ponds and capped in the Ceramic Tile Pile, monitoring continues to assess the upgradient and downgradient monitoring wells to determine contaminant impact and historical trends. Since the background levels and NCGS are not influenced by seasonal variations, and any potential cleanup period will be of sufficient duration that seasonal variations will be averaged; there is no need to correct for seasonal variations.

E-6 Description of Detection Monitoring Program for Facilities Not Detecting the Presence of Hazardous Constituents

Not Applicable.

E-7 Compliance Monitoring Program for Facilities Which Have Detected Presence of Hazardous Constituents

Not currently applicable. This would be part of the CAP submittal at a future date.

E-8 Corrective Action Program

A CAP has not been implemented at the Facility but will be implemented once assessment is complete.

E-8a Characterization of Contamination

The nature and extent of the hazardous constituents detected at the Facility since the 1995 sampling event include the following:

| <u>Contaminant</u> | <u>Highest Detected Concentration (mg/L)</u> |
|--------------------|--|
| Boron | 102.6 mg/L (MW-26-A-2 on September 1996) |
| Cadmium | ND since 2007 |
| Chromium | 0.031 mg/L (MW-22A on September 17, 2008) |
| Cobalt | 0.402 mg/L (MW-1 on March 2000) |
| Fluoride | 2.72 mg/L (MW-10 on September 1998) |
| Lead | 0.024 mg/L (MW-26-A-2 on October 17, 2011) |
| Manganese | 2.88 mg/L (MW-12 on September 29, 2009) |
| Zinc | 2.97 mg/L (MW-26-A-2 on March 29, 2013) |

The lowest detected concentration for each of these constituents would be ND.

E-8b Concentration Limits

E-8b (1) Concentration Limits Established Under 264.94(a)

The nature and extent of hazardous at the Facility from the past sampling events exceeding the MCLs or PQLs of Method 200.7 include the following:

| <u>Contaminant</u> | <u>MCL/PQL (mg/L)</u> |
|--------------------|-----------------------|
| Boron | PQL (0.05 mg/L) |
| Cadmium | MCL (0.01 mg/L) |
| Chromium | MCL (0.05 mg/L) |
| Cobalt | PQL (0.01 mg/L) |
| Lead | MCL (0.05 mg/L) |
| Manganese | PQL (0.01 mg/L) |

Zinc PQL (0.01 mg/L)

E-8 b (2) Alternate Concentration Limits

Concentration limits are the standard limits to be applied at Points of Compliance or the Facility boundary. However, based on the current data trends and site-specific factors, it may not be possible to remediate the groundwater plume to the current NCGS. Therefore, ACLs or risk based clean up levels, if accepted, may be established that must be obtained at a point within the property boundary prior to termination of the groundwater recovery program. These limits will be defined as the steady state or equilibrium concentration of a given contaminant at a Point of Compliance that would not cause an exceedance of the concentration limit at the facility boundary. These concentrations cannot be established at this time. The ACLs may be established in the future and applied based on a demonstration that the levels will not cause an exceedance of the concentration limits at the Facility boundary or if the concentrations will remain on the property so that risk-based cleanup levels may be developed. Such a demonstration shall be based on an appropriate contaminant fate and transport analysis using historical corrective action monitoring data.

E-8c Corrective Action Plan

Corrective measures for groundwater and land based SWMUs have not been implemented at the Facility; however, these will be implemented in the future, as deemed necessary, and will include a CAP. This CAP will be designed to prevent hazardous constituents from exceeding their respective concentration limits at the property boundary. The CAP will consist of detailed engineering plans, if required, and will report and address the following:

- Identification of compliance point
- Plans for removing and handling hazardous waste
- Design and construction plans and specifications for any proposed features to contain groundwater or redirect its flow (e.g. drains, engineered barriers, wells)
- A description of the treatment technologies to be employed to remove hazardous constituents from contaminated groundwater
- Description of the operations and maintenance plans for the corrective action measures
- Description of any additional hydrogeologic data collected for use in designing the corrective action measures
- Schedule for implementation of the corrective action measures

E-8d Groundwater Monitoring Program

Implemented as part of the CAP, a groundwater monitoring program will be utilized to determine compliance with the concentration limits established under 40CFR Part 264.94, and to determine the effectiveness of the CAP.

E-8d (1) Description of Monitoring System

The groundwater monitoring program will include a description of the following:

- Number of wells
- Locations
- Depths and screen intervals
- Casing descriptions
- Other well construction details
- Description of how the groundwater monitoring program will demonstrate the adequacy of the correction action.

This monitoring program will continue until such time that the NCDEQ approves a petition for the Facility to modify or terminate the Corrective Action program based on a comparison of monitoring data to the concentration limits or ACLs proposed in the future. The Facility may also petition the NCDEQ to discontinue monitoring at any well or wells where three (3) consecutive monitoring events indicate contaminant concentrations are below the concentration limits or detection limits.

The frequency and points of monitoring in the program will provide sufficient data for a complete evaluation of the adequacy of corrective measures underway at the facility. The proposed monitoring will be performed in and around the defined extent of the contaminant plume for an evaluation of plume migration and capture by the groundwater recovery system.

E-8d (2) Description of Sampling and Analysis Procedures

The most recently approved SAP, located in Appendix E-3, contains detailed information regarding the sample collection, handling and analysis.

Procedures for Annual Determination of Groundwater Flow and Direction

The direction and rate of groundwater flow will continue to be determined annually using the following procedure:

- Static groundwater elevations will be measured on the same date at the monitoring well locations with an electronic interface probe with an accuracy of 0.01 feet.
- Water level measurements from all monitoring wells will be made on the date of the most recent sampling event for the annual groundwater flow determination.
- Maps of the shallow water table aquifer and deeper water aquifer will be constructed from the static water level measurements. The flow direction and gradient will be determined directly from the maps.
- The range of flow gradients and hydraulic conductivities previously determined at the site will be used to calculate the range of the groundwater flow rate from the equation:

$$V_s = ki/n$$

where: V_s = flow seepage velocity in ft/day,
 k = hydraulic conductivity in ft/day,
 i = flow gradient ft/ft,
 n = effective porosity (assumed to be 0.25)

E-8d (3) Monitoring Data and Statistical Analysis Procedure

No statistical analysis of the monitoring data is required. The MCLs or PQLs presented in Section E-8b (1), or potentially ACLs (to be established in the future), will be used to evaluate the effectiveness and scope of the corrective action system. Corrective action will continue until the NCDEQ approves a petition to modify or terminate the system as described in Section E-8d. Any constituent with a concentration remaining below the MCL or PQL for three (3) consecutive years may be dropped from the monitoring program in accordance with 264.96(c).

E-8d (4) Reporting Requirements

Records of the performance of the Corrective Measures and the progress of remediation will be kept neat and orderly in both hard and electronic format files. These records shall form the basis of the following reports to be submitted to the NCDEQ.

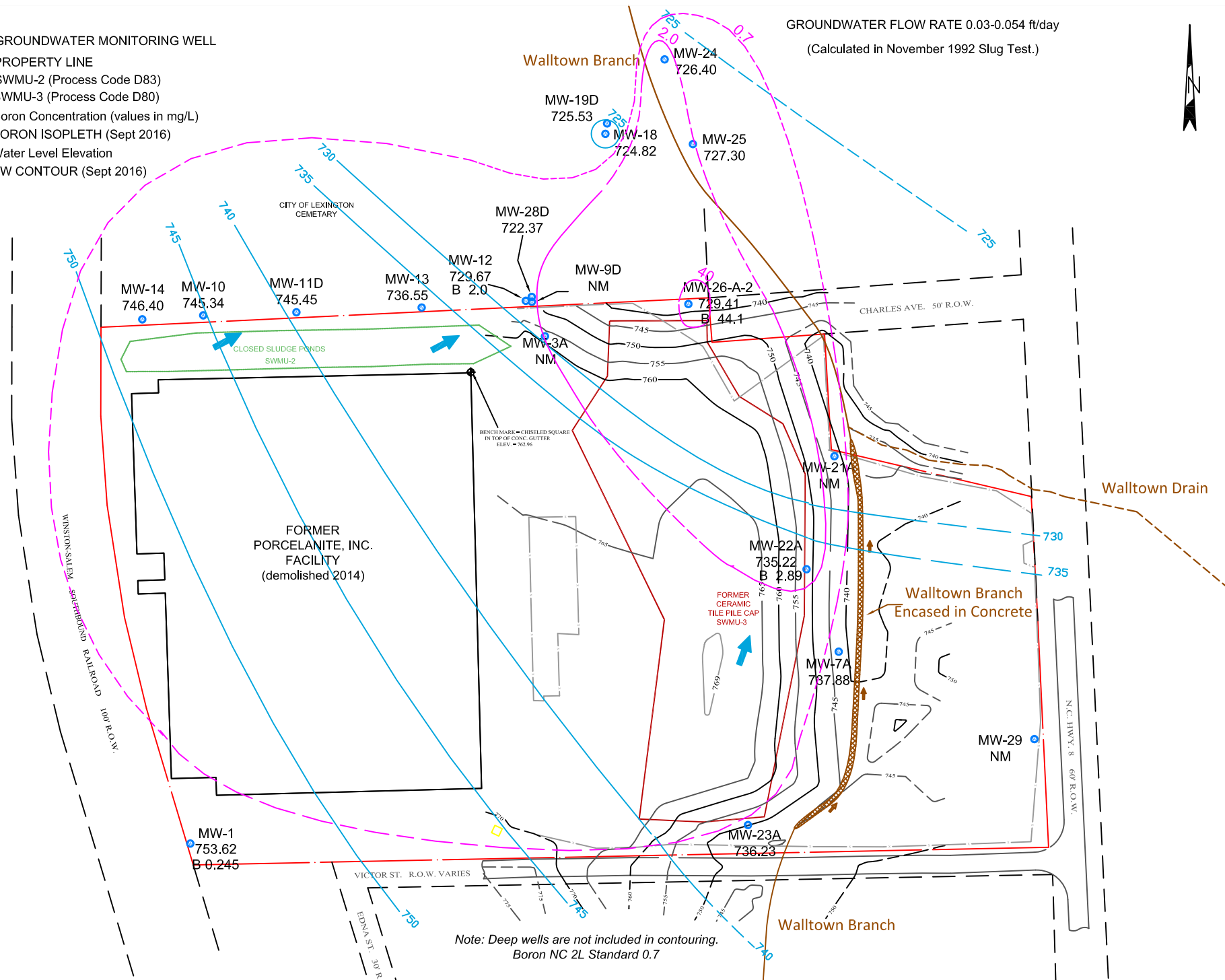
- Annual Progress Report -The Annual Progress Report shall contain a narrative summary of principal activities conducted during the reporting period and graphical or tabular presentation of monitoring data (QA/QC data, data usability evaluation), including, but not limited to, efficiency, groundwater levels and flow directions, and groundwater quality. The Annual Progress Report shall also include a schedule of sampling and field activities to be performed in the following year.
- Biannual O&M Assessment Report - The Biannual O&M Assessment Report shall document assessment of performance of the corrective measure over time. The Biannual O&M Assessment Report shall include summarized data representing corrective measure performance during respective two-year intervals, any proposed changes to the corrective measure and summary of changes, isoconcentration maps for groundwater illustrating the concentration of boron and any other metal detected in multiple wells, assessment of the progress of the corrective measures towards achievement of concentration limits, and when appropriate, notification that limits have been achieved.

Part E Figures

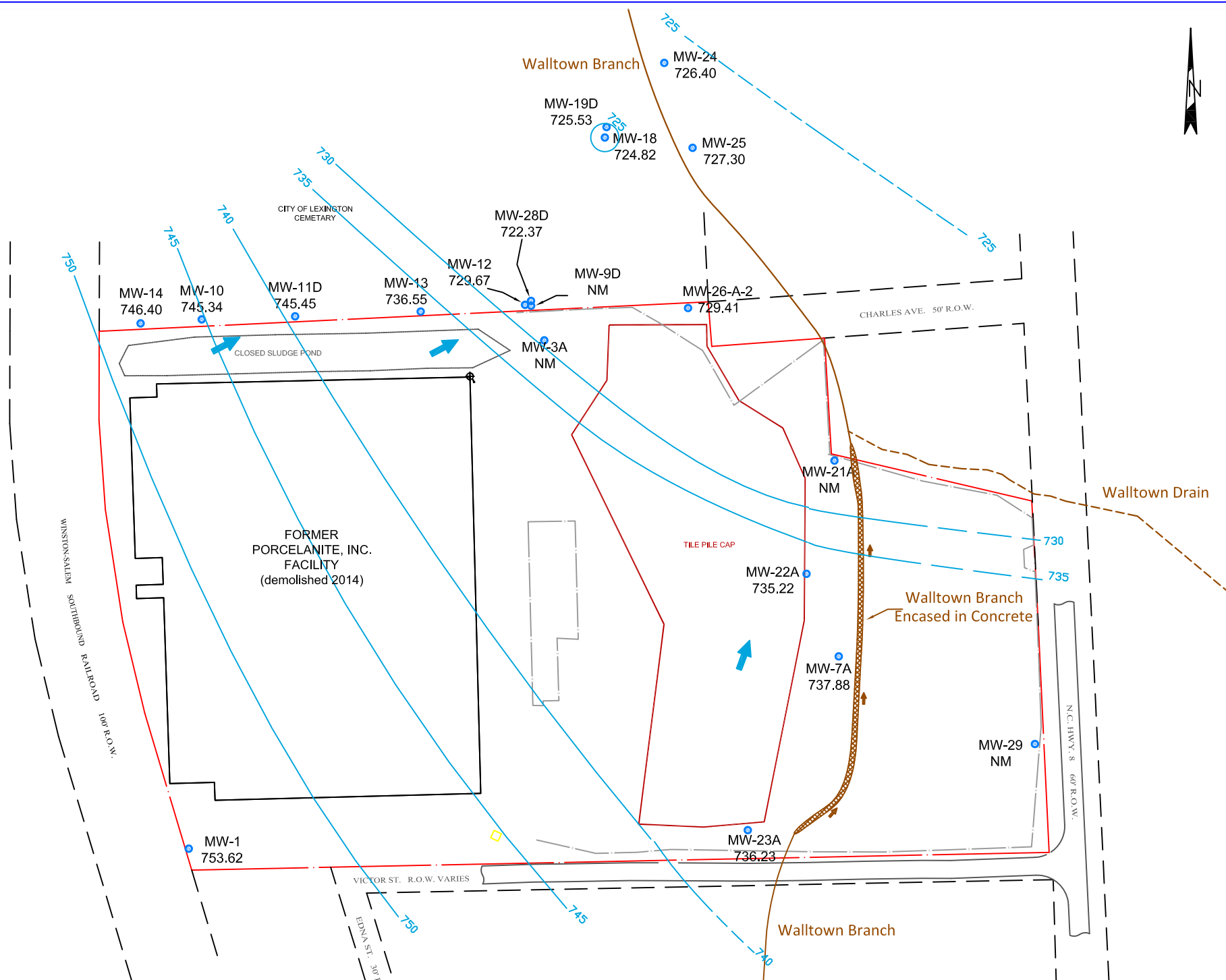
LEGEND

- GROUNDWATER MONITORING WELL
- PROPERTY LINE
- SWMU-2 (Process Code D83)
- SWMU-3 (Process Code D80)
- B 0.249 Boron Concentration (values in mg/L)
- BORON ISOPLETH (Sept 2016)
- 725.53 Water Level Elevation
- - - GW CONTOUR (Sept 2016)

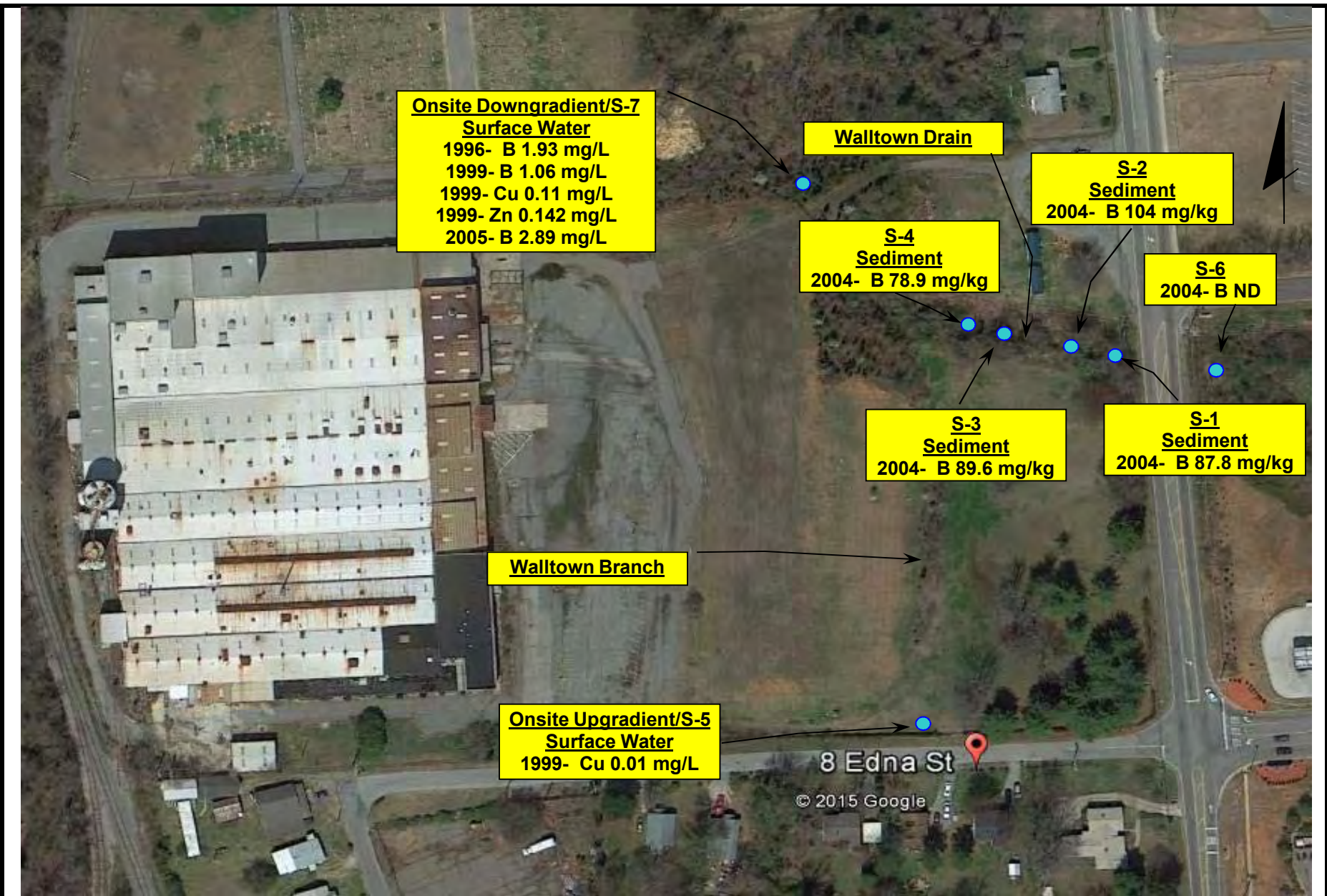
GROUNDWATER FLOW RATE 0.03-0.054 ft/day
(Calculated in November 1992 Slug Test.)



| | | | | |
|------------------|---------------------------|---------------|--------------------|--|
| Author plr | Drawing Part E Fig E-1 | Layers | Date 12.20.2016 | Title Part E3 Topographic Map |
| Job No. R1-21 | Revision 2.23.2017 | Figure E-1 | Scale 1" = 150' | Project Former Porelanite Facility Lexington, North Carolina |



| | | | | |
|------------------|---------------------------|---------------|--------------------|---|
| Author plr | Drawing Part E Fig E-2 | Layers | Date 12.20.2016 | Title Groundwater Contour Map (September 15, 2016) |
| Job No. R1-21 | Revision 12.20.2016 | Figure E-2 | Scale 1" = 150' | Project Former Porcelanite Facility Lexington, North Carolina |



**Onsite Downgradient/S-7
Surface Water**
 1996- B 1.93 mg/L
 1999- B 1.06 mg/L
 1999- Cu 0.11 mg/L
 1999- Zn 0.142 mg/L
 2005- B 2.89 mg/L

Walltown Drain

**S-2
Sediment**
 2004- B 104 mg/kg

**S-4
Sediment**
 2004- B 78.9 mg/kg

**S-6
2004- B ND**

**S-3
Sediment**
 2004- B 89.6 mg/kg

**S-1
Sediment**
 2004- B 87.8 mg/kg

Walltown Branch

**Onsite Upgradient/S-5
Surface Water**
 1999- Cu 0.01 mg/L

8 Edna St

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| | | | |
|--------------------------------|--|-------------------------|--|
| <i>Job No.</i> R1-21 | <i>Image/Photo</i> Davidson Co. GIS | <i>Date</i> 2.22.17 | <i>Title</i> Past Surface Water Sample/Sediment 2B/RBC Exceedances |
| <i>File Name</i> 15-006.xls | <i>Figure</i> E-3 | <i>Scale</i> unknown | <i>Project</i> Former Porcelanite Facility Lexington, North Carolina |

Part E Tables

Table E-1A
1995-2004 Summary of Analytical Result for Boron
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-95 | Jun-95 | Sep-95 | Dec-95 | Mar-96 | Jun-96 | Sep-96 | Dec-96 | Mar-97 | Jun-97 | Sep-97 | Dec-97 | Mar-98 | Jun-98 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | 0.341 | 0.202 | 0.31 | 0.332 | 0.232 | 0.209 | 0.24 | 0.228 | 0.232 | 0.186 | 0.189 | NA | 0.435 | 0.108 |
| MW-3A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.18 | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-11 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-12 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 7.42 | NA |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 22.8 | NA |
| MW-14 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 8.56 | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-19 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-21A | 6.18 | 9.72 | 11.2 | 4.07 | 5.48 | 5.47 | 6.34 | 4.92 | 3.81 | NA | NA | NA | NA | NA |
| MW-22A | 5.64 | 6.2 | 4.89 | 6.24 | 3.58 | 4.06 | BDL | 3.99 | 4.0 | NA | NA | NA | NA | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1.43 | 1.55 |
| MW-26A | 80.8 | 37 | 29.3 | 43.8 | 70.9 | 52.2 | 102.6 | NA | NA | NA | NA | NA | NA | NA |
| MW-28 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 5.83 | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (0.7 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Boron
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Sep-98 | Dec-98 | Mar-99 | Jun-99 | Sep-99 | Dec-99 | Mar-00 | Jun-00 | Sep-00 | Dec-00 | Mar-01 | Jun-01 | Sep-01 | Dec-01 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | 0.28 | 0.249 | 0.254 | 0.22 | 0.179 | 0.239 | 0.24 | 0.237 | 0.281 | 0.225 | 0.236 | 0.267 | 0.236 | 0.482 |
| MW-3A | NA | NA | 1.32 | NA | NA | NA | 0.93 | NA | 1.04 | NA | NA | NA | 1.07 | NA |
| MW-7A | NA | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-9 | 1.12 | NA | 1.07 | NA | 0.798 | NA | 0.812 | NA | 0.806 | NA | 0.713 | NA | 0.802 | NA |
| MW-10 | 14.5 | NA | NA | NA | 17.4 | NA | NA | NA | 9.01 | NA | NA | NA | NA | NA |
| MW-11 | 0.217 | NA | NA | NA | 0.281 | NA | NA | NA | BDL | NA | NA | NA | BDL | NA |
| MW-12 | 4.78 | NA | 2.12 | NA | 5.0 | NA | 4.8 | NA | 4.32 | NA | 2.86 | NA | 4.72 | NA |
| MW-13 | 10.2 | NA | 10.7 | NA | 10.5 | NA | 8.14 | NA | NA | NA | NA | NA | NA | NA |
| MW-14 | 8.31 | NA | 9.46 | NA | 5.75 | NA | 4.8 | NA | 6.5 | NA | 5.2 | NA | NA | NA |
| MW-18 | 0.237 | NA | NA | NA | 0.613 | NA | NA | NA | 0.283 | NA | NA | NA | 0.38 | NA |
| MW-19 | 0.625 | NA | NA | NA | 0.499 | NA | NA | NA | BDL | NA | NA | NA | 0.129 | NA |
| MW-21A | NA | 0.148 | BDL | BDL | BDL | BDL | 0.115 | BDL | BDL | 0.234 | BDL | 0.25 | BDL | BDL |
| MW-22A | NA | 8.47 | 1.08 | 12 | 13.8 | 8.54 | 8.25 | 8.98 | 8.88 | 8.69 | 7.66 | 11 | 8.86 | 13 |
| MW-23A | NA | NA | NA | 0.302 | 0.74 | 0.211 | 0.527 | 0.272 | 0.104 | 0.111 | 1.31 | 0.181 | BDL | 0.181 |
| MW-24 | 3.2 | NA | NA | NA | 3.52 | NA | NA | NA | 3.05 | NA | NA | NA | 3.92 | NA |
| MW-25 | 1.71 | 1.58 | 1.77 | 1.83 | 3.12 | NA | 1.79 | 1.7 | 1.75 | 1.55 | BDL | 2.04 | 2.2 | 2.02 |
| MW-26A | NA | NA | NA | 0.262 | 10.4 | NA | 6.54 | 6.88 | 13.8 | 13 | 1.68 | 17.5 | 21.4 | 40.9 |
| MW-28 | 3.86 | NA | 3.23 | NA | 3.33 | NA | 2.77 | NA | 2.37 | NA | 0.956 | NA | 2.34 | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (0.7 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Boron
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-02 | Jun-02 | Sep-02 | Dec-02 | Mar-03 | Jun-03 | Sep-03 | Dec-03 | Mar-04 | Jun-04 | Sep-04 | Dec-04 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--|--------------------|
| MW-1 | 0.251 | 0.208 | NA | 0.303 | 0.261 | 0.157 | 0.426 | 0.323 | 1st Quarter sampling not performed due to SAP revisions. | 0.248 | 3rd Quarter sampling not performed due to SAP revisions. | 0.288 |
| MW-3A | 0.976 | NA | 1.14 | NA | 1.48 | NA | 2.97 | NA | | NA | | NA |
| MW-7A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | | BDL | | 0.163 |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-9 | 0.794 | NA | 1.99 | NA | 0.538 | NA | 0.516 | NA | | NA | | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-11 | NA | NA | 0.118 | NA | NA | NA | 0.162 | NA | | NA | | NA |
| MW-12 | 2.67 | NA | NA | NA | 4.56 | NA | 6.5 | NA | | NA | | NA |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-14 | 4.22 | NA | NA | NA | 2.47 | NA | 2.42 | NA | | NA | | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-19 | NA | NA | 0.441 | NA | NA | NA | 0.112 | NA | | NA | | NA |
| MW-21A | BDL | BDL | 0.456 | 0.336 | 0.117 | BDL | BDL | 0.147 | | BDL | | 0.177 |
| MW-22A | 7.9 | 10 | 16.3 | 8.93 | 7.13 | 3.46 | 3.1 | 2.86 | | 4.25 | | <i>pump broken</i> |
| MW-23A | BDL | BDL | 0.37 | 2.3 | 0.7 | 0.402 | 1.72 | 2.32 | | 3.19 | | 2.61 |
| MW-24 | NA | NA | 5.22 | NA | NA | NA | 4.98 | NA | | NA | | NA |
| MW-25 | 2.47 | 2.55 | 3.37 | 2.9 | 3.59 | 2.29 | 2.57 | 2.24 | 1.57 | 2.13 | | |
| MW-26A | 37.4 | 31.7 | 68 | 34.6 | 32.1 | 20.8 | 19.8 | 18.1 | 17.8 | 13.3 | | |
| MW-28 | 2.54 | NA | 3.56 | NA | 2.17 | NA | NA | NA | NA | NA | | |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (0.7 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Cobalt
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-95 | Jun-95 | Sep-95 | Dec-95 | Mar-96 | Jun-96 | Sep-96 | Dec-96 | Mar-97 | Jun-97 | Sep-97 | Dec-97 | Mar-98 | Jun-98 |
|-----------|--------|---------------|--------------|---------------|--------------|--------------|--------|--------------|--------|--------------|--------|--------------|--------------|--------|
| MW-1 | NA | 0.0033 | 0.033 | 0.036 | 0.029 | 0.037 | NA | BDL | NA | 0.074 | NA | NA | 0.04 | NA |
| MW-3A | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | NA | NA | NA |
| MW-7A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-8 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-9 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | BDL | NA |
| MW-10 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA |
| MW-11 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA |
| MW-12 | NA | 0.21 | NA | 0.117 | NA | 0.099 | NA | 0.062 | NA | 0.083 | NA | 0.091 | 0.055 | NA |
| MW-13 | NA | 0.042 | NA | NA | NA | 0.032 | NA | BDL | NA | 0.026 | NA | 0.026 | 0.027 | NA |
| MW-14 | NA | BDL | NA | NA | NA | BDL | NA | BDL | NA | NA | NA | BDL | BDL | NA |
| MW-18 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | BDL | BDL | NA | NA |
| MW-19 | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | NA | NA | BDL | NA | NA |
| MW-21A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-22A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-23A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-24 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA | NA |
| MW-25 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA | NA |
| MW-26A | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | BDL | NA | NA |
| MW-28 | NA | BDL | NA | 0.0029 | NA | BDL | NA | BDL | NA | NA | NA | BDL | BDL | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Cobalt
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Sep-98 | Dec-98 | Mar-99 | Jun-99 | Sep-99 | Dec-99 | Mar-00 | Jun-00 | Sep-00 | Dec-00 | Mar-01 | Jun-01 | Sep-01 | Dec-01 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | 0.184 | NA | 0.101 | NA | 0.148 | NA | 0.402 | NA | 0.057 | NA | 0.195 | NA | 0.951 | NA |
| MW-3A | NA | NA | BDL | NA | NA | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-9 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA |
| MW-10 | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | NA | NA |
| MW-11 | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA |
| MW-12 | 0.083 | NA | 0.083 | NA | 0.056 | NA | 0.046 | NA | 0.056 | NA | 0.049 | NA | 0.047 | NA |
| MW-13 | 0.037 | NA | 0.033 | NA | 0.026 | NA | 0.026 | NA | NA | NA | NA | NA | NA | NA |
| MW-14 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | 0.12 | NA | NA | NA |
| MW-18 | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA |
| MW-19 | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-28 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | 0.013 | NA | BDL | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Cobalt
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-02 | Jun-02 | Sep-02 | Dec-02 | Mar-03 | Jun-03 | Sep-03 | Dec-03 | Mar-04 | Jun-04 | Sep-04 | Dec-04 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--|--------|
| MW-1 | 0.178 | NA | NA | NA | 0.228 | NA | 0.123 | NA | 1st Quarter sampling not performed due to SAP revisions. | NA | 3rd Quarter sampling not performed due to SAP revisions. | NA |
| MW-3A | BDL | NA | BDL | NA | BDL | NA | BDL | NA | | NA | | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-9 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | | NA | | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | BDL | NA | | NA | | NA |
| MW-11 | NA | NA | BDL | NA | NA | NA | BDL | NA | | NA | | NA |
| MW-12 | 0.038 | NA | NA | NA | BDL | NA | 0.017 | NA | | NA | | NA |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-14 | BDL | NA | NA | NA | BDL | NA | BDL | NA | | NA | | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-19 | NA | NA | BDL | NA | NA | NA | BDL | NA | | NA | | NA |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | |
| MW-28 | 0.01 | NA | BDL | NA | BDL | NA | NA | NA | NA | NA | | |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL = Below Detection Limit

NA = Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Fluoride
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-95 | Jun-95 | Sep-95 | Dec-95 | Mar-96 | Jun-96 | Sep-96 | Dec-96 | Mar-97 | Jun-97 | Sep-97 | Dec-97 | Mar-98 | Jun-98 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | NA | BDL | 0.141 | BDL | BDL | BDL | NA | 0.1 | NA | BDL | NA | NA | BDL | NA |
| MW-3A | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | NA | NA | NA |
| MW-7A | BDL | BDL | BDL | BDL | BDL | BDL | 0.19 | BDL | BDL | NA | NA | NA | NA | NA |
| MW-8 | BDL | BDL | BDL | BDL | BDL | BDL | 0.14 | BDL | BDL | NA | NA | NA | NA | NA |
| MW-9 | NA | 0.4 | NA | 0.62 | NA | 0.43 | NA | 0.3 | NA | 0.34 | NA | BDL | 0.216 | NA |
| MW-10 | NA | 0.8 | NA | 1.4 | NA | 2.6 | NA | 1.6 | NA | 1.68 | NA | 1.5 | NA | NA |
| MW-11 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA |
| MW-12 | NA | 0.58 | NA | 0.62 | NA | 0.38 | NA | 0.265 | NA | 0.3 | NA | 0.17 | 0.134 | NA |
| MW-13 | NA | BDL | NA | BDL | NA | 0.1 | NA | 0.3 | NA | 0.17 | NA | BDL | 0.22 | NA |
| MW-14 | NA | BDL | NA | BDL | NA | 0.1 | NA | BDL | NA | BDL | NA | BDL | BDL | NA |
| MW-18 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | NA | BDL | BDL | NA | NA |
| MW-19 | NA | 0.32 | NA | 0.27 | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA | NA |
| MW-21A | BDL | BDL | BDL | BDL | BDL | BDL | 0.12 | BDL | BDL | NA | NA | NA | NA | NA |
| MW-22A | BDL | 0.17 | BDL | BDL | BDL | BDL | 0.14 | BDL | BDL | NA | NA | NA | NA | NA |
| MW-23A | BDL | BDL | BDL | 0.38 | BDL | BDL | BDL | BDL | BDL | NA | NA | NA | NA | NA |
| MW-24 | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA | NA |
| MW-25 | NA | BDL | NA | BDL | NA | BDL | NA | 0.1 | NA | NA | NA | BDL | NA | NA |
| MW-26A | 1.34 | 0.14 | 1.68 | 0.14 | 1.58 | 0.17 | 1.8 | BDL | NA | NA | NA | NA | NA | NA |
| MW-28 | NA | BDL | NA | BDL | NA | 0.1 | NA | BDL | NA | NA | NA | BDL | BDL | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (2 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Fluoride
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Sep-98 | Dec-98 | Mar-99 | Jun-99 | Sep-99 | Dec-99 | Mar-00 | Jun-00 | Sep-00 | Dec-00 | Mar-01 | Jun-01 | Sep-01 | Dec-01 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | BDL | NA | BDL | NA | BDL | NA | 0.108 | NA | BDL | NA | BDL | NA | 0.188 | NA |
| MW-3A | NA | NA | BDL | NA | NA | NA | BDL | NA | BDL | NA | NA | NA | BDL | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-9 | 0.23 | NA | 0.2 | NA | 0.15 | NA | 0.157 | NA | 0.24 | NA | BDL | NA | 0.37 | NA |
| MW-10 | 2.72 | NA | NA | NA | 1.47 | NA | NA | NA | 0.82 | NA | NA | NA | NA | NA |
| MW-11 | 0.15 | NA | NA | NA | 0.12 | NA | NA | NA | 0.132 | NA | NA | NA | 0.163 | NA |
| MW-12 | 0.2 | NA | NA | NA | BDL | NA | 0.142 | NA | 0.189 | NA | BDL | NA | 0.275 | NA |
| MW-13 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | NA | NA | NA | NA | NA | NA |
| MW-14 | BDL | NA | BDL | NA | BDL | NA | BDL | NA | BDL | NA | 0.149 | NA | NA | NA |
| MW-18 | 0.33 | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | 0.107 | NA |
| MW-19 | BDL | NA | NA | NA | BDL | NA | NA | NA | BDL | NA | NA | NA | 0.329 | NA |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-28 | BDL | NA | BDL | NA | 1.62 | NA | 0.123 | NA | 0.111 | NA | BDL | NA | 0.609 | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (2 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Fluoride
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-03 | Jun-02 | Sep-02 | Dec-02 | Mar-03 | Jun-03 | Sep-03 | Dec-03 | Mar-04 | Jun-04 | Sep-04 | Dec-04 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--|--------|
| MW-1 | BDL | NA | NA | NA | 0.381 | NA | 0.124 | NA | 1st Quarter sampling not performed due to SAP revisions. | NA | 3rd Quarter sampling not performed due to SAP revisions. | NA |
| MW-3A | BDL | NA | BDL | NA | 0.137 | NA | BDL | NA | | NA | | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-9 | 0.124 | NA | BDL | NA | 0.225 | NA | BDL | NA | | NA | | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | 0.107 | NA | | NA | | NA |
| MW-11 | NA | NA | 0.209 | NA | NA | NA | BDL | NA | | NA | | NA |
| MW-12 | 0.165 | NA | NA | NA | 0.141 | NA | BDL | NA | | NA | | NA |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-14 | BDL | NA | NA | NA | 0.159 | NA | BDL | NA | | NA | | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-19 | NA | NA | 0.153 | NA | NA | NA | 0.109 | NA | | NA | | NA |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-28 | 0.125 | NA | BDL | NA | 0.198 | NA | NA | NA | | NA | | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (2 mg/L).

Table E-1A
1995-2004 Summary of Analytical Result for Gross Beta
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-95 | Jun-95 | Sep-95 | Dec-95 | Mar-96 | Jun-96 | Sep-96 | Dec-96 | Mar-97 | Jun-97 | Sep-97 | Dec-97 | Mar-98 | Jun-98 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | 3.7 | 3.1 | 3.2 | 3.1 | 3.4 | 3.1 | 3.7 | 3.8 | 2.7 | 2.5 | 3.5 | NA | NA | NA |
| MW-3A | NA | NA | NA | BDL | NA | NA | NA | 11.7 | NA | NA | NA | NA | NA | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | 1.8 | NA | NA | NA | NA | NA | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | 2.9 | NA | NA | NA | NA | NA | NA |
| MW-9 | NA | NA | NA | NA | NA | NA | NA | 6.8 | NA | NA | NA | 5.5 | NA | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | NA | 18.1 | NA | NA | NA | 20.6 | NA | NA |
| MW-11 | NA | NA | NA | NA | NA | NA | NA | 1.9 | NA | NA | NA | 1.8 | NA | NA |
| MW-12 | NA | NA | NA | NA | NA | NA | NA | 8.3 | NA | NA | NA | 13.4 | NA | NA |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | 8.8 | NA | NA | NA | 7.0 | NA | NA |
| MW-14 | NA | NA | NA | NA | NA | NA | NA | 8.8 | NA | NA | NA | 5.5 | NA | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | 3 | NA | NA | BDL | 2.4 | NA | NA |
| MW-19 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 10.4 | NA | NA |
| MW-21A | 3.2 | 3.3 | 4.1 | BDL | 3.7 | 3.6 | 2.3 | 3.1 | 3.0 | NA | NA | NA | NA | NA |
| MW-22A | 1.4 | NA | 1.4 | 3.8 | 1.7 | 1.3 | 1.1 | 1.8 | BDL | NA | NA | NA | NA | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | 1.6 | NA | NA | NA | NA | NA | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | 2.1 | NA | NA | NA | BDL | NA | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | 1.7 | NA | NA | NA | 2.2 | NA | NA |
| MW-26A | 20.4 | 21.1 | NA | 14.6 | 15 | 14.6 | 20.5 | NA | NA | NA | NA | 8.5 | NA | NA |
| MW-28 | NA | NA | NA | NA | NA | NA | NA | 9.0 | NA | NA | NA | 9.9 | NA | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Gross Beta
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Sep-98 | Dec-98 | Mar-99 | Jun-99 | Sep-99 | Dec-99 | Mar-00 | Jun-00 | Sep-00 | Dec-00 | Mar-01 | Jun-01 | Sep-01 | Dec-01 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | BDL | NA | NA | NA | NA | NA | NA | NA | 5.4 | NA | NA | NA | 4 | NA |
| MW-3A | NA | NA | NA | NA | NA | NA | NA | NA | 16.2 | NA | NA | NA | 11.3 | NA |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-9 | 6.3 | NA | NA | NA | 5.3 | NA | NA | NA | 5.4 | NA | NA | NA | 4.2 | NA |
| MW-10 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-11 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-12 | 9.3 | NA | NA | NA | 9.8 | NA | NA | NA | 11.5 | NA | NA | NA | 11.4 | NA |
| MW-13 | 7.5 | NA | NA | NA | 8.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-14 | 8.8 | NA | NA | NA | 8.1 | NA | NA | NA | 8.5 | NA | NA | NA | NA | NA |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-19 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-28 | 7.7 | NA | NA | NA | NA | NA | NA | NA | 59.3 | NA | NA | NA | 5.4 | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Gross Beta
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-02 | Jun-02 | Sep-02 | Dec-02 | Mar-03 | Jun-03 | Sep-03 | Dec-03 | Mar-04 | Jun-04 | Sep-04 | Dec-04 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--|--------|
| MW-1 | NA | NA | NA | NA | NA | NA | NA | NA | 1st Quarter sampling not performed due to SAP revisions. | NA | 3rd Quarter sampling not performed due to SAP revisions. | NA |
| MW-3A | NA | NA | 17.4 | NA | NA | NA | NA | NA | | NA | | |
| MW-7A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-8 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-9 | NA | NA | 5.2 | NA | NA | NA | NA | NA | | NA | | |
| MW-10 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-11 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-12 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-13 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-14 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-18 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-19 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-21A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-22A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-23A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-24 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-25 | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-26A | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | |
| MW-28 | NA | NA | 9.1 | NA | NA | NA | NA | NA | | NA | | |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (detection limit).

Table E-1A
1995-2004 Summary of Analytical Result for Manganese
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | Mar-98 | Jun-98 | Sep-98 | Dec-98 | Mar-99 | Jun-99 | Sep-99 | Dec-99 | Mar-00 | Jun-00 | Sep-00 | Dec-00 | Mar-01 | Jun-01 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| MW-1 | NA | NA | 0.025 | NA | NA | NA | 0.025 | NA | NA | NA | 0.093 | NA | NA | NA |
| MW-3A | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0.316 | NA | NA | NA |
| MW-9 | NA | NA | 0.163 | NA | NA | NA | 0.113 | NA | NA | NA | 0.124 | NA | NA | NA |
| MW-12 | NA | NA | 0.568 | NA | NA | NA | 0.512 | NA | NA | NA | 0.55 | NA | NA | NA |
| MW-13 | NA | NA | 0.278 | NA | NA | NA | 0.262 | NA | NA | NA | dry | NA | NA | NA |
| MW-14 | NA | NA | 0.092 | NA | NA | NA | 0.094 | NA | NA | NA | 0.104 | NA | NA | NA |
| MW-28 | NA | NA | 0.133 | NA | NA | NA | 0.361 | NA | NA | NA | 0.952 | NA | NA | NA |

| Well ID # | Sep-01 | Dec-01 | Mar-02 | Jun-02 | Sep-02 | Dec-02 | Mar-03 | Jun-03 | Sep-03 | Dec-03 | Mar-04 | Jun-04 | Sep-04 | Dec-04 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--|--------|
| MW-1 | 0.139 | NA | NA | NA | NA | NA | NA | NA | 0.123 | NA | 1st Quarter sampling not performed due to SAP revisions. | NA | 3rd Quarter sampling not performed due to SAP revisions. | NA |
| MW-3A | NA | NA | NA | NA | 1.1 | NA | NA | NA | 0.348 | NA | | NA | | NA |
| MW-9 | 0.066 | NA | NA | NA | 0.082 | NA | NA | NA | 0.068 | NA | | NA | | NA |
| MW-12 | 0.567 | NA | NA | NA | NA | NA | NA | NA | 0.291 | NA | | NA | | NA |
| MW-13 | dry | NA | NA | NA | NA | NA | NA | NA | NA | NA | | NA | | NA |
| MW-14 | dry | NA | NA | NA | NA | NA | NA | NA | 0.127 | NA | | NA | | NA |
| MW-28 | 0.314 | NA | NA | NA | 0.761 | NA | NA | NA | NA | NA | | NA | | NA |

Additional compounds were analyzed but determined not to be COCs.

All results in mg/L

BDL=Below Detection Limit

NA=Not Analyzed

Highlighted blocks indicate concentration in excess of current GW standard (0.05 mg/L).

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-1

| Parameter | Units | Quantitation Limit | 2L Standard | 9/8/05 | 8/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 | 3/25/09 | 9/29/09 |
|---------------|-------|--------------------|-------------|--------|--------------|--------------|--------------|--------------|---------|---------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.226 | 0.254 | 0.268 | 0.369 | BQL | 0.288 | 0.236 | 0.322 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | 0.344 | 0.818 | 0.222 | 0.042 | 0.259 | 0.295 |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | BQL | 0.013 | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | 0.026 | BQL | 0.007 | 0.012 | 0.009 | 0.012 | 0.018 |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | 0.102 | 0.147 | 0.131 | 0.034 | 0.039 | 0.210 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | 0.138 | 0.381 | 0.268 | 0.231 | 0.283 | 0.085 |

MW-1 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/23/10 | 9/21/10 | 3/22/11 | 10/17/11 | 3/27/12 | 9/20/12 | 3/29/13 | 9/17/13 |
|---------------|-------|--------------------|-------------|--------------|--------------|--------------|----------|--------------|---------|---------|---------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.224 | 0.362 | 0.294 | 0.314 | 0.310 | 0.292 | 0.266 | 0.321 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | 0.074 | 0.056 | 0.279 | 0.158 | 0.124 | 0.124 |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | 0.009 | 0.007 | BQL | 0.006 | 0.006 | 0.007 |
| Manganese | mg/L | 0.010 | 0.05 | 0.086 | 0.118 | 0.086 | 0.021 | 0.073 | 0.023 | 0.014 | 0.036 |
| Zinc | mg/L | 0.020 | 1.0 | 0.283 | 0.096 | 0.108 | 0.208 | 0.182 | 0.132 | 0.330 | 0.222 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-1 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 | | |
|----------------------|--------------|-------------------------------|--------------------|----------------|---------------|----------------|----------------|----------------|----------------|--|--|
| <i>Metals</i> | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.102 | 0.302 | 0.293 | 0.285 | 0.280 | 0.245 | | |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | | |
| Cobalt | mg/L | 0.025 | NS | BQL | 0.062 | 0.036 | BQL | 0.026 | BQL | | |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | | |
| Lead | mg/L | 0.005 | 0.015 | BQL | 0.010 | 0.005 | BQL | 0.015 | BQL | | |
| Manganese | mg/L | 0.010 | 0.05 | BQL | 0.034 | 0.586 | 0.301 | 0.498 | 0.389 | | |
| Zinc | mg/L | 0.020 | 1.0 | 0.206 | 0.096 | 0.068 | 0.105 | 0.229 | 0.089 | | |

BQL = Below Quantitation Limit
NA = Compound Not Analyzed
NS = No Standard Established

MW-1

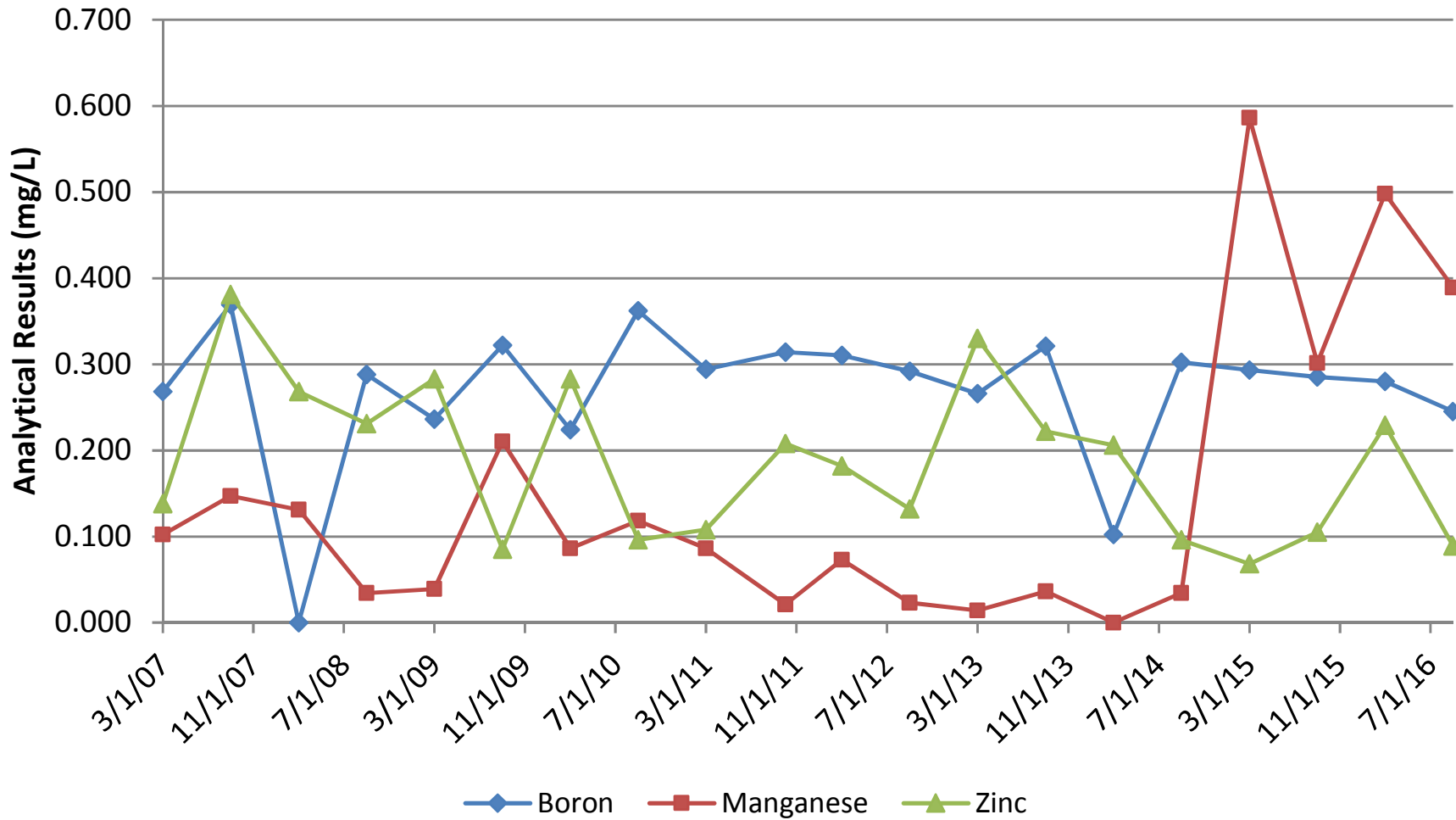


Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-9D

| Parameter | Units | Quantitation Limit | 2L Standard | 3/30/05 | 9/8/05 | 5/19/06 | 10/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 |
|---------------|-------|--------------------|-------------|-------------|--------------|--------------|----------|-------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 1.41 | 0.744 | 0.738 | 0.694 | 0.578 | 1.69 | BQL | 0.738 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | 0.006 |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | NA | NA | 0.033 | 0.412 | 0.058 | 0.160 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | NA | NA | 1.30 | 2.50 | 1.5 | 1.01 |

MW-9D (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/25/09 | 9/29/09 | 3/23/10 | 9/21/10 | 3/22/11 | 10/17/11 | 3/27/12 | 9/20/12 |
|---------------|-------|--------------------|-------------|-------------|-------------|--------------|-------------|--------------|----------|-------------|-------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.419 | 0.59 | 0.332 | 0.441 | 0.613 | 0.136 | 0.527 | 0.497 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | 0.006 | BQL | 0.006 | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.035 | 0.034 | 0.058 | 0.043 | 0.142 | 0.013 | 0.041 | 0.10 |
| Zinc | mg/L | 0.020 | 1.0 | 1.09 | 1.10 | 1.16 | 1.21 | 0.971 | 0.473 | 1.09 | 1.10 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-9D (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/29/13 | 9/17/13 | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 |
|---------------|-------|-----------------------|-------------|---------|--------------|--------------|--------------|---------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | BQL | 0.385 | 0.260 | 0.355 | 0.266 | 0.737 | 0.249 | 0.262 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | 0.008 | BQL | 0.014 | 0.009 | BQL | BQL | BQL | 0.006 |
| Manganese | mg/L | 0.010 | 0.05 | 0.014 | 0.058 | 0.070 | 0.062 | 0.05 | 0.039 | 0.056 | 0.051 |
| Zinc | mg/L | 0.020 | 1.0 | 0.48 | 1.13 | 1.26 | 1.13 | 0.768 | 0.996 | 1.06 | 0.969 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

MW-9D

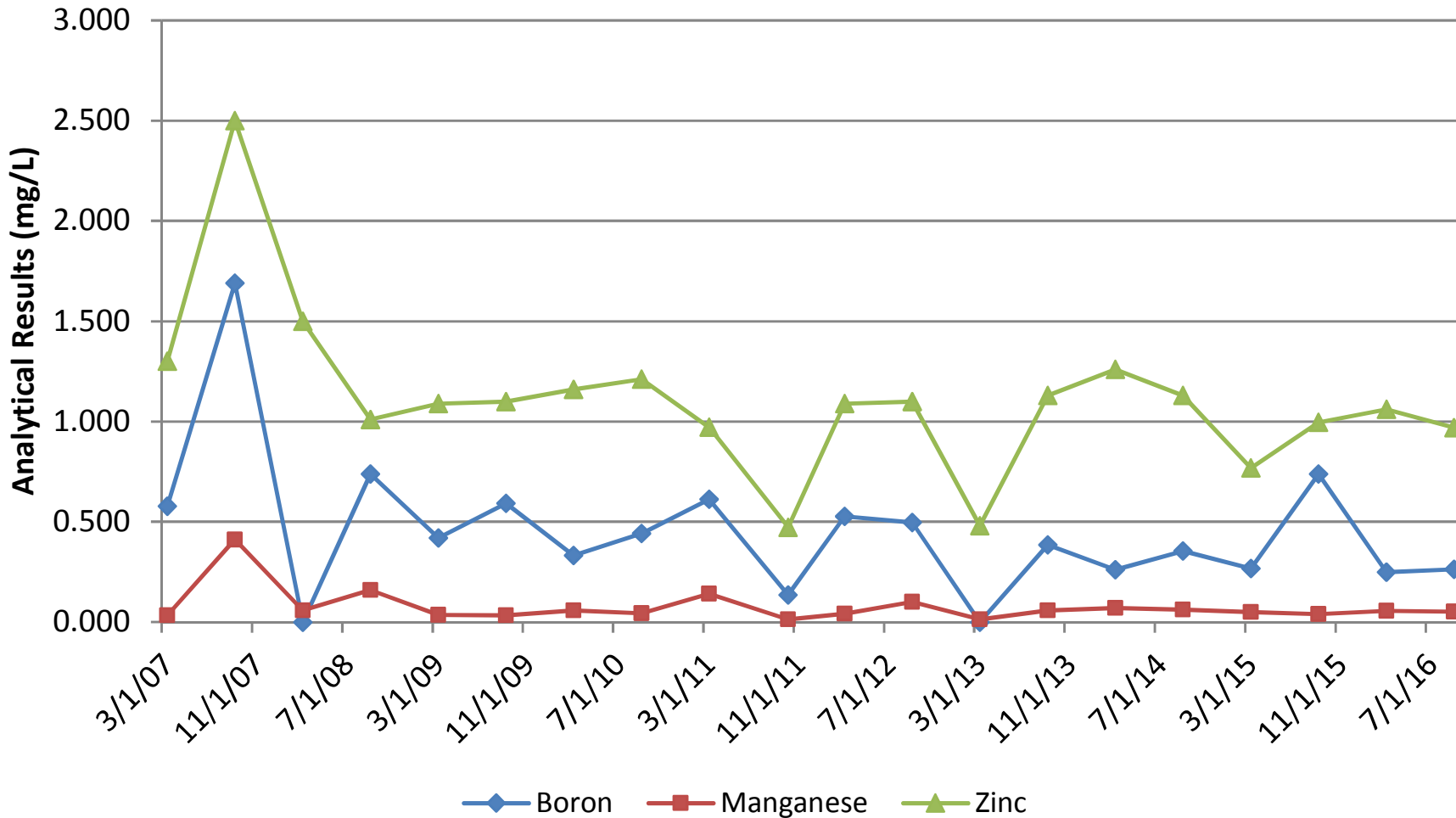


Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-12

| Parameter | Units | Quantitation Limit | 2L Standard | 3/30/05 | 9/8/05 | 5/19/06 | 10/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 |
|---------------|-------|--------------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 3.33 | 1.79 | 1.95 | 0.823 | 3.70 | 1.79 | BQL | 1.35 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | NA | NA | 0.269 | 0.412 | 0.336 | 0.243 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | NA | NA | 1.60 | 2.49 | 2.01 | 1.33 |

MW-12 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/25/09 | 9/29/09 | 3/23/120 | 9/21/10 | 3/22/11 | 10/17/11 | 3/28/12 | 9/20/12 |
|---------------|-------|--------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 2.34 | 1.23 | 2.49 | 2.65 | 1.81 | 1.77 | 2.08 | 1.91 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | 0.005 | BQL | BQL | BQL | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.224 | 2.880 | 0.116 | 0.234 | 0.242 | 0.284 | 0.205 | 0.229 |
| Zinc | mg/L | 0.020 | 1.0 | 1.34 | 1.58 | 0.772 | 1.26 | 1.33 | 1.49 | 1.17 | 1.27 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-12 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/29/13 | 9/17/13 | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 |
|------------------|--------------|-------------------------------|--------------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 2.32 | 2.69 | 2.28 | 4.41 | 2.31 | 1.12 | 2.25 | 2.00 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.225 | 0.150 | 0.135 | 0.235 | 0.175 | 0.205 | 0.121 | 0.223 |
| Zinc | mg/L | 0.020 | 1.0 | 1.39 | 0.82 | 0.802 | 1.15 | 0.978 | 1.2 | 0.679 | 1.15 |

BQL = Below Quantitation Limit
NA = Compound Not Analyzed
NS = No Standard Established

MW-12

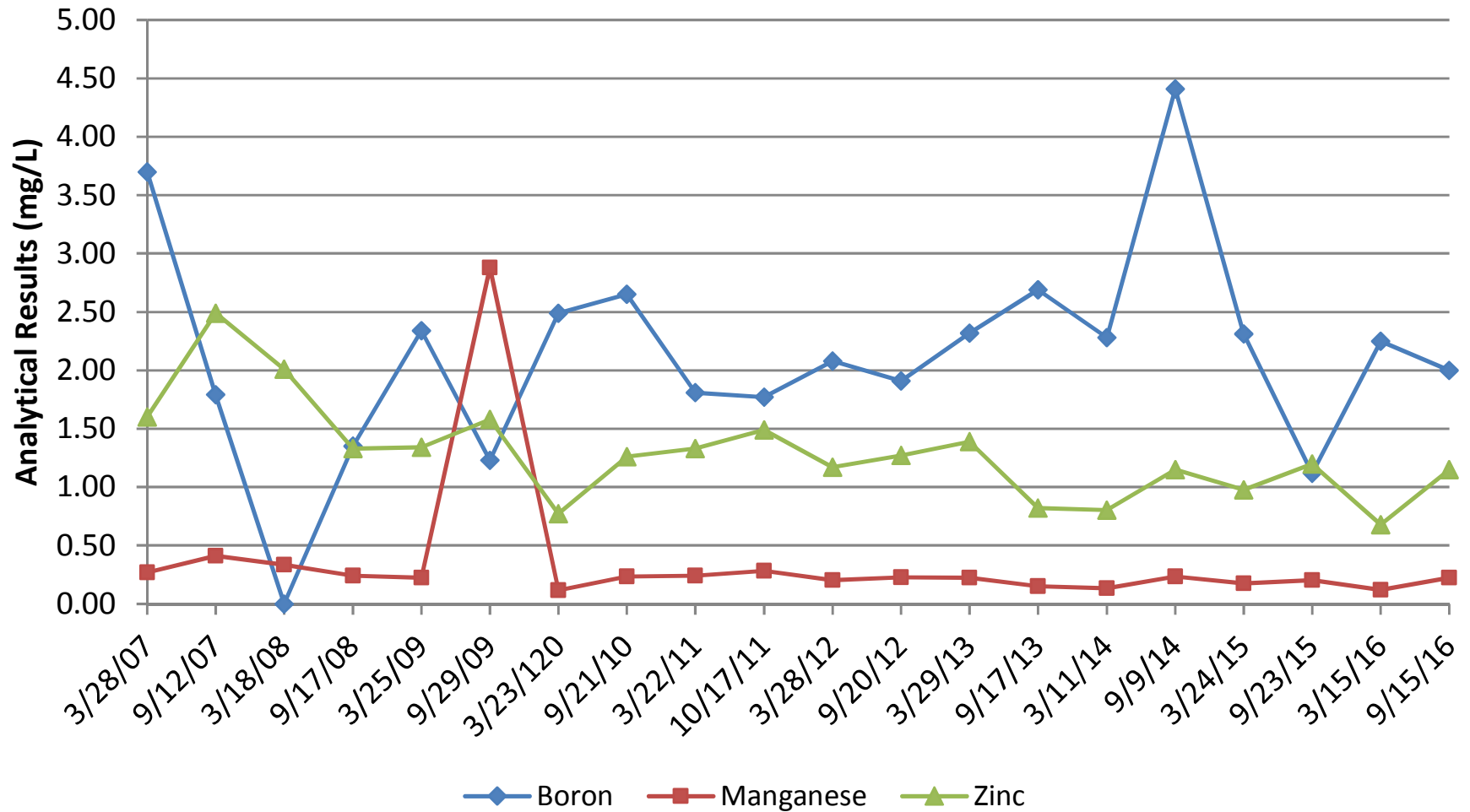


Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-22A

| Parameter | Units | Quantitation Limit | 2L Standard | 9/8/05 | 10/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 | 3/25/09 | 9/29/09 |
|---------------|-------|--------------------|-------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 4.5 | 2.5 | 1.98 | 11.3 | 0.187 | 5.30 | 1.79 | 3.28 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | BQL | BQL | BQL | 0.031 | 0.022 | 0.010 |
| Lead | mg/L | 0.005 | 0.015 | BQL | 0.028 | BQL | BQL | BQL | 0.015 | 0.024 | 0.017 |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | 0.185 | 0.345 | 0.290 | 0.310 | 0.218 | 0.288 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | BQL | 0.117 | BQL | 0.028 | 0.047 | 0.033 |

MW-22A (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/23/10 | 9/20/2010 | 3/22/11 | 10/17/11 | 3/27/12 | 9/20/12 | 3/29/13 | 9/17/13 |
|---------------|-------|--------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 1.60 | 2.04 | 1.29 | 2.82 | 1.08 | 3.63 | 2.86 | 2.03 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | 0.006 | 0.005 | 0.008 | BQL | BQL | 0.008 | BQL | 0.006 |
| Manganese | mg/L | 0.010 | 0.05 | 0.167 | 0.225 | 0.195 | 0.254 | 0.284 | 0.242 | 0.248 | 0.232 |
| Zinc | mg/L | 0.020 | 1.0 | BQL | 0.039 | 0.048 | BQL | 0.042 | BQL | BQL | 0.020 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-22A (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 | | |
|------------------|--------------|-------------------------------|--------------------|----------------|---------------|----------------|----------------|----------------|----------------|--|--|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.99 | 2.86 | 1.67 | 2.74 | 1.29 | 2.89 | | |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | | |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | | |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | | |
| Lead | mg/L | 0.005 | 0.015 | BQL | 0.007 | BQL | 0.006 | 0.011 | BQL | | |
| Manganese | mg/L | 0.010 | 0.05 | 0.188 | 0.256 | 0.216 | 0.260 | 0.251 | 0.236 | | |
| Zinc | mg/L | 0.020 | 1.0 | BQL | BQL | BQL | 0.027 | 0.025 | 0.023 | | |

BQL = Below Quantitation Limit
NA = Compound Not Analyzed
NS = No Standard Established

MW-22A

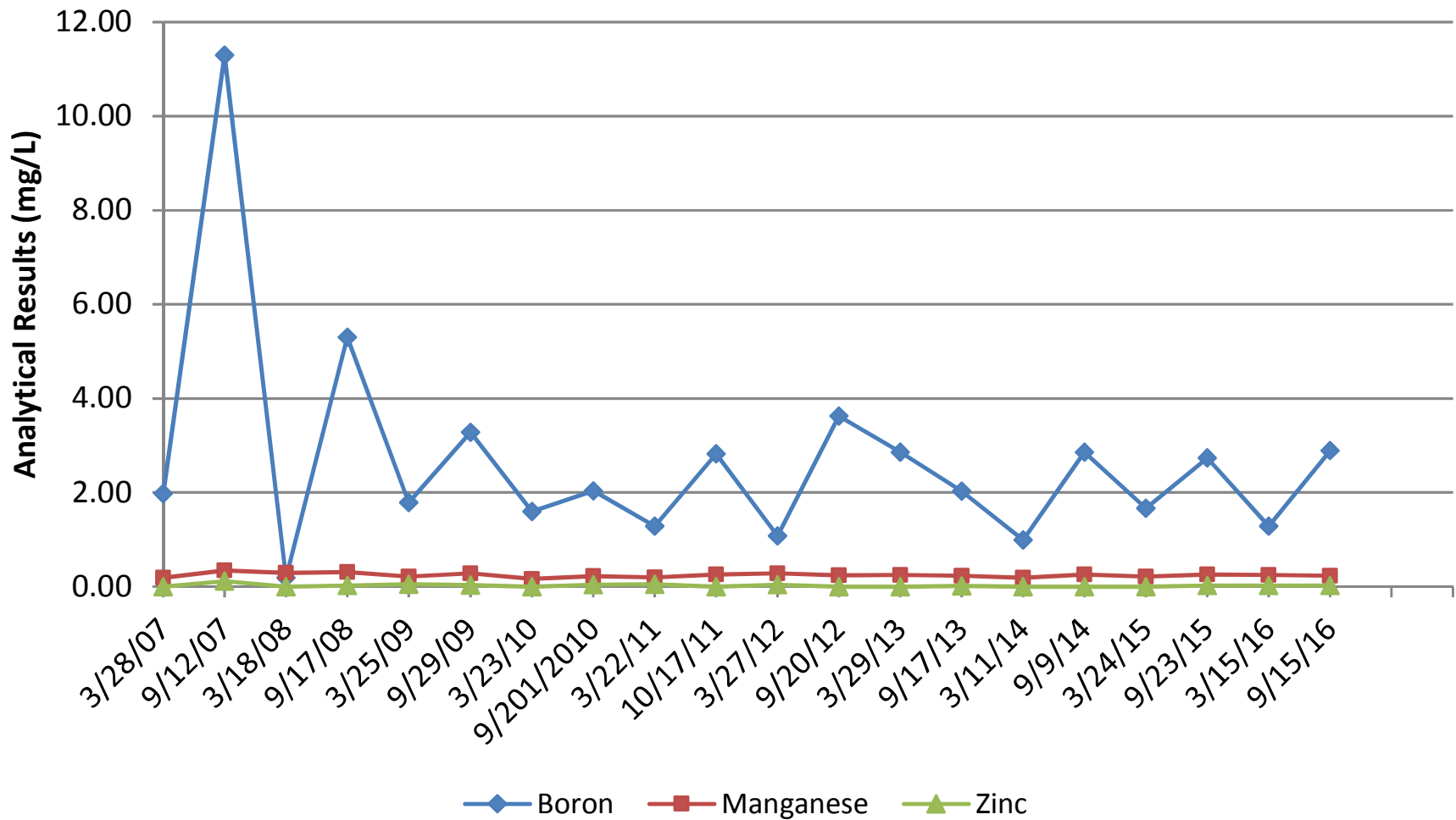


Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-26A-2

| Parameter | Units | Quantitation Limit | 2L Standard | 3/30/05 | 9/8/05 | 5/19/06 | 10/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 |
|---------------|-------|--------------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|-------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 24.3 | 16.5 | 30.8 | 31.9 | 18.5 | 56.6 | 3.560 | 64.3 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | NA | NA | 0.028 | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | 0.023 | 0.037 | 0.075 | 0.187 | 0.126 | BQL | BQL | 0.008 |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | NA | NA | 0.788 | 2.24 | 1.52 | 1.66 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | NA | NA | 1.54 | 0.119 | 0.102 | 0.223 |

MW-26A-2 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/25/09 | 9/29/09 | 3/23/10 | 9/21/10 | 3/22/11 | 10/17/11 | 3/28/12 | 9/20/12 |
|---------------|-------|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|-------------|-------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 57.1 | 73.3 | 1.44 | 63.5 | 64.7 | 30.6 | 47.0 | 62.7 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | 0.007 | BQL | 0.010 | 0.008 | 0.005 | 0.012 | BQL | 0.006 |
| Manganese | mg/L | 0.010 | 0.05 | 1.27 | 1.41 | 1.37 | 1.57 | 1.84 | 0.669 | 1.42 | 2.43 |
| Zinc | mg/L | 0.020 | 1.0 | 1.03 | 0.367 | 1.36 | 0.912 | 0.912 | 2.73 | 1.55 | 0.43 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-26A-2 (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/29/13 | 9/17/13 | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 |
|------------------|--------------|-------------------------------|--------------------|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 17.9 | 29.2 | 18.6 | 66.4 | 17.6 | 69.9 | 11.0 | 44.1 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.22 | 0.242 | 0.271 | 2.33 | 0.268 | 2.49 | 0.152 | 1.26 |
| Zinc | mg/L | 0.020 | 1.0 | 2.97 | 2.88 | 2.11 | 1.56 | 1.68 | 0.754 | 2.92 | 2.01 |

BQL = Below Quantitation Limit
NA = Compound Not Analyzed
NS = No Standard Established

MW-26A

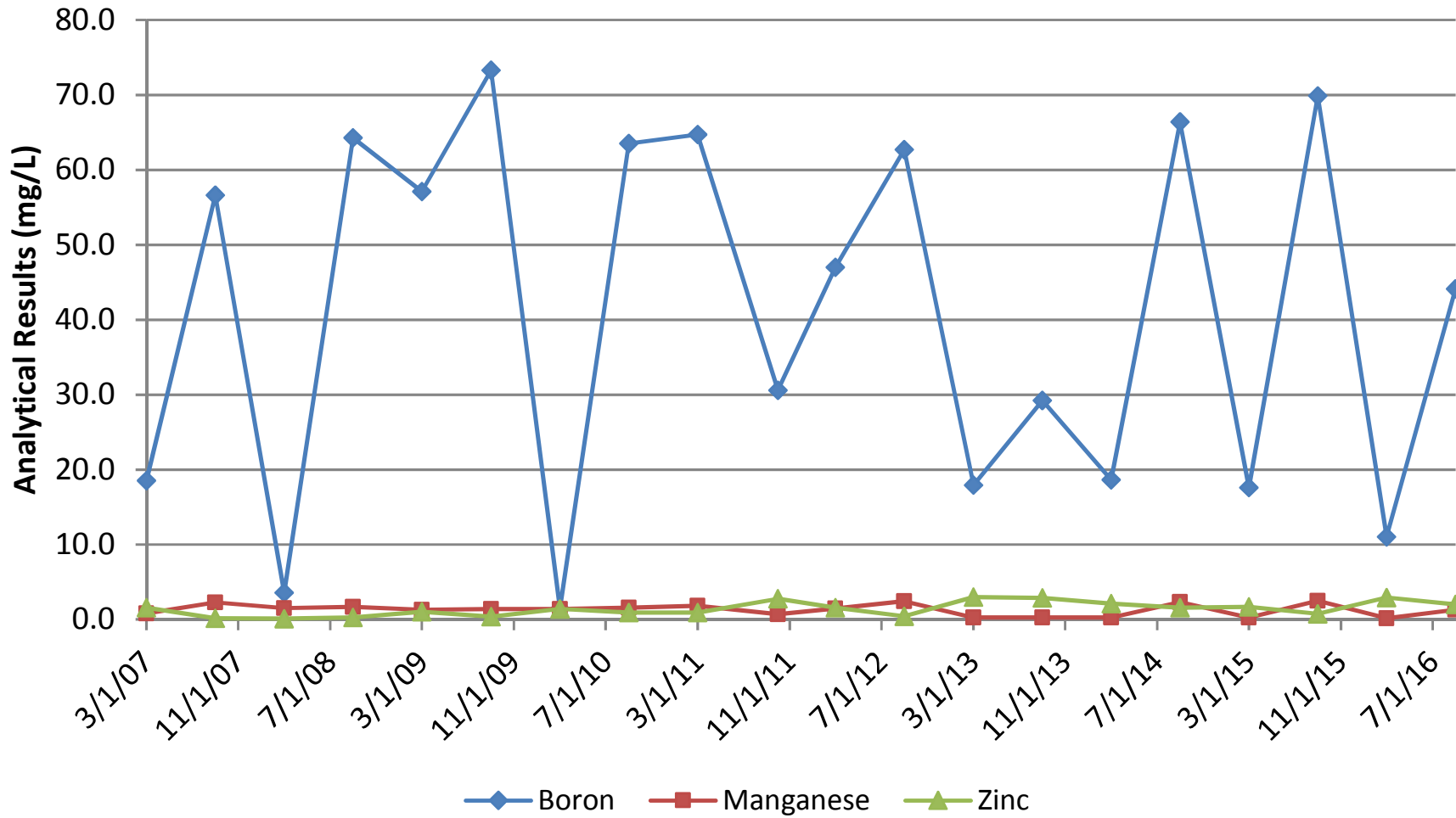


Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-28D

| Parameter | Units | Quantitation Limit | 2L Standard | 3/30/05 | 9/8/05 | 5/19/06 | 10/18/06 | 3/28/07 | 9/12/07 | 3/18/08 | 9/17/08 |
|---------------|-------|--------------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 1.13 | 1.09 | 1.54 | 1.05 | 1.09 | 2.10 | BQL | 0.186 |
| Cadmium | mg/L | 0.005 | 0.002 | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | NA | NA | NA | NA | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | NA | NA | NA | NA | 0.102 | BQL | 0.016 | 0.024 |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | 0.012 | 0.012 | BQL | BQL | 0.005 | BQL |
| Manganese | mg/L | 0.010 | 0.05 | NA | NA | NA | NA | 0.588 | 0.762 | 0.566 | 0.043 |
| Zinc | mg/L | 0.020 | 1.0 | NA | NA | NA | NA | 0.092 | 0.224 | 0.136 | 0.140 |

MW-28D (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/25/09 | 9/29/09 | 3/23/10 | 9/21/10 | 3/22/11 | 10/17/11 | 3/28/12 | 9/20/12 |
|---------------|-------|--------------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | 0.869 | 1.17 | 1.24 | 1.55 | 1.25 | 0.187 | 0.745 | 0.561 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | 0.021 | 0.023 | 0.018 | 0.024 | 0.019 | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | 0.010 | 0.006 | 0.007 | 0.019 | 0.007 | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.744 | 0.797 | 0.821 | 0.778 | 0.895 | 0.132 | 0.525 | 0.428 |
| Zinc | mg/L | 0.020 | 1.0 | 0.054 | 0.202 | 0.235 | 0.143 | 0.168 | 0.108 | 0.045 | 0.149 |

BQL = Below Quantitation Limit

NA = Compound Not Analyzed

NS = No Standard Established

Table E-1B
Groundwater Monitoring Well Data- 2005-2016
Former Porcelanite
Lexington, North Carolina

MW-28D (cont.)

| Parameter | Units | Quantitation Limit | 2L Standard | 3/29/13 | 9/17/13 | 3/11/14 | 9/9/14 | 3/24/15 | 9/23/15 | 3/15/16 | 9/15/16 |
|---------------|-------|--------------------|-------------|--------------|---------|--------------|--------------|--------------|--------------|--------------|--------------|
| Metals | | | | | | | | | | | |
| Boron | mg/L | 0.100 | 0.7 | BQL | BQL | 0.106 | 0.508 | 0.664 | 0.883 | 0.787 | 0.705 |
| Cadmium | mg/L | 0.005 | 0.002 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Cobalt | mg/L | 0.025 | NS | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Chromium | mg/L | 0.010 | 0.01 | BQL | BQL | BQL | BQL | BQL | BQL | BQL | BQL |
| Lead | mg/L | 0.005 | 0.015 | BQL | BQL | BQL | 0.007 | BQL | BQL | BQL | BQL |
| Manganese | mg/L | 0.010 | 0.05 | 0.095 | 0.041 | 0.096 | 0.418 | 0.664 | 0.707 | 0.959 | 0.925 |
| Zinc | mg/L | 0.020 | 1.0 | 0.165 | 0.171 | 0.101 | 0.230 | 0.232 | 0.232 | 0.222 | 0.193 |

BQL = Below Quantitation Limit
NA = Compound Not Analyzed
NS = No Standard Established

MW-28D

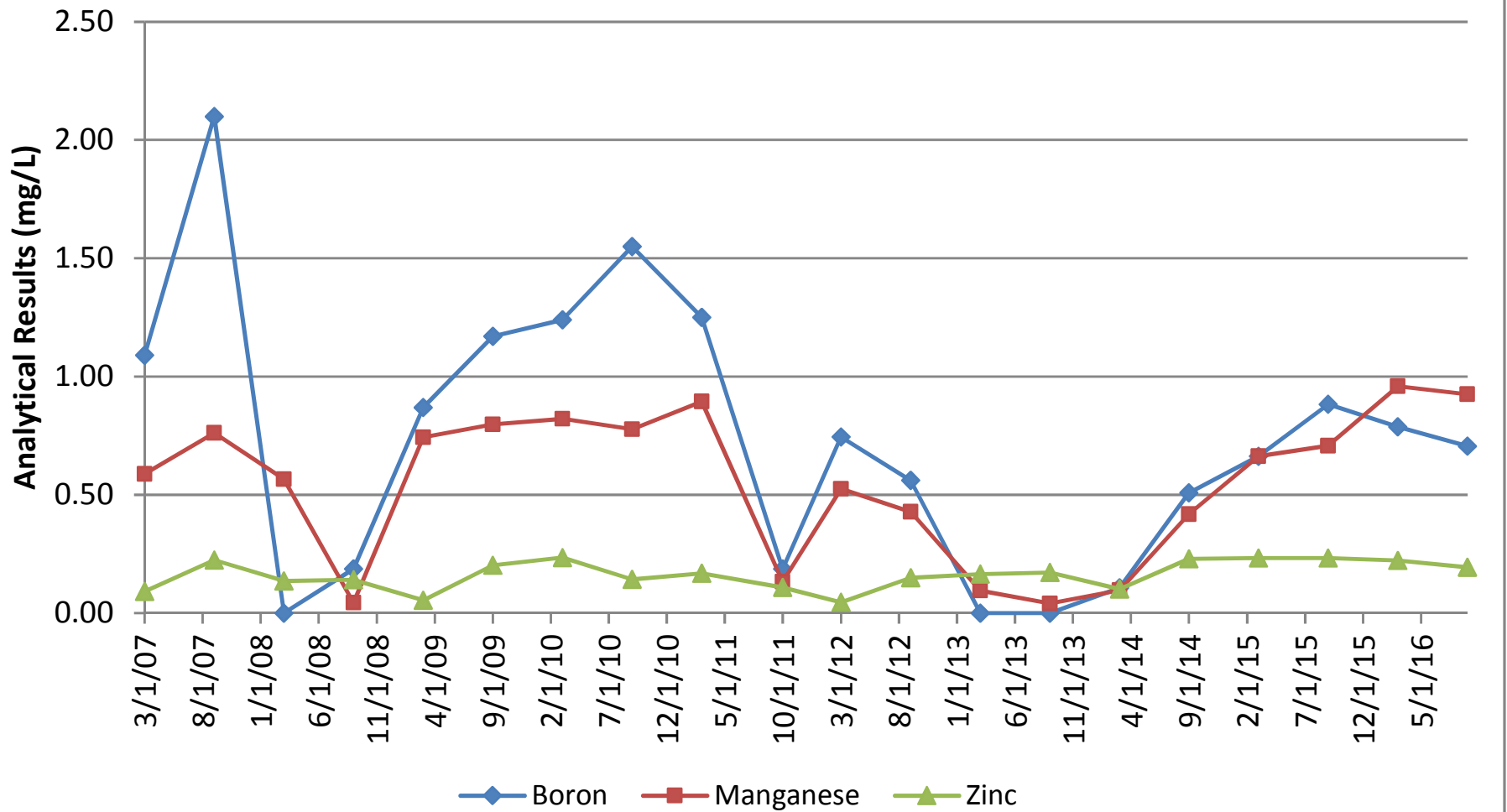


Table E-2
Former Porcelanite, Inc.
September 2016
Groundwater Monitoring Well Construction and Elevation Data

| Monitoring Well Identification | Top of Casing Elevation | Water Level Reading (9.15.16) | Total Depth (ft bgs) | Screen Interval (ft bgs) | Ground Water Elevation | Pump Intake Elevation |
|---------------------------------------|--------------------------------|--------------------------------------|-----------------------------|---------------------------------|-------------------------------|------------------------------|
| MW-1 | 769.71 | 12.81 | 25 | 15-25 | 756.9 | 749.41 |
| MW-7A | 742.69 | NM | 16 | 6-16.0 | NC | NM |
| MW-9D | 749.79 | 21.57 | 55.50 | 45.5-55.5 | 728.22 | 699.97 |
| MW-10 | 757.81 | NM | 20 | 10-20.0 | NC | 643.42 |
| MW-11D | 755.10 | NM | 70 | 60-70 | NC | 690.62 |
| MW-12 | 749.59 | 17.78 | 27 | 17-27 | 731.81 | 727.80 |
| MW-13 | 752.86 | NM | 23 | 13-23 | NC | 736.11 |
| MW-14 | 756.92 | NM | 17 | 7-17.0 | NC | 744.54 |
| MW-18 | 733.44 | NM | 18 | 8-18.0 | NC | NM |
| MW-19D | 732.4 | NM | 38 | 33-38 | NC | NM |
| MW-21A | 739.31 | NM | 12.5 | 2.5-12.5 | NC | NM |
| MW-22A | 753.25 | 18.45 | 22.5 | 12.5-22.5 | 734.80 | 730.73 |
| MW-23A | 748.57 | NM | 16 | 6-16.0 | NC | NM |
| MW-24 | 729.42 | NM | 15 | 5-15.0 | NC | NM |
| MW-25 | 731.59 | NM | 15 | 5-15.0 | NC | NM |
| MW-26A-2 | 749.44 | 19.64 | 17.3 | 7.3-17.3 | 729.80 | 722.44 |
| MW-28D | 749.39 | 25.81 | 81 | 71-81 | 723.58 | 669.72 |
| MW-29 | 753.19 | NM | 20 | 10-20.0 | NC | NM |

NC= Not Calculable

NM= Not Measured

Ground surface datum collected on May 15, 1999, August 2000 and September 2008

Waters Edge Environmental Job No. R1-21

Table E-3
October 2007 Sampling and Analysis Plan
Target Analyte List and Sampling Schedule
Former Porcelanite Facility
Lexington, North Carolina

| Well ID # | March | September |
|------------------|--------------|------------------|
| MW-1 | A | A |
| MW-9 | A | A |
| MW-12 | A | A |
| MW-22A | A | A |
| MW-26-A-2 | A | A |
| MW-28 | A | A |

PARAMETERS

A: Boron, Cadmium, Chromium, Cobalt, Lead, Manganese and Zinc

Table E-4

**Target Analyte List
Container Size, Preservative, Holding Time and Analytical Methodology
Former Porcelanite Facility
Lexington, North Carolina**

| Parameter | Container | Preservative | Holding Time | Analytical Method |
|------------------|------------------|---------------------|---------------------|--------------------------|
| Boron | 950 ml | HNO ₃ | 6 months | 200.7 |
| Cadmium | 950 ml | HNO ₃ | 6 months | 200.7 |
| Chromium | 950 ml | HNO ₃ | 6 months | 200.7 |
| Cobalt | 950 ml | HNO ₃ | 6 months | 200.7 |
| Lead | 950 ml | HNO ₃ | 6 months | 200.7 |
| Manganese | 950 ml | HNO ₃ | 6 months | 200.7 |
| Zinc | 950 ml | HNO ₃ | 6 months | 200.7 |

Note: With use of EPA Method 200.7, the lowest possible detection limit will be obtained with each analyte tested. Sample containers, preservation techniques and holding times utilized in the sampling events are conducted in accordance with the methods presented in *EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Table 2-33*.

Table E-5
SWMU-7 Past Surface Water Results Versus 2B and Risk Based Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID | NCDENR 2B/EPA Screening Value | Onsite Up | Onsite Down | Onsite Up | Onsite Down | S-1 | S-2 | S-3 | S-4 | S-5 Onsite Up | S-6 | S-7 Onsite Down |
|---|--|-----------|-------------|-----------|-------------|----------|----------|----------|----------|------------------|----------|--------------------|
| | | 3/26/96 | 3/26/96 | 3/1/99 | 3/1/99 | 12/29/04 | 12/29/04 | 12/29/04 | 12/29/04 | 2/8/2005 | 2/8/2005 | 2/8/2005 |
| | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/L) | | | | | | | | | | | | |
| Arsenic | 0.05* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 1.0** | NA | NA | 0.059 | 0.127 | NA | NA | NA | NA | NA | NA | NA |
| Boron | 0.75*** | 0.084 | 1.93 | BDL | 1.06 | BDL | BDL | BDL | 0.223 | 0.104 | BDL | 2.89 |
| Cadmium | 0.002* | NA | NA | <0.005 | <0.005 | NA | NA | NA | NA | NA | NA | NA |
| Chromium, total | 0.05* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Copper | 0.007* | NA | NA | 0.01 | 0.11 | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | NS | NA | NA | <0.025 | <0.025 | NA | NA | NA | NA | NA | NA | NA |
| Iron | NS | NA | NA | 1.34 | 2.58 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 0.025* | NA | NA | <0.005 | 0.011 | NA | NA | NA | NA | NA | NA | NA |
| Manganese | 0.02** | NA | NA | 0.109 | 0.23 | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 0.012* | NA | NA | <0.0002 | <0.0002 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 0.088* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 0.005* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 0.00006* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Tin | NS | NA | NA | <1.0 | <1.0 | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NA | NA | <0.1 | <0.1 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | NS | NA | NA | <0.02 | <0.02 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 0.05* | NA | NA | 0.035 | 0.142 | NA | NA | NA | NA | NA | NA | NA |

Notes:

Result Exceeds NCDEQ 2B or EPA Screening Value

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

* - Freshwater

** - Water Supply

*** - EPA Screening Value

Note- March 1999 Sampling included additional radionuclides and Secondary Parameters which have no 2B Standards

Table E-6
SWMU-7 Past Sediment Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Com/Ind PSRG | Range of Background Concentrations | Onsite Up | Onsite Down | S-1 | S-2 | S-3 | S-4 | S-5 Onsite Up | S-6 | S-7 Onsite Down |
|---|--------------------------------------|-----------------|--|-----------|-------------|----------|----------|----------|----------|------------------|--------|--------------------|
| | | | | 3/1/99 | 3/1/99 | 12/29/04 | 12/29/04 | 12/29/04 | 12/29/04 | 2/8/05 | 2/8/05 | 2/8/05 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | |
| Priority Pollutant Metals (mg/kg)* | | | | | | | | | | | | |
| Arsenic | 5.8 | 3 | <0.5-4.38 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | 49.9 | 93.9 | NA | NA | NA | NA | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 13.7 | 33 | 87.8 | 104 | 89.6 | 78.9 | BDL | BDL | BDL |
| Cadmium | 3 | 200 | <0.1-12.7 | 0.486 | 0.716 | NA | NA | NA | NA | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 12.9 | 20.7 | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 4.46 | 9.76 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 48.6 | 125 | NA | NA | NA | NA | NA | NA | NA |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 1 | 3.1 | <0.0005-0.862 | <0.177 | <0.171 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | 4.0 | 5.03 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Tin | NS | NS | 46.1-1,020 | <154 | <157 | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 93.2 | 163 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 39.4 | 54.3 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 121 | 365 | NA | NA | NA | NA | NA | NA | NA |

Notes:

 Result Exceeds NCDEQ REC Protection of Groundwater (PGW) PSRG

 Result Exceeds NCDEQ REC Industrial PSRG

 Result Exceeds NCDEQ REC PGW and Industrial PSRG

*- mg/L denoted in sediment sample results versus mg/kg potentially due to high water content in the sample aliquot

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

Part E

Appendices

Appendix E-1
Historic Groundwater
Monitoring Reports

Appendix E-1- Past Groundwater Monitoring Reports

1. Aquaterra, Inc., 1991 Annual Summary, Ground Water Quality Assessment Program, March 31, 1992
2. Applied Environmental Services Inc., End of Year Groundwater Assessment Report and Phase II Groundwater Assessment Plan for Former Waste Water Holding Ponds, December 31, 1992
3. ENSCI Environmental, Inc., 1993 Annual Groundwater Assessment Update Report, March 10, 1994
4. ENSCI Environmental, Inc., Fall and Year-End 1994 Groundwater Sampling Reports, March 21, 1995
5. Terra Technologies Group, P.A., 1995 Annual Groundwater Assessment Update Report, March 14, 1996
6. Waters Edge Environmental, 2000 Annual Ground Water Assessment Report and Fourth Quarter 2000 Monitoring Report, January 4, 2001.
7. Waters Edge Environmental, Second Quarter 2001 Report, July 26, 2001.
8. Waters Edge Environmental, Third Quarter 2001 Report, November 14, 2001.
9. Waters Edge Environmental, 2001 Annual Ground Water Assessment Report and Fourth Quarter 2001 Monitoring Report, February 19, 2001.
10. Waters Edge Environmental, First Quarter 2002 Report, May 30, 2002.
11. Waters Edge Environmental, First Quarter 2002 Resampling Monitoring Report, July 1, 2002.
12. Waters Edge Environmental, Second Quarter 2002 Monitoring Report, July 15, 2002.
13. Waters Edge Environmental, Third Quarter 2002 Monitoring Report, October 30, 2002.
14. Waters Edge Environmental, 2002 Annual Ground Water Assessment Report and Fourth Quarter 2002, January 27, 2003.
15. Waters Edge Environmental, First Quarter 2003 Monitoring Report, April 29, 2003.
16. Waters Edge Environmental, Second Quarter 2003 Monitoring Report, July 24, 2003.
17. Waters Edge Environmental, Third Quarter 2003 Monitoring Report, December 9, 2003.
18. Waters Edge Environmental, 2003 Annual Ground Water Assessment Report and Fourth Quarter 2003 Monitoring Report, January 14, 2004.
19. Waters Edge Environmental, Second Quarter 2004 Monitoring Report, July 12, 2004.
20. Waters Edge Environmental, Fourth Quarter 2004 Monitoring, Surface Water/Sediment Sampling and 2004 Annual Ground Water Assessment Report, January 24, 2005.
21. Waters Edge Environmental, March 2005 Semiannual Ground Water Monitoring Report, April 12, 2005.
22. Waters Edge Environmental, Amended September 2005 Semiannual Ground Water Monitoring Report, November 18, 2005.
23. Waters Edge Environmental, May 2006 Semiannual Ground Water Monitoring Report, June 13, 2006.
24. Waters Edge Environmental, October 2006 Semiannual Ground Water Monitoring Report, November 9, 2006.
25. Waters Edge Environmental, March 2007 Semiannual Groundwater Assessment Report, April 26, 2007.
26. Waters Edge Environmental, September 2007 Ground Water Monitoring Report, October

*RCRA Part B Post-Closure Permit Application
Part E-Groundwater Monitoring
Former Porcelanite Facility
Lexington, Davidson County, North Carolina*

- 9, 2013 (modified 12.6.13).
27. Waters Edge Environmental, March 2008 Semiannual Ground Water Monitoring Report, June 4, 2008.
 28. Waters Edge Environmental, September 2008 Semiannual Ground Water Monitoring Report, November 11, 2008.
 29. Waters Edge Environmental, March 2009 Semiannual Ground Water Monitoring Report, May 22, 2009.
 30. Waters Edge Environmental, September 2009 Groundwater Assessment Report, December 10, 2009.
 31. Waters Edge Environmental, March 2010 Groundwater Assessment Report, April 22, 2010.
 32. Waters Edge Environmental, September 2010 Groundwater Assessment Report, November 8, 2010.
 33. Waters Edge Environmental, March 2011 Groundwater Assessment Report, May 6, 2011.
 34. Waters Edge Environmental, September 2011 Groundwater Assessment Report, December 12, 2011 Revised March 19, 2012.
 35. Waters Edge Environmental, March/April 2012 Groundwater Assessment Report, April 30, 2012.
 36. Waters Edge Environmental, September 2013 Semi-annual Groundwater Assessment Report, October 9, 2013.
 37. Waters Edge Environmental, March 2014 Semi-annual Groundwater Assessment Report, July 17, 2014 (revised).
 38. Waters Edge Environmental, September 2014 Semi-annual Groundwater Assessment Report, September 15, 2014.
 39. Waters Edge Environmental, March 2015 Semi-annual Groundwater Assessment Report, April 29, 2015.
 40. Waters Edge Environmental, September 2015 Semi-annual Groundwater Assessment Report, October 30, 2015.
 41. Waters Edge Environmental, March 2016 Semi-annual Groundwater Assessment Report, April 19, 2016.
 42. Waters Edge Environmental, September 2016 Semi-annual Groundwater Assessment Report, December 19, 2016.

Appendix E-2
Well Construction
Diagrams

Boring /Well Construction Log

Well Construction Permit Number _____

Aquaterra, Inc.

| | | | |
|--------------|--------------------|------------------|------------------------------------|
| I. D. Number | <i>MW-3A</i> | Purpose | <i>Monitoring Well Replacement</i> |
| Project Name | <i>Porcelanite</i> | Contractor | <i>Aquadriill</i> |
| Project No. | <i>3105804</i> | Registration No. | <i>1361</i> |
| Geologist | <i>Tom Haynes</i> | Driller | <i>Paul Waddell</i> |
| Start Date | <i>9/17/98</i> | Complete Date | <i>9/17/98</i> |
| | | Equipment | <i>Ingersoll-Rand A-300</i> |

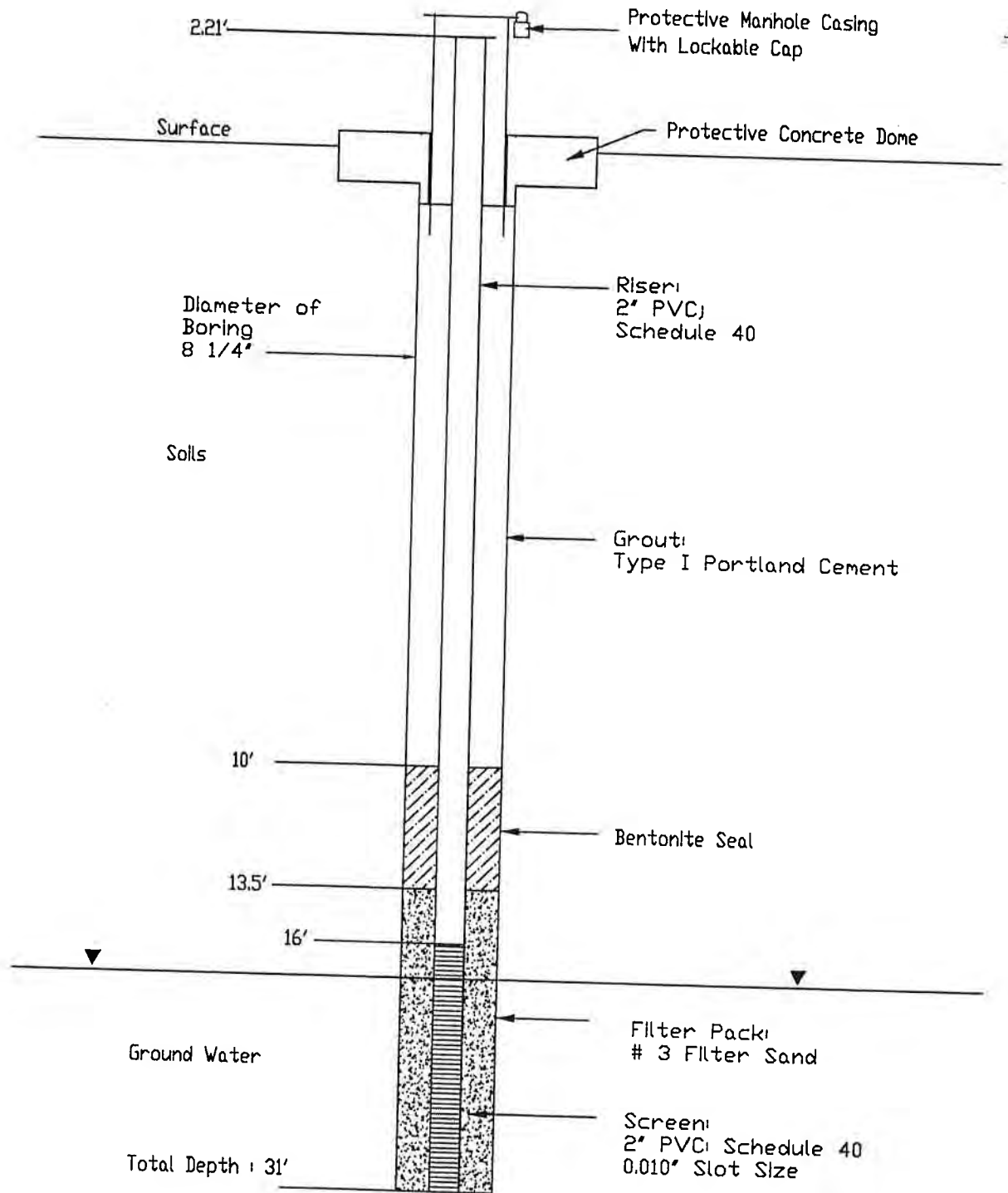
Drilling Metho *Hollow Stem Auger*

Comments *Well set at 31'. Past boring logs indicated MW-3 was 30.25' deep with water level of ~17'.*

| Well Construction Information | | | Depth From - To | Soil / Rock Description / Comments | FID / PID (ppm) @ Depth (ft.) |
|-------------------------------|-----------------------|--|-----------------|--|-------------------------------|
| Borehole Dia. | <i>8 1/4" 0.0</i> | | <i>0-2'</i> | <i>Crushed Stone</i> | |
| Riser Type | <i>PVC Sch 40</i> | | <i>2'-4'</i> | <i>Yellow, medium grain Sand</i> | |
| Diameter | <i>2"</i> | | <i>4'-5'</i> | <i>Red, brown clayey Sand</i> | |
| Screen Type | <i>PVC Sch 40</i> | | <i>5'-7'</i> | <i>Red, brown slightly micaceous</i> | |
| Diameter | <i>2"</i> | | | <i>slightly sandy Clay</i> | |
| Riser Interval | <i>16-0'</i> | | <i>7'-9'</i> | <i>Yellow, brown slightly micaceous</i> | |
| Screen Interval | <i>31-16'</i> | | | <i>sandy Clay, moist</i> | |
| Slot Size | <i>0.010"</i> | | <i>9'-13'</i> | <i>Red brown sandy Clay with tile pieces intermingled</i> | |
| Grout Type | <i>Type I Portand</i> | | | <i>also old grass / wood, also crushed stone included.</i> | |
| Interval | <i>10-0'</i> | | | | |
| Bentonite Type | <i>3/8" Pellets</i> | | | | |
| Interval | <i>13.5"-10'</i> | | <i>13'-14'</i> | <i>Brown, clayey sand, sandy Clay</i> | |
| Filter Pack | <i>#3 Filter Sand</i> | | <i>14'-20'</i> | <i>Red, brown slightly sandy Clay</i> | |
| Interval | <i>31'-13.5'</i> | | <i>20'-31'</i> | <i>Yellow, brown sandy Clay</i> | |
| Total Depth | <i>31'</i> | | | | |
| R.P. Elevation | | | | | |
| Datum | | | | | |
| Water Level Information | | | | | |
| Date | W.L. Below R.P. | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.



Total Depth = 31'



| | | | | |
|-------------------|--------------------|--------|--------------|---|
| Author mbb | Drawing 105804 | Layers | Date | Title Well Construction Diagram Monitoring Well MW-3A |
| Job No. 105804 | Revision 9-8-00 | Figure | Scale NTS | Project Porcelanite Lexington, North Carolina |

For Office Use Only

Quad. No. _____ Serial No. _____
 Lat. _____ Long. _____ Pc _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

Well Identification MW-3A
 Drilling Contractor Aquadriill
 Driller Registration Number 1361

State Well Construction Permit
 Number: On Client Property

1. Well Location: (Show sketch of the location below)
 Nearest Town: Lexington, NC

County: Davidson Co.

NC Hwy. 8 and Victor St.
 (Road, Community, or Subdivision and Lot No.)

2. Owner
 Address Mannington Mills, Inc.
P.O. Box 30
 (Street or Route No.)
Salem NJ 08079
 City State Zip Code
 Use of Well Monitoring
 Cuttings Collected No

3. Date Drilled 9/17/98
 4. Total Depth 31'
 5. Does Well Replace Existing Well Yes
 6. Static Water Level 17 Feet Below Top Of Casing
 Top of Casing 3 Feet Above Land Surface
 7. Yield (gpm): NA Test Method
 8. Water Zones: (depth) NA
 9. Chlorination: NA Amount

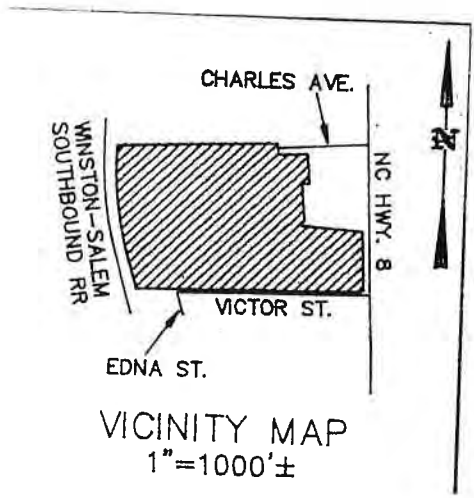
| Depth | Drill Log |
|---------|--|
| From To | Formation Description |
| 0-2' | Crushed Stone |
| 2'-4' | Yellow, medium grain Sand |
| 4'-5' | Red, brown clayey Sand |
| 5'-7' | Red, brown slightly micaceous slightly sandy Clay |
| 7'-9' | Yellow, brown slightly micaceous sandy Clay, moist |
| 9'-13' | Red brown sandy Clay with tile pieces intermingled also old grass / wood, also crushed stone included. |
| 13'-14' | Brown, clayey sand, sandy Clay |
| 14'-20' | Red, brown slightly sandy Clay |
| 20'-31' | Yellow, brown sandy Clay |

If additional space is needed, use back of form.

10. Casing:

| Depth (ft.) | Diameter | Wall Thickness | Material |
|-------------|----------|----------------|------------|
| From To | | | |
| 16-0' | 2" | Sch 40 | PVC Sch 40 |

Location Sketch
 (Show direction & distance from at least two State Roads, or other map reference points.)



11. Grout:
 Depth (ft.)
 From To Material Method
 10-0' Type I Portand Pour
 13.5"-10' Bentonite Pour

12. Screen:
 Depth (ft.)
 From To Diameter Slot Size Material
 31-16' 2" 0.010" PVC Sch 40

13. Gravel Pack:
 Depth (ft.)
 From To Size Material
 31'-13.5' #3 Filter Sand #3 Filter Sand

14. Remarks:

I do hereby certify that this well was constructed in accordance with 15 NCAC 2C, well construction standards, and that a copy of this record has been provided to the well owner.

Signature of Contractor or Agent _____ Date _____
 Submit original to Division of Environmental Management & copy to well owner.

| For Office Use Only | | | |
|---------------------|-------|------------|----------------|
| Quad. No. | _____ | Serial No. | _____ |
| Lat. | _____ | Long. | _____ Pc _____ |
| Minor Basin | _____ | | |
| Basin Code | _____ | | |
| Header Ent. | _____ | GW-1 Ent. | _____ |

WELL CONSTRUCTION RECORD

Well Identification MW-7A
 Drilling Contractor Aquadriill
 Driller Registration Number 1361

State Well Construction Permit
 Number: On Client Property

1. Well Location: (Show sketch of the location below)

Nearest Town: Lexington, NC

County: Davidson Co.

NC Hwy. 8 and Victor St.
 (Road, Community, or Subdivision and Lot No.)

2. Owner Address
Mannington Mills, Inc.
P.O. Box 30
 (Street or Route No.)

| Depth | | Drill Log Formation Description |
|---------|----|------------------------------------|
| From | To | |
| 0-1" | | Grass |
| 1"-2' | | Red, brown sandy silty Clay |
| 2'-5' | | Brown sandy Clay |
| 5'-8' | | Grey, brown sandy Clay, moist |
| 8'-13' | | Tan sandy Clay, moist |
| 13'-14' | | Tan, red sandy Clay, wet |
| 14'-16' | | Tan, grey sandy Clay, wet |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

3. Date Drilled 9/17/98 Use of Well Monitoring

4. Total Depth 16' Cuttings Collected No

5. Does Well Replace Existing Well Yes

6. Static Water Level NM Feet Below Top Of Casing

Top of Casing 3 Feet Above Land Surface

7. Yield (gpm): NA Test Method _____

8. Water Zones: (depth) NA

9. Chlorination: NA Amount _____

10. Casing:

| Depth (ft.) | | Diameter | Wall Thickness | Material |
|-------------|----|----------|----------------|------------|
| From | To | | | |
| 6-0' | | 2" | Sch 40 | PVC Sch 40 |
| | | | | |
| | | | | |

11. Grout:

| Depth (ft.) | | Material | Method |
|-------------|----|-----------------|--------|
| From | To | | |
| 2-0' | | Type I Portland | Pour |
| 4-2' | | Bentonite | Pour |

12. Screen:

| Depth (ft.) | | Diameter | Slot Size | Material |
|-------------|----|----------|-----------|------------|
| From | To | | | |
| 16-6' | | 2" | 0.010" | PVC Sch 40 |

13. Gravel Pack:

| Depth (ft.) | | Size | Material |
|-------------|----|----------------|----------------|
| From | To | | |
| 16-4' | | #3 Filter Sand | #3 Filter Sand |

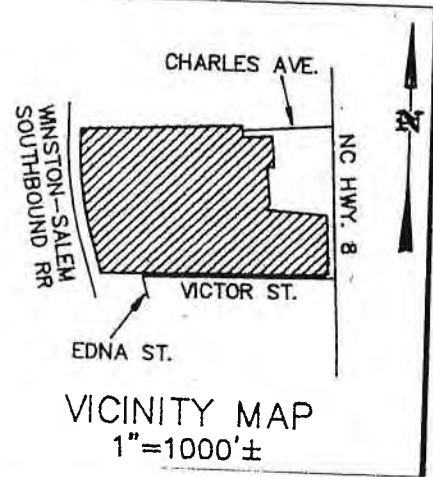
14. Remarks:

I do hereby certify that this well was constructed in accordance with 15 NCAC 2C, well construction standards, and that a copy of this record has been provided to the well owner.

If additional space is needed, use back of form.

Location Sketch

(Show direction & distance from at least two State Roads, or other map reference points.)



Signature of Contractor or Agent _____ Date _____
 Submit original to Division of Environmental Management & copy to well owner

Boring / Well Construction Log

Well Construction Permit Number _____

Aquaterra, Inc.

| | | | |
|--------------|--------------------|------------------|------------------------------------|
| I. D. Number | <i>MW-7A</i> | Purpose | <i>Monitoring Well Replacement</i> |
| Project Name | <i>Porcelanite</i> | Contractor | <i>Aquadrill</i> |
| Project No. | <i>3105804</i> | Registration No. | <i>1361</i> |
| Geologist | <i>Tom Haynes</i> | Driller | <i>Paul Waddell</i> |
| Start Date | <i>9/16/98</i> | Complete Date | <i>9/17/98</i> |
| | | Equipment | <i>Ingersoll-Rand A-300</i> |

Drilling Metho *Hollow Stem Auger*

Comments

| Well Construction Information | | Depth From - To | Soil / Rock Description / Comments | FID / PID (ppm) @ Depth (ft.) |
|-------------------------------|------------------------|-----------------|--------------------------------------|-------------------------------|
| Borehole Dia. | <i>8 1/4" O.D.</i> | <i>0-1"</i> | <i>Grass</i> | |
| Riser Type | <i>PVC Sch 40</i> | <i>1"-2'</i> | <i>Red, brown sandy silty Clay</i> | |
| Diameter | <i>2"</i> | <i>2'-5'</i> | <i>Brown sandy Clay</i> | |
| Screen Type | <i>PVC Sch 40</i> | <i>5'-8'</i> | <i>Grey, brown sandy Clay, moist</i> | |
| Diameter | <i>2"</i> | <i>8'-13'</i> | <i>Tan sandy Clay, moist</i> | |
| Riser Interval | <i>6-0'</i> | <i>13'-14'</i> | <i>Tan, red sandy Clay, wet</i> | |
| Screen Interval | <i>16-6'</i> | <i>14'-16'</i> | <i>Tan, grey sandy Clay, wet</i> | |
| Slot Size | <i>0.010"</i> | | | |
| Grout Type | <i>Type I Portland</i> | | | |
| Interval | <i>2-0'</i> | | | |
| Bentonite Type | <i>3/8" Pellets</i> | | | |
| Interval | <i>4-2'</i> | | | |
| Filter Pack | <i>#3 Filter Sand</i> | | | |
| Interval | <i>16-4'</i> | | | |
| Total Depth | <i>16'</i> | | | |
| R.P. Elevation | | | | |
| Datum | | | | |
| Water Level Information | | | | |
| Date | W.L. Below R.P. | | | |
| | | | | |
| | | | | |
| | | | | |

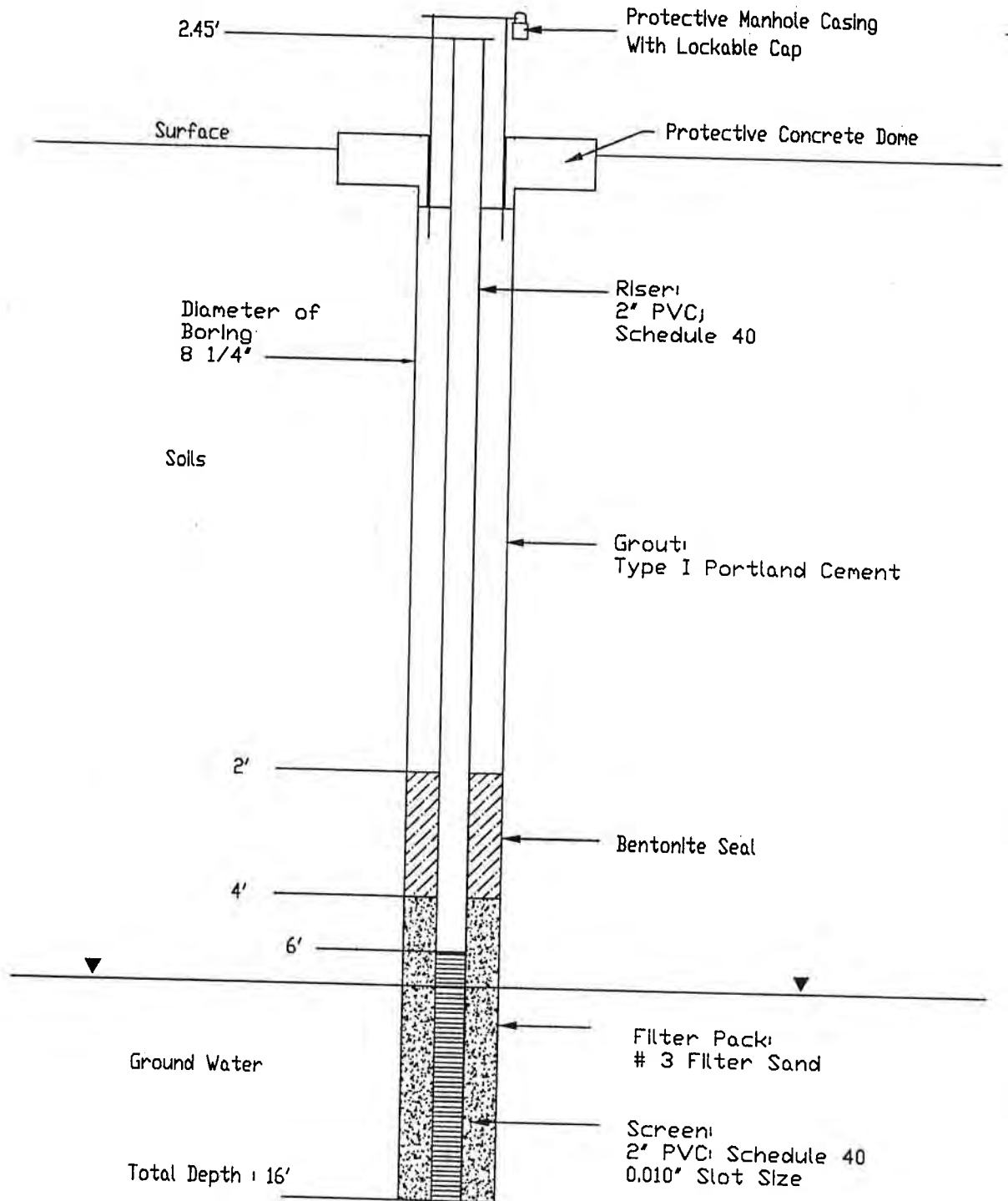
R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

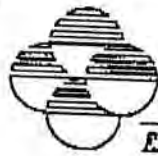


| Author | Drawing | Layers | Date | Title |
|---------|----------|--------|-------|---------|
| nbb | 105804 | | | |
| Job No. | Revision | Figure | Scale | Project |
| 105804 | 9-8-00 | | NTS | |

Well Construction Diagram
Monitoring Well MW-7A

Porcelanite
Lexington, North Carolina

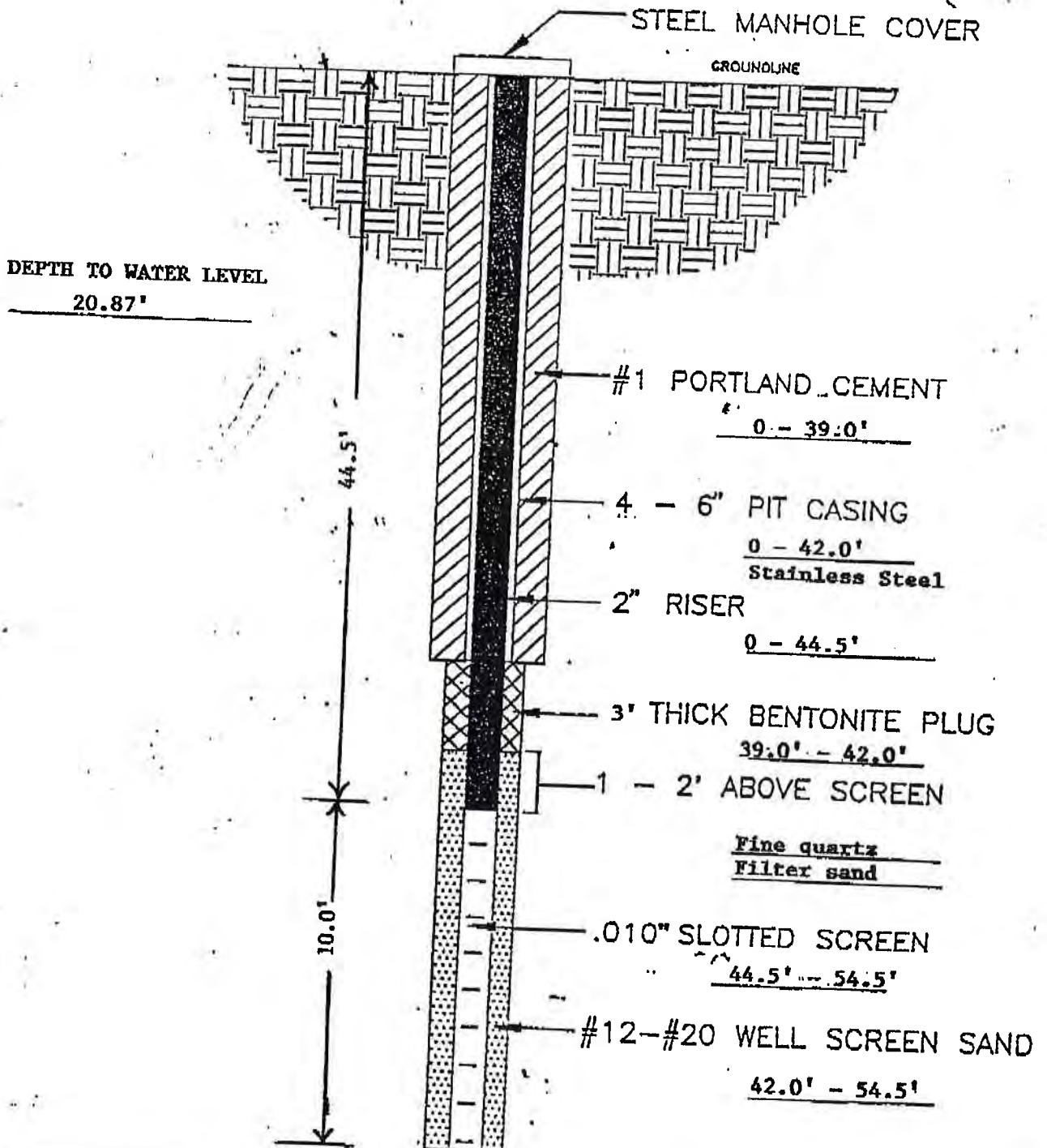
MW-9



ENSCI
ENVIRONMENTAL SERVICES GROUP
HIGH POINT, NORTH CAROLINA

DRILLING CONTRACTOR
Well Drillers, Inc.

TYPE III MONITORING WELL

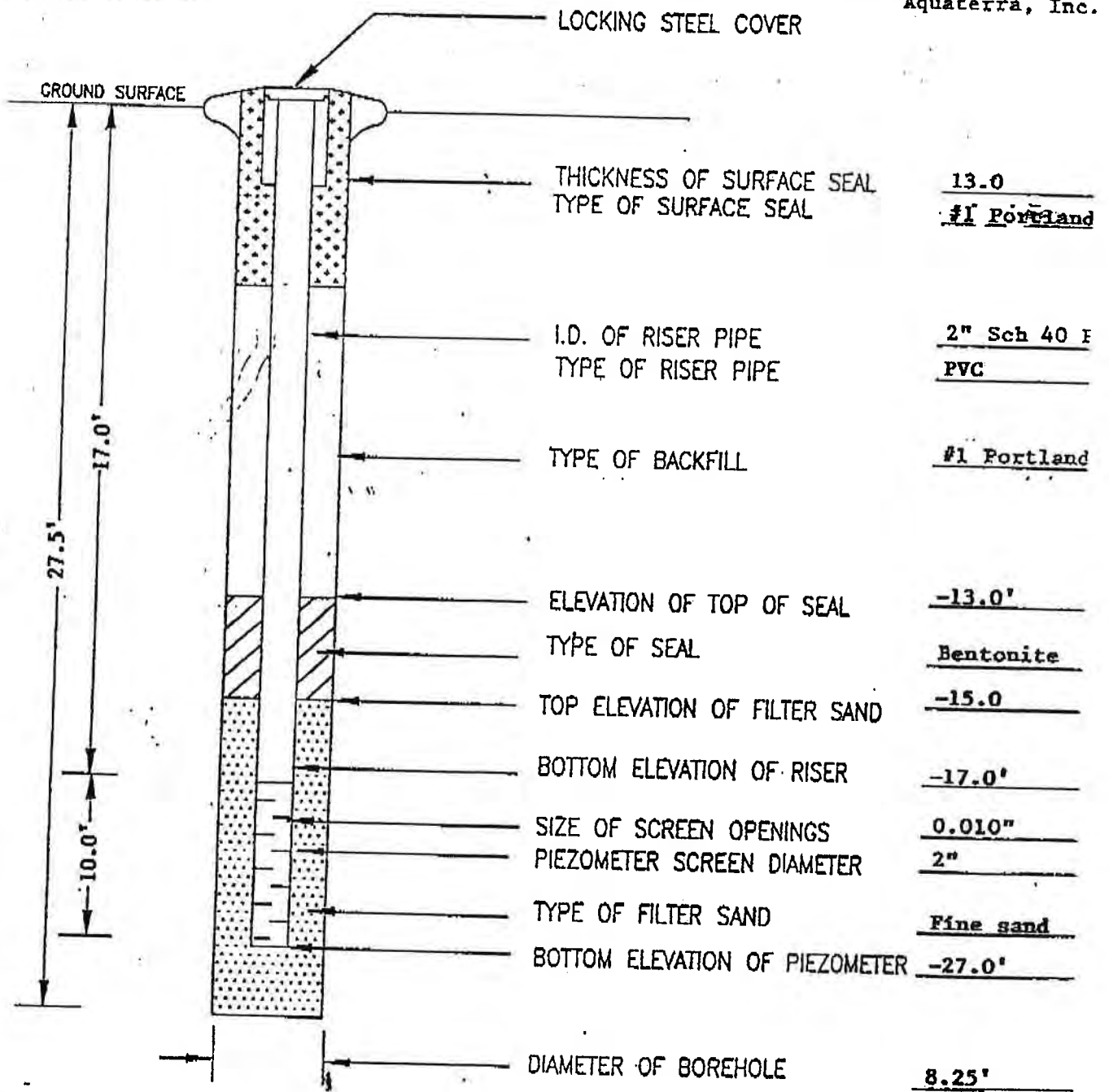


PROJECT Mann. gton PIEZOMETER NUMBER MW-12
 GROUND ELEVATION _____ DEPTH TO WATER LEVEL 18.42'
 BENCH MARK DATA _____ ELEVATION OF WATER LEVEL _____
 ELEVATION OF TOP OF PIEZOMETER _____

DRILLING CONTRACTOR Well Drillers, Inc.



NOTE: Well installed under direction Aquaterra, Inc.

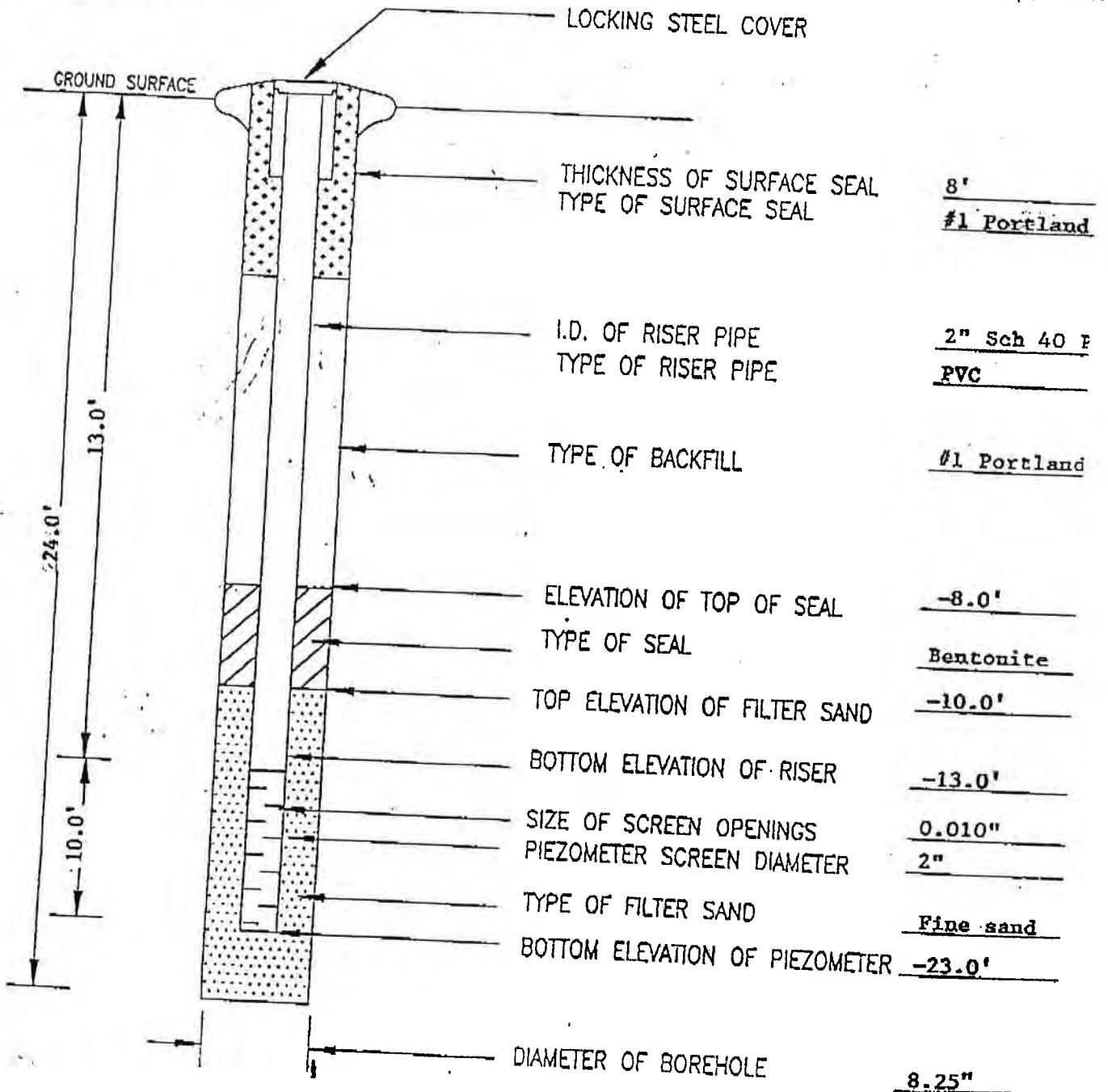


MONITORING WELL INSTALLATION SHEET

PROJECT Mannington PIEZOMETER NUMBER MW-13
 GROUND ELEVATION _____ DEPTH TO WATER LEVEL 16.09'
 BENCH MARK DATA _____ ELEVATION OF WATER LEVEL _____
 ELEVATION OF TOP OF PIEZOMETER _____
 DRILLING CONTRACTOR Wells Drillers, Inc.



NOTE: Well installed under direction Aquaterra, Inc.



Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

DRILLING CONTRACTOR ENSCI
DRILLER REGISTRATION NUMBER 1233

STATE WELL CONSTRUCTION MW-14
PERMIT NUMBER: 28-0331-WM-0098

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Lexington County: Davidson

(Road, Community, or Subdivision and Lot No.)

2. OWNER Mannington Ceramic Tile
ADDRESS Post Office Box 1777
Lexington, NC 27693
(Street or Route No.)
City or Town State Zip Code

| Depth | | DRILLING LOG Formation Description |
|-------|----|---------------------------------------|
| From | To | |
| 0 | 10 | Brown sandy clay |
| 10 | 17 | Brown pink granitic saprol |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

3. DATE DRILLED 9/9/92 USE OF WELL Monitoring

4. TOTAL DEPTH 17' CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: 10 FT. above TOP OF CASING,
 below TOP OF CASING IS 0 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): - METHOD OF TEST -

8. WATER ZONES (depth): 10-17'

9. CHLORINATION: Type - Amount -

10. CASING:

| Depth | Diameter | Wall Thickness or Weight/Ft. | Material |
|-------------------------------|----------|------------------------------|------------|
| From <u>0</u> To <u>7</u> Ft. | <u>2</u> | <u>Sch 40</u> | <u>PVC</u> |
| From _____ To _____ Ft. | _____ | _____ | _____ |
| From _____ To _____ Ft. | _____ | _____ | _____ |

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

11. GROUT:

| Depth | Material | Method |
|----------------------------------|--------------------|---------------|
| From <u>.5</u> To <u>3.5</u> Ft. | <u>#1 Portland</u> | <u>Poured</u> |
| From <u>3.5</u> To <u>5</u> Ft. | <u>Bentonite</u> | _____ |

12. SCREEN:

| Depth | Diameter | Slot Size | Material |
|--------------------------------|--------------|------------------|------------|
| From <u>7</u> To <u>17</u> Ft. | <u>2</u> in. | <u>0.010</u> in. | <u>PVC</u> |
| From _____ To _____ Ft. | _____ in. | _____ in. | _____ |
| From _____ To _____ Ft. | _____ in. | _____ in. | _____ |

13. GRAVEL PACK:

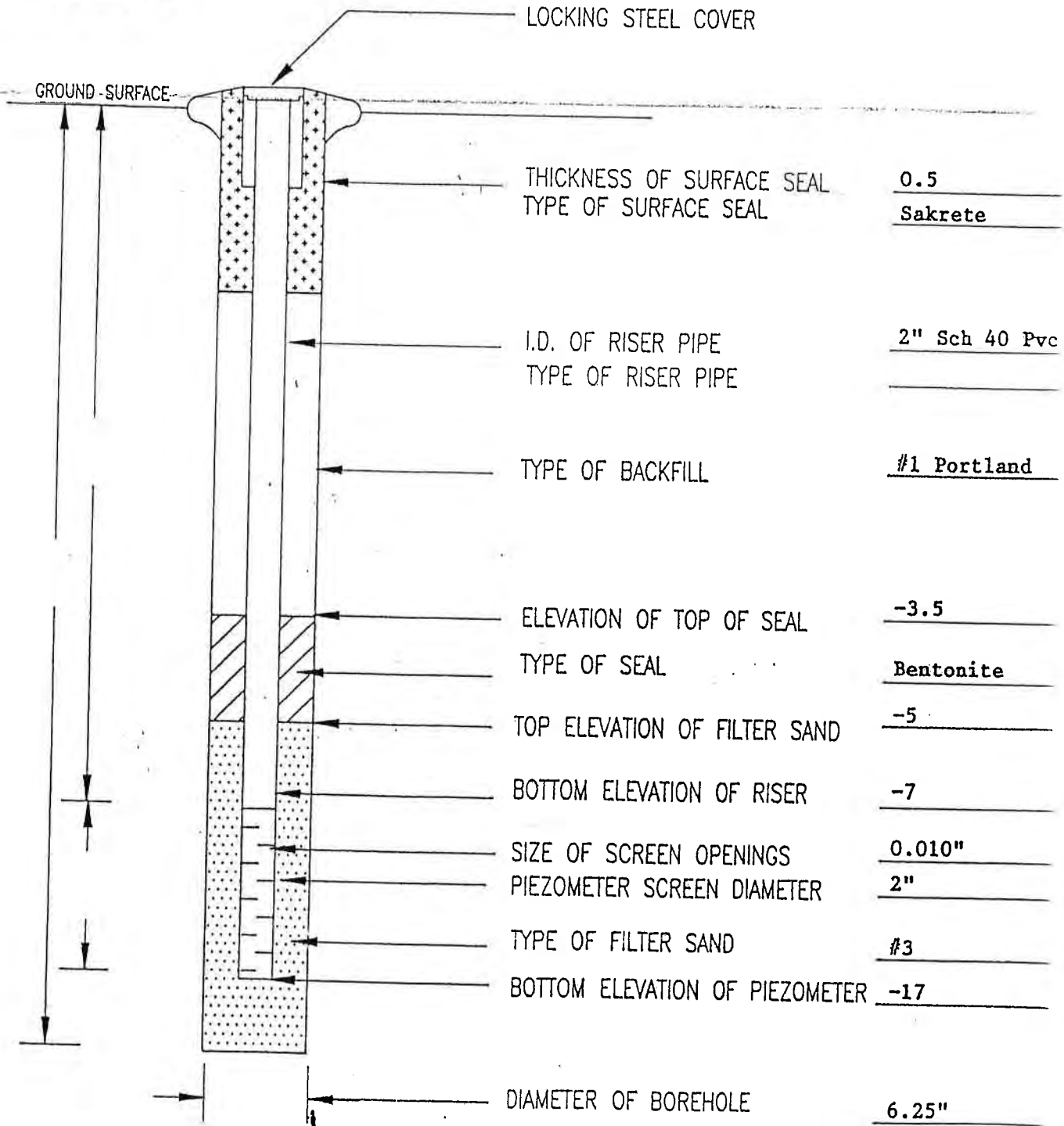
| Depth | Size | Material |
|--------------------------------|-----------|-------------|
| From <u>5</u> To <u>17</u> Ft. | <u>#3</u> | <u>Sand</u> |
| From _____ To _____ Ft. | _____ | _____ |

14. REMARKS: _____
I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF CONTRACTOR OR AGENT _____ DATE _____
Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION SKETCH

PROJECT Mannington PIEZOMETER NUMBER MW-14
 GROUND ELEVATION _____ DEPTH TO WATER LEVEL _____
 BENCH MARK DATA _____ ELEVATION OF WATER LEVEL _____
 ELEVATION OF TOP OF PIEZOMETER _____



WELL CONSTRUCTION RECORD

| | |
|-------------------|------------------|
| Quad. No. _____ | Serial No. _____ |
| Lat. _____ | Long. _____ |
| Minor Basin _____ | |
| Basin Code _____ | |
| Header Ent. _____ | GW-I Ent. _____ |

DRILLING CONTRACTOR ENSCI

MW-18

DRILLER REGISTRATION NUMBER 1233

STATE WELL CONSTRUCTION
PERMIT NUMBER: 28-0331-WM-0098

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Lexington

County: Davidson

(Road, Community, or Subdivision and Lot No.) _____

2. OWNER Mannington Ceramic Tile

ADDRESS Post Office Box 1777
Lexington, NC 27293

City or Town _____ State _____ Zip Code _____

3. DATE DRILLED 9/9/92 USE OF WELL Monitoring

4. TOTAL DEPTH _____ CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: 5 FT. above TOP OF CASING.
TOP OF CASING IS 0 FT. ABOVE LAND SURFACE. below

7. YIELD (gpm): _____ METHOD OF TEST _____

8. WATER ZONES (depth): 5-18

9. CHLORINATION: Type _____ Amount _____

10. CASING:

| From | Depth | To | Diameter | Wall Thickness or Weight/Ft. | Material |
|------------|----------|-----------|----------|------------------------------|------------|
| <u>0</u> | <u>0</u> | <u>8</u> | <u>2</u> | <u>Sch 40</u> | <u>PVC</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |

11. GROUT:

| From | Depth | To | Material | Method |
|------------|------------|-----------|--------------------|---------------|
| <u>0.5</u> | <u>0.5</u> | <u>5</u> | <u>#1 Portland</u> | <u>Poured</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ |

12. SCREEN:

| From | Depth | To | Diameter | Slot Size | Material |
|------------|----------|-----------|----------|------------------|------------|
| <u>8</u> | <u>8</u> | <u>18</u> | <u>2</u> | <u>0.010 in.</u> | <u>PVC</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |

13. GRAVEL PACK:

| From | Depth | To | Size | Material |
|------------|----------|-----------|-----------|-------------|
| <u>6</u> | <u>6</u> | <u>18</u> | <u>#3</u> | <u>Sand</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ |

14. REMARKS:

| Depth | | DRILLING LOG Formation Description |
|----------|-----------|---------------------------------------|
| From | To | |
| <u>0</u> | <u>3</u> | <u>Brown sandy clay loam</u> |
| <u>3</u> | <u>5</u> | <u>Red sandy clay</u> |
| <u>5</u> | <u>15</u> | <u>Brown granitic saprolite</u> |
| | | |
| | | |

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads or other map reference points)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

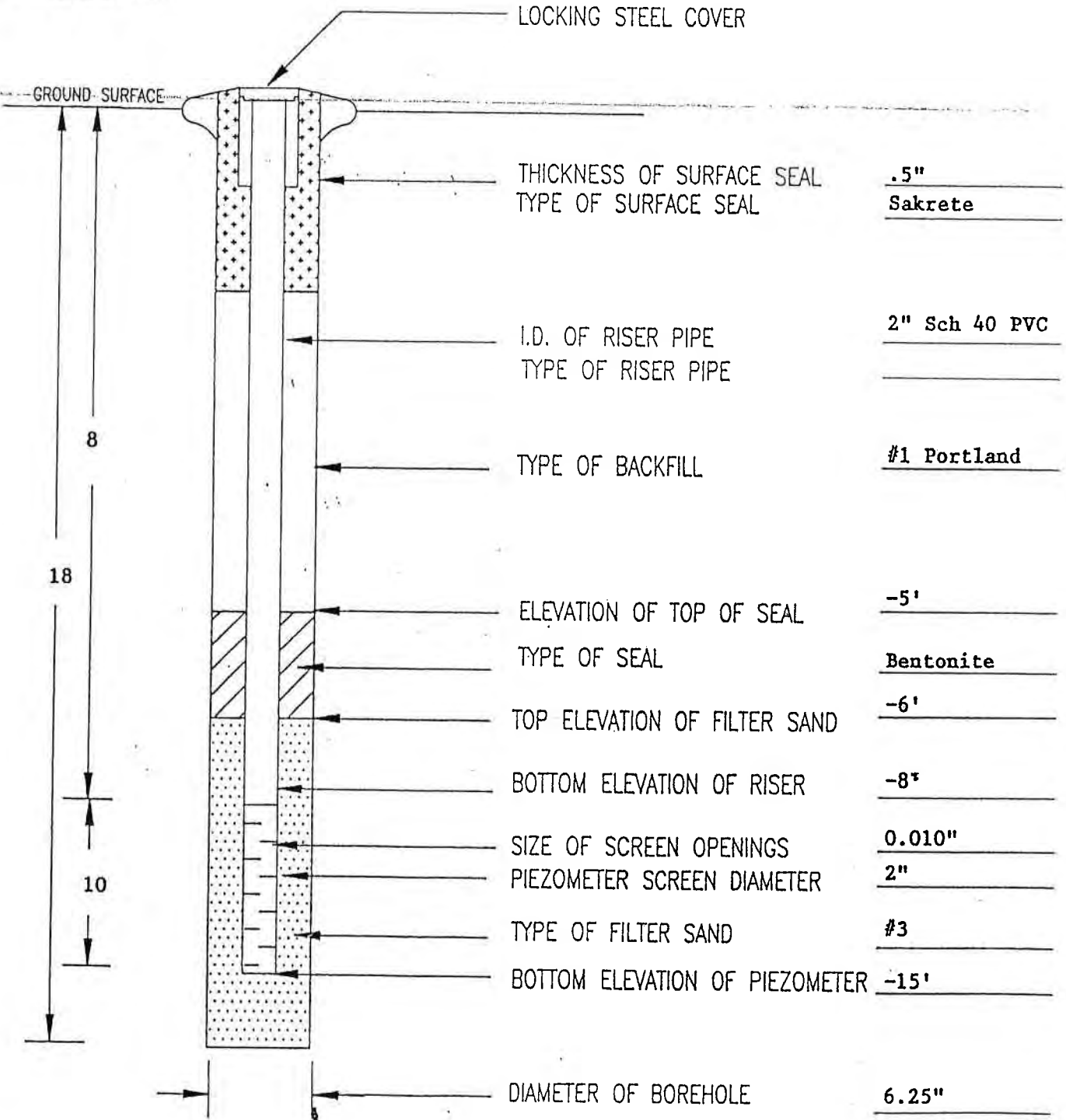
SIGNATURE OF CONTRACTOR OR AGENT _____

DATE _____

Submit original to Division of Environmental Management and copy to well owner.

MONITORING WELL INSTALLATION SKETCH

PROJECT Mannington PIEZOMETER NUMBER MW-18
 GROUND ELEVATION _____ DEPTH TO WATER LEVEL _____
 BENCH MARK DATA _____ ELEVATION OF WATER LEVEL _____
 ELEVATION OF TOP OF PIEZOMETER _____



FIELD DRILLING RECORD

| | | | |
|---------------|--|----------------|--------------------------|
| BORING # | MW - 19 | LOCATION: | Mannington |
| START DATE: | 8-31-92 | COMPLETED: | 9-1-92 |
| GEOLOGIST: | S. Stadelman | DRILLER: | Engineering Tectonics |
| DRILL METHOD: | Hollow Stem Auger 0 to 25' Roller Cone 25' | SAMPLE METHOD: | Split Spoon |
| BORING DIA: | 6.25 Inches | CASING DIA: | 25'/6" 33'/2" |
| TOTAL DEPTH: | 38 Feet | CASING DEPTH: | 33 Feet |

| DEPTH | | LITHOLOGIC DESCRIPTION | PENETRATION TEST RESULTS | | | | |
|-------|------|--|--------------------------|-------|-----|-----|-----|
| FROM | TO | | REC | 6" | 12" | 18" | 24" |
| 3.5 | 5.0 | Red clay. Highly weathered saprolite. | 0-8 | 18/18 | 6 | 5 | 6 |
| | | yellowish-brown Clay. Highly weathered saprolite. | 8-16 | | | | |
| | | Common light gray mottles. | | | | | |
| 8.5 | 10.0 | Yellowish-brown clay loam to clay. Few red stains. Highly weathered saprolite. Abrupt lower boundary. | 0-6 | | 4 | 5 | 8 |
| | | Moderately weathered saprolite with rock structure. Resembles granite. Slightly altered micas. | 6-8 | | | | |
| | | Saprolite. Crushes to sand. Resembles granite. Crushes to sand. Brown staining. Moderately weathered micas/Fe minerals. Crushes to loamy sand. | 8-15 | | | | |

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH(ft) _____ DEPTH(ft) _____ DIAMETER(in) _____ MATERIAL _____
 SCREEN LENGTH(ft) _____ DEPTH(ft) _____ DIAMETER(in) _____ MATERIAL _____
 DEPTH TO TOP OF SAND _____ BAGS OF SAND _____
 DEPTH TO TOP SEAL _____ BENTONITE USED _____
 BAGS OF CEMENT USED _____

FIELD DRILLING RECORD

| | | | |
|---------------|--|----------------|--------------------------|
| BORING # | MW - 19 (Continued) | LOCATION: | Mannington |
| START DATE: | 8-31-92 | COMPLETED: | 9-1-92 |
| GEOLOGIST: | S. Stadelman | DRILLER: | Engineering Tectonics |
| DRILL METHOD: | Hollow Stem Auger 0 to 25' Roller Cone 25' | SAMPLE METHOD: | Split Spoon |
| BORING DIA: | 6.25 Inches | CASING DIA: | 25'/6" 33'/2" |
| TOTAL DEPTH: | 38' | CASING DEPTH: | 33' |

| DEPTH | | LITHOLOGIC DESCRIPTION | PENETRATION TEST RESULTS | | | | |
|-------|----|--|--------------------------|----|------|-----|-----|
| FROM | TO | | REC | 6" | 12" | 18" | 24" |
| 13.5 | 15 | Saprolite. Moderately weathered. Resembles pink granite (high K feldspar content). Micas/FeMn minerals are slight to moderately weathered. Oxidation halos around approx. 25% of FeMn minerals. Black Mn-Oxide staining. | 0-6 | | 50/6 | | |
| 18.5 | 20 | Saprolite. Same as 13.5 to 15. | 0-6 | | 50/6 | | |
| 23.5 | 25 | Same as 18.5 - 20 feet. Set 25' - 6" PVC casing 8-31. Returned 9-1. Drilled additional 15' w/5 1/2" air hammer. Medium grained quartz-k-feldspar-muscovite. Weathered granite. Set 35' 2" riser 5'2" .010 screen. | 0-1.5 | | 50/6 | | |
| | | | | | | | |

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH(ft) 33 DEPTH(ft) 0-33 DIAMETER(in) 2 MATERIAL PVC
 SCREEN LENGTH(ft) 5 DEPTH(ft) 33-38 DIAMETER(in) 2 MATERIAL PVC
 DEPTH TO TOP OF SAND 30 BAGS OF SAND 2
 DEPTH TO TOP SEAL 29 BENTONITE USED 1/2
 BAGS OF CEMENT USED 10 Portland 4 Sakrete

WELL CONSTRUCTION RECORD

Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc. _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR ENSCI

MW-19

DRILLER REGISTRATION NUMBER 1233

STATE WELL CONSTRUCTION
PERMIT NUMBER: 28-0331-WM-0098

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Lexington

County: Davidson

(Road, Community, or Subdivision and Lot No.) _____

2. OWNER Mannington Ceramic Tile

ADDRESS Post Office Box 1777

Lexington, NC 27293

City or Town _____ State _____ Zip Code _____

3. DATE DRILLED 8/31/92 USE OF WELL Monitoring

4. TOTAL DEPTH 40' CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: 5 FT. above TOP OF CASING.
TOP OF CASING IS 0 FT. below ABOVE LAND SURFACE.

7. YIELD (gpm): - METHOD OF TEST -

8. WATER ZONES (depth): 5'-40'

9. CHLORINATION: Type - Amount -

10. CASING:

| From | To | Depth | Diameter | Wall Thickness or Weight/Ft. | Material |
|------|----|-------|----------|------------------------------|----------|
| 0 | 25 | Ft. | 6" | Sch 40 | PVC |
| 0 | 33 | Ft. | 2" | Sch 40 | PVC |
| From | To | Ft. | | | |

11. GROUT:

| From | To | Depth | Material | Method |
|------|----|-------|-------------|--------|
| 0 | 29 | Ft. | #1 Portland | Tremie |
| From | To | Ft. | | |

12. SCREEN:

| From | To | Depth | Diameter | Slot Size | Material |
|------|----|-------|----------|-----------|----------|
| 33 | 38 | Ft. | 2" | 0.010 in. | PVC |
| From | To | Ft. | in. | in. | |
| From | To | Ft. | in. | in. | |

13. GRAVEL PACK:

| From | To | Depth | Size | Material |
|------|----|-------|------|-------------|
| 29 | 38 | Ft. | #3 | Washed Sand |
| From | To | Ft. | | |

14. REMARKS: _____

| Depth | DRILLING LOG | |
|-------|--------------|-------------------------------------|
| From | To | Formation Description |
| 0 | 25 | Highly weathered granitic saprolite |
| 25 | 38 | Weathered pink granite |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

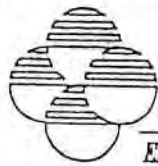
If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

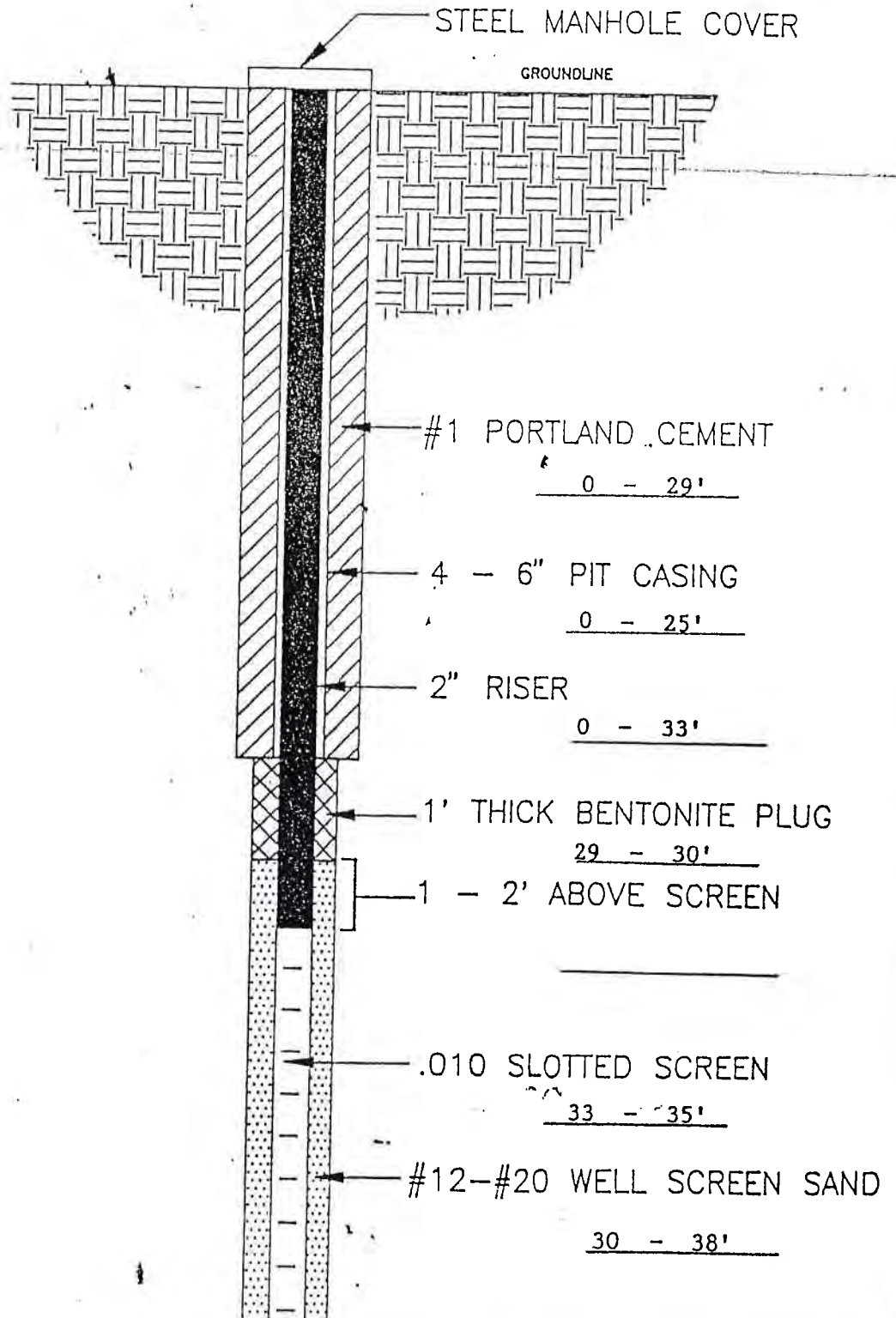
SIGNATURE OF CONTRACTOR OR AGENT _____ DATE _____
Submit original to Division of Environmental Management and copy to well owner.



ENSCI

ENVIRONMENTAL SERVICES GROUP
HIGH POINT, NORTH CAROLINA

TYPE III MONITORING WELL



Boring /Well Construction Log

Well Construction Permit Number _____

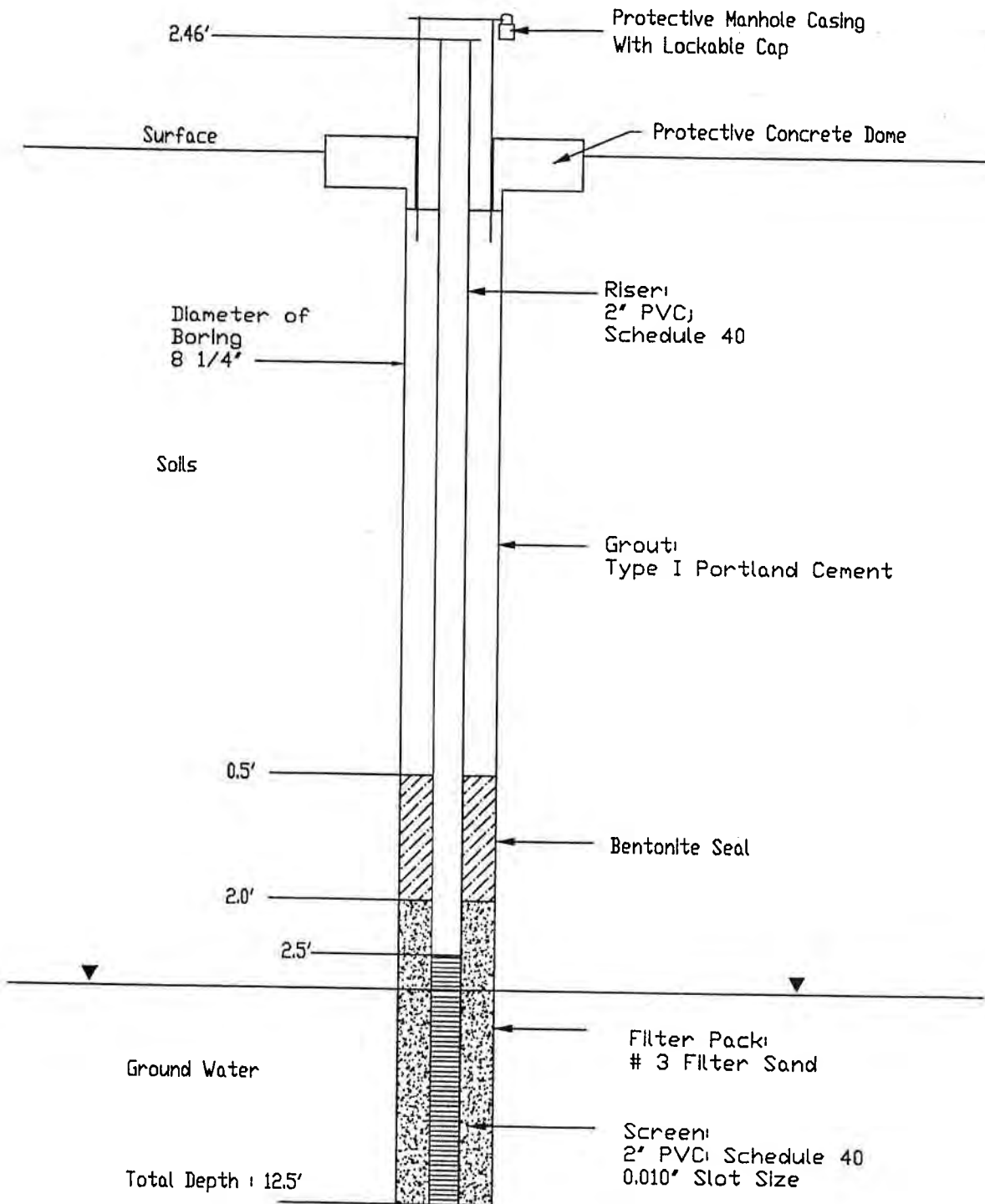
Aquaterra, Inc.

| | | | |
|--------------|--------------------|------------------|------------------------------------|
| I. D. Number | <i>MW-21A</i> | Purpose | <i>Monitoring Well Replacement</i> |
| Project Name | <i>Porcelanite</i> | Contractor | <i>Aquadrill</i> |
| Project No. | <i>3105804</i> | Registration No. | <i>1361</i> |
| Geologist | <i>Tom Haynes</i> | Driller | <i>Paul Waddell</i> |
| Start Date | <i>9/16/98</i> | Complete Date | <i>9/17/98</i> |
| | | Equipment | <i>Ingersoll-Rand A-300</i> |

| | | | |
|--|------------------------|-----------------|--|
| Drilling Metho <i>Hollow Stem Auger</i> | | | |
| Comments <i>Area covered with rip-rap stone.</i> | | | |
| | | | |
| Well Construction Information | | | FID / PID (ppm) @ Depth (ft.) |
| Borehole Dia. | <i>8 1/4" O.D.</i> | Depth From - To | <i>0-3"</i> |
| Riser Type | <i>PVC Sch 40</i> | | <i>Topsoil grass</i> |
| Diameter | <i>2"</i> | | <i>Dark brown sandy Clay, dry</i> |
| Screen Type | <i>PVC Sch 40</i> | | <i>Brown, grey slightly sandy Clay, moist</i> |
| Diameter | <i>2"</i> | | <i>Grey, highly micaceous, slightly clayey Silt</i> |
| Riser Interval | <i>2.5-0'</i> | | <i>Olive brown highly micaceous sandy Silt</i> |
| Screen Interval | <i>12.5-2.5'</i> | | <i>10'-12.5'</i> |
| Slot Size | <i>0.010"</i> | | <i>Olive brown highly micaceous Sand, weathered rock</i> |
| Grout Type | <i>Type I Portland</i> | | |
| Interval | <i>0.5-0'</i> | | |
| Bentonite Type | <i>3/8" Pellets</i> | | |
| Interval | <i>2-0.5'</i> | | |
| Filter Pack | <i>#3 Filter Sand</i> | | |
| Interval | <i>12.5-2.0'</i> | | |
| Total Depth | <i>12.5'</i> | | |
| R.P. Elevation | | | |
| Datum | | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.



| Author | Drawing | Layers | Date | Title |
|---------|----------|--------|-------|---|
| mbb | 105804 | | | Well Construction Diagram Monitoring Well MW-21A |
| Job No. | Revision | Figure | Scale | Project |
| 105804 | 9-8-00 | | NTS | Porcelanite Lexington, North Carolina |

Boring / Well Construction Log

Well Construction Permit Number _____

Aquaterra, Inc.

| | | | |
|--------------|--------------------|------------------|------------------------------------|
| I. D. Number | <i>MW-22A</i> | Purpose | <i>Monitoring Well Replacement</i> |
| Project Name | <i>Porcelanite</i> | Contractor | <i>Aquadrill</i> |
| Project No. | <i>3105804</i> | Registration No. | <i>1361</i> |
| Geologist | <i>Tom Haynes</i> | Driller | <i>Paul Waddell</i> |
| Start Date | <i>9/16/98</i> | Complete Date | <i>9/17/98</i> |
| | | Equipment | <i>Ingersoll-Rand A-300</i> |

| Well Construction Information | | | Depth From - To | Soil / Rock Description / Comments | FID / PID (ppm) @ Depth (ft.) |
|---|------------------------|--|-------------------|---|-------------------------------|
| Drilling Metho <i>Hollow Stem Auger</i> | | | | | |
| Comments | | | | | |
| Borehole Dia. | <i>8 1/4" O.D.</i> | | <i>0-1"</i> | <i>Grass</i> | |
| Riser Type | <i>PVC Sch 40</i> | | <i>1"-2'</i> | <i>Red, brown sandy Silt</i> | |
| Diameter | <i>2"</i> | | <i>2'-10'</i> | <i>Red, slightly sandy Clay</i> | |
| Screen Type | <i>PVC Sch 40</i> | | <i>10'-13.5'</i> | <i>Red, brown slightly micaceous sandy Clay</i> | |
| Diameter | <i>2"</i> | | <i>13.5-17.5'</i> | <i>Brown sandy Clay</i> | |
| Riser Interval | <i>12.5-0'</i> | | <i>17.5-22'</i> | <i>Dark brown slightly sandy Clay, wet.</i> | |
| Screen Interval | <i>22.5-12.5'</i> | | | | |
| Slot Size | <i>0.010"</i> | | <i>22'-22.5'</i> | <i>Olive, grey sandy silty Clay</i> | |
| Grout Type | <i>Type I Portland</i> | | | | |
| Interval | <i>7'-0'</i> | | | | |
| Bentonite Type | <i>3/8" Pellets</i> | | | | |
| Interval | <i>10.5-7'</i> | | | | |
| Filter Pack | <i>#3 Filter Sand</i> | | | | |
| Interval | <i>22.5'-10.5'</i> | | | | |
| Total Depth | <i>22.5'</i> | | | | |
| R.P. Elevation | | | | | |
| Datum | | | | | |
| Water Level Information | | | | | |
| Date | W.L. Below R.P. | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

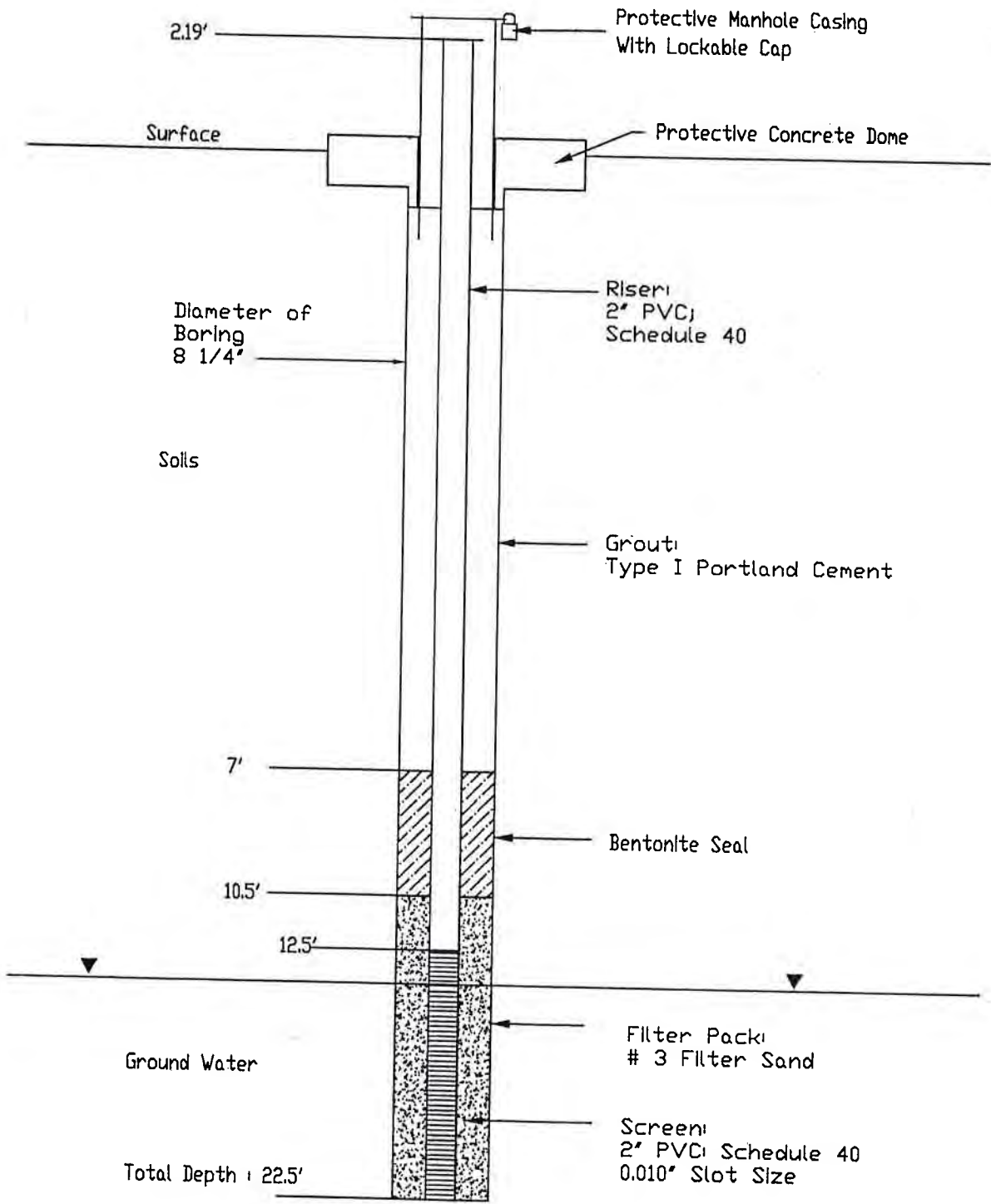
R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.



| | | | | |
|-------------------|--------------------|--------|--------------|--|
| Author mbb | Drawing 105804 | Layers | Date | Title Well Construction Diagram Monitoring Well MW-22A |
| Job No. 105804 | Revision 9-8-00 | Figure | Scale NTS | Project Porcelanite Lexington, North Carolina |

Boring /Well Construction Log

Well Construction Permit Number _____

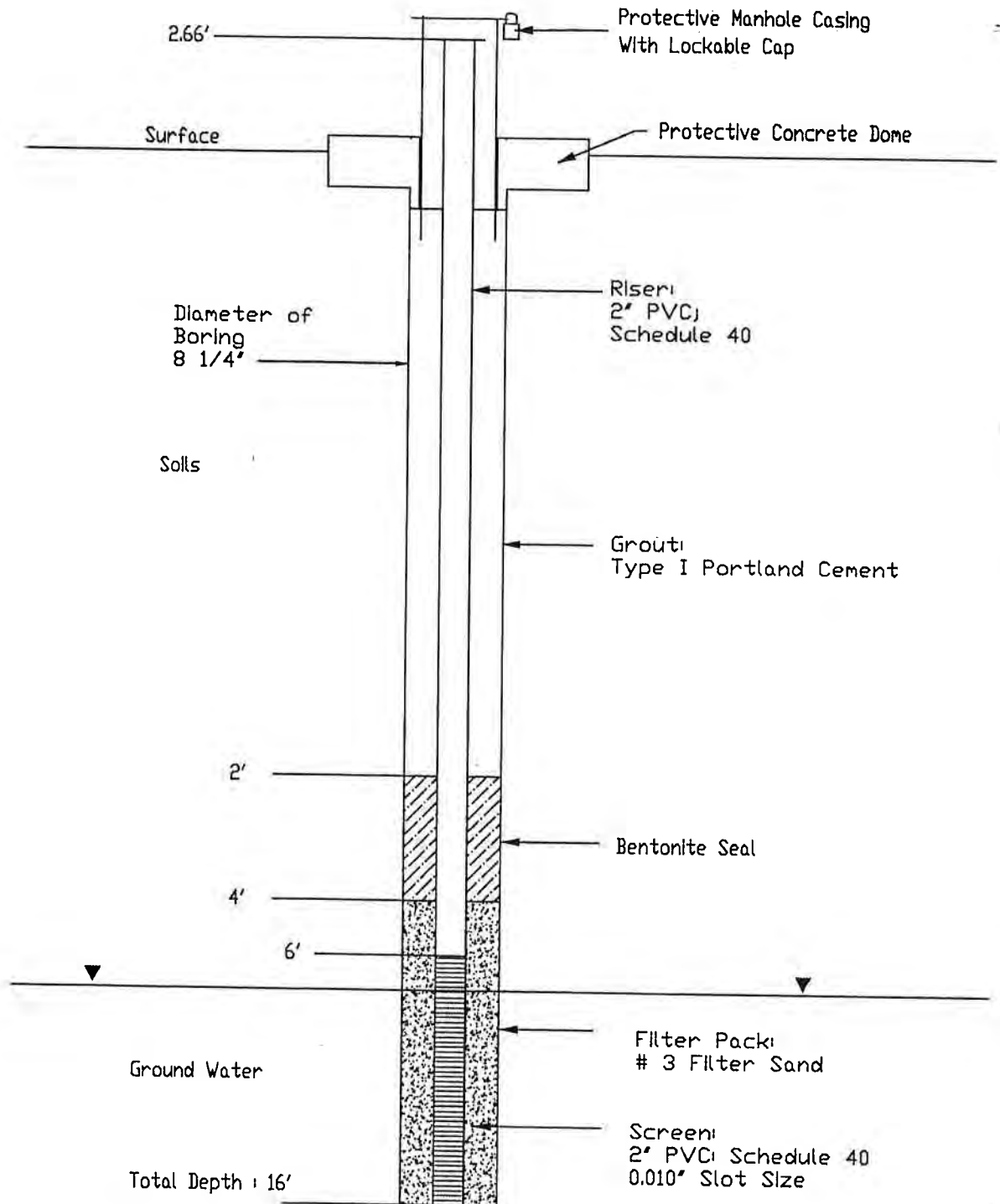
Aquaterra, Inc.

| | | | |
|---------------------|--------------------|-------------------------|------------------------------------|
| I. D. Number | <i>MW-23A</i> | Purpose | <i>Monitoring Well Replacement</i> |
| Project Name | <i>Porcelanite</i> | Contractor | <i>Aquadriill</i> |
| Project No. | <i>3105804</i> | Registration No. | <i>1361</i> |
| Geologist | <i>Tom Haynes</i> | Driller | <i>Paul Waddell</i> |
| Start Date | <i>9/16/98</i> | Complete Date | <i>9/17/98</i> |
| | | Equipment | <i>Ingersoll-Rand A-300</i> |

| | | | |
|--|------------------------|---|----------------------|
| Drilling Metho <i>Hollow Stem Auger</i> | | | |
| Comments | | | |
| | | | |
| | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. <i>8 1/4" O.D.</i> | <i>0-1"</i> | <i>Grass</i> | |
| Riser Type <i>PVC Sch 40</i> | <i>1"-4'</i> | <i>Red slightly sandy clayey Silt</i> | |
| Diameter <i>2"</i> | <i>4'-8'</i> | <i>Red, brown slightly sandy Clay with tile chips</i> | |
| Screen Type <i>PVC Sch 40</i> | <i>8'-12'</i> | <i>Brown sandy Clay, moist</i> | |
| Diameter <i>2"</i> | <i>12'-14'</i> | <i>Light brown clayey Sand, wet</i> | |
| Riser Interval <i>6-0'</i> | <i>14'-16'</i> | <i>Tan, olive sandy Clay, moist</i> | |
| Screen Interval <i>6-16'</i> | | | |
| Slot Size <i>0.010"</i> | | | |
| Grout Type <i>Type I Portland</i> | | | |
| Interval <i>2-0'</i> | | | |
| Bentonite Type <i>3/8" Pellets</i> | | | |
| Interval <i>4-2'</i> | | | |
| Filter Pack <i>#3 Filter Sand</i> | | | |
| Interval <i>16-4'</i> | | | |
| Total Depth <i>16'</i> | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.



| Author | Drawing | Layers | Date | Title |
|---------|----------|--------|-------|---|
| nbb | 105804 | | | Well Construction Diagram Monitoring Well MW-23A |
| Job No. | Revision | Figure | Scale | Project |
| 105804 | 9-8-00 | | NTS | Porcelanite Lexington, North Carolina |

WELL CONSTRUCTION RECORD

Case No. _____
 Lat. _____ Long. _____ Pc _____
 Minor Basin _____
 Basin Code _____
 Header Ent. _____ GW-1 Ent. _____

DRILLING CONTRACTOR ENSCI
 DRILLER REGISTRATION NUMBER 1233

MW-24
 STATE WELL CONSTRUCTION
 PERMIT NUMBER: 28-0331-WM-0098

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Lexington

County: Davidson

(Road, Community, or Subdivision and Lot No.)

2. OWNER Mannington Ceramic Tile
 ADDRESS Post Office Box 1777
 (Street or Route No.)
Lexington, NC 27293
 City or Town State Zip Code

| Depth | | FORMATION DESCRIPTION |
|-------|----|--|
| From | To | |
| 0 | 5 | Sandy Clay loam |
| 5 | 15 | Gray white weathered granite saprolite |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

3. DATE DRILLED 9/1/92 USE OF WELL Monitoring
 4. TOTAL DEPTH 15 CUTTINGS COLLECTED Yes No
 5. DOES WELL REPLACE EXISTING WELL? Yes No
 6. STATIC WATER LEVEL: 3 FT. above TOP OF CASING.
 TOP OF CASING IS 3 FT. ABOVE LAND SURFACE. below
 7. YIELD (gpm): - METHOD OF TEST -
 8. WATER ZONES (depth): 3-15'

9. CHLORINATION: Type - Amount -

10. CASING:

| From | To | Depth | Diameter | Wall Thickness or Weight/Ft. | Material |
|------------|-----------|------------|-----------|------------------------------|------------|
| <u>+3</u> | <u>-5</u> | <u>Ft.</u> | <u>22</u> | <u>Sch 40</u> | <u>PVC</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads or other map reference points)

11. GROUT:

| From | To | Depth | Material | Method |
|------------|----------|------------|--------------------|---------------|
| <u>0.5</u> | <u>2</u> | <u>Ft.</u> | <u>#1 Portland</u> | <u>Poured</u> |
| <u>2</u> | <u>3</u> | <u>Ft.</u> | <u>Bentonite</u> | _____ |

12. SCREEN:

| From | To | Depth | Diameter | Slot Size | Material |
|------------|-----------|------------|----------|------------------|------------|
| <u>5</u> | <u>15</u> | <u>Ft.</u> | <u>2</u> | <u>0.010 in.</u> | <u>PVC</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |
| From _____ | To _____ | Ft. _____ | _____ | _____ | _____ |

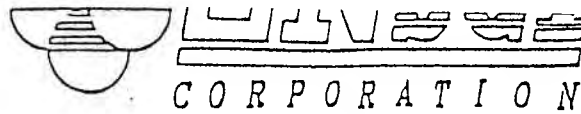
13. GRAVEL PACK:

| From | To | Depth | Size | Material |
|------------|-----------|------------|-----------|-------------|
| <u>3</u> | <u>15</u> | <u>Ft.</u> | <u>#3</u> | <u>Sand</u> |
| From _____ | To _____ | Ft. _____ | _____ | _____ |

14. REMARKS: _____

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

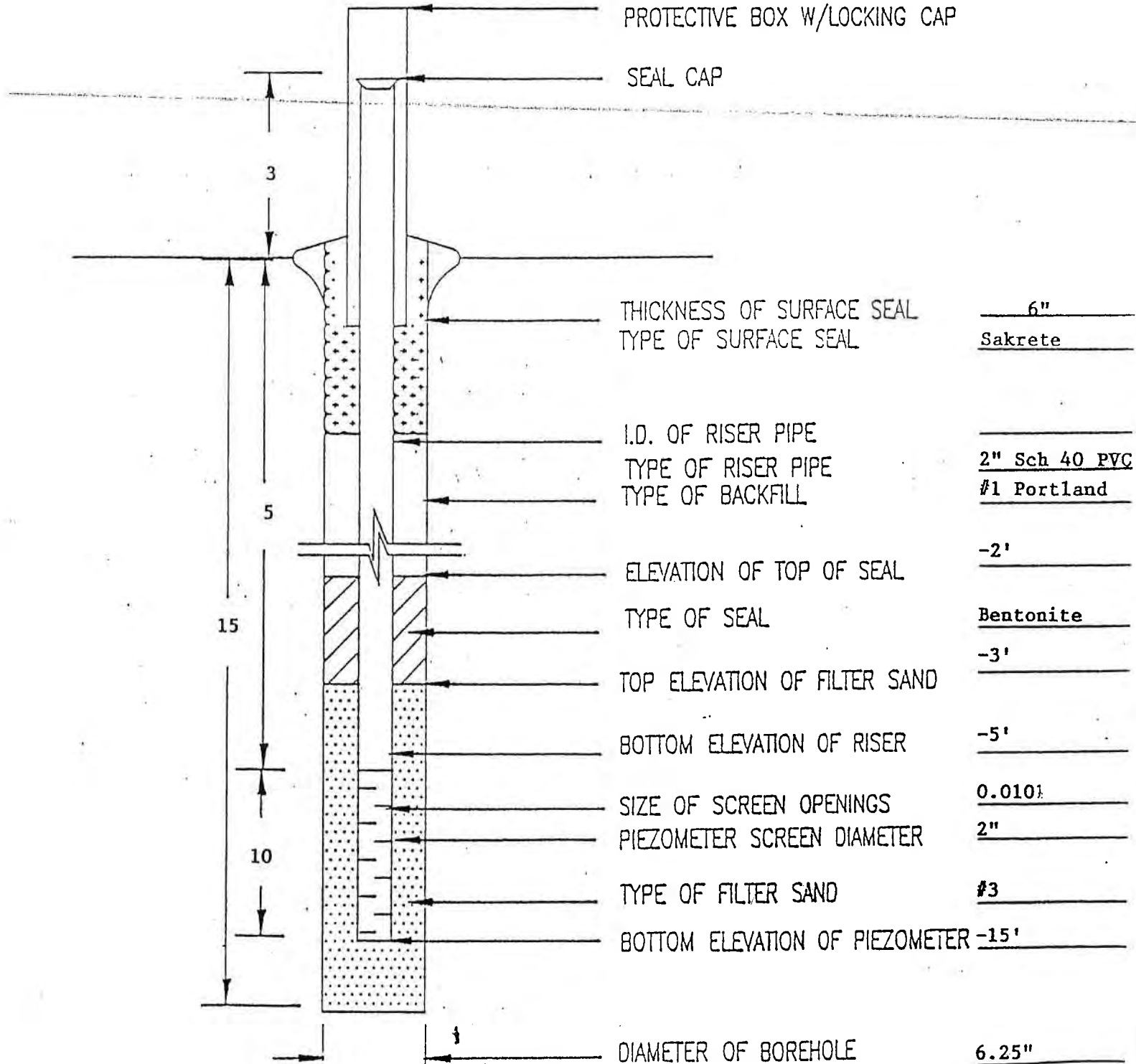
SIGNATURE OF CONTRACTOR OR AGENT _____ DATE _____
 Submit original to Division of Environmental Management and copy to well owner.



MONITORING WELL INSTALLATION SKETCH

PROJECT Mannington
 GROUND ELEVATION _____
 BENCH MARK DATA _____
 ELEVATION OF TOP OF PIEZOMETER _____

PIEZOMETER NUMBER MW-24
 DEPTH TO WATER LEVEL _____
 ELEVATION OF WATER LEVEL _____



Quad. No. _____ Serial No. _____
Lat. _____ Long. _____ Pc _____
Minor Basin _____
Basin Code _____
Header Ent. _____ GW-1 Ent. _____

WELL CONSTRUCTION RECORD

MW-25

DRILLING CONTRACTOR ENSCI
DRILLER REGISTRATION NUMBER 1233

STATE WELL CONSTRUCTION
PERMIT NUMBER: 28-03310WM-0098

1. WELL LOCATION: (Show sketch of the location below)

Nearest Town: Lexington

County: Davidson

(Road, Community, or Subdivision and Lot No.)

2. OWNER Manninton Ceramic Tile
ADDRESS Post Office Box 1777
(Street or Route No.)
Lexington, NC 27293
City or Town _____ State _____ Zip Code _____

| Depth | | DRILLING LOG |
|-------|------|-------------------------------------|
| From | To | Formation Description |
| 0 | - 5 | Sandy Clay |
| 5 | - 15 | Brown Vertically foliated saprolite |

3. DATE DRILLED 9/1/92 USE OF WELL Monitoring

4. TOTAL DEPTH 15' CUTTINGS COLLECTED Yes No

5. DOES WELL REPLACE EXISTING WELL? Yes No

6. STATIC WATER LEVEL: 3 FT. above TOP OF CASING.
 below TOP OF CASING IS 3 FT. ABOVE LAND SURFACE.

7. YIELD (gpm): _____ METHOD OF TEST _____

8. WATER ZONES (depth): 3-15'

9. CHLORINATION: Type _____ Amount _____

10. CASING:

| From | To | Depth | Diameter | Wall Thickness or Weight/Ft. | Material |
|------|----|-------|----------|------------------------------|----------|
| 13 | -5 | Ft. | 2" | Sch 40 | PVC |
| From | To | Ft. | | | |
| From | To | Ft. | | | |

If additional space is needed use back of form.

LOCATION SKETCH

(Show direction and distance from at least two State Roads, or other map reference points)

11. GROUT:

| From | To | Depth | Material | Method |
|------|----|-------|-------------|--------|
| 0.5 | 2 | Ft. | #1 Portland | Poured |
| 2 | 3 | Ft. | Bentonite | |

12. SCREEN:

| From | To | Depth | Diameter | Slot Size | Material |
|------|----|-------|----------|---------------|----------|
| 5 | 15 | Ft. | 2 | in. 0.010 in. | PVC |
| From | To | Ft. | | in. | |
| From | To | Ft. | | in. | |

13. GRAVEL PACK:

| From | To | Depth | Size | Material |
|------|----|-------|------|----------|
| 3 | 15 | Ft. | #3 | Sand |
| From | To | Ft. | | |

14. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15 NCAC 2C. WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

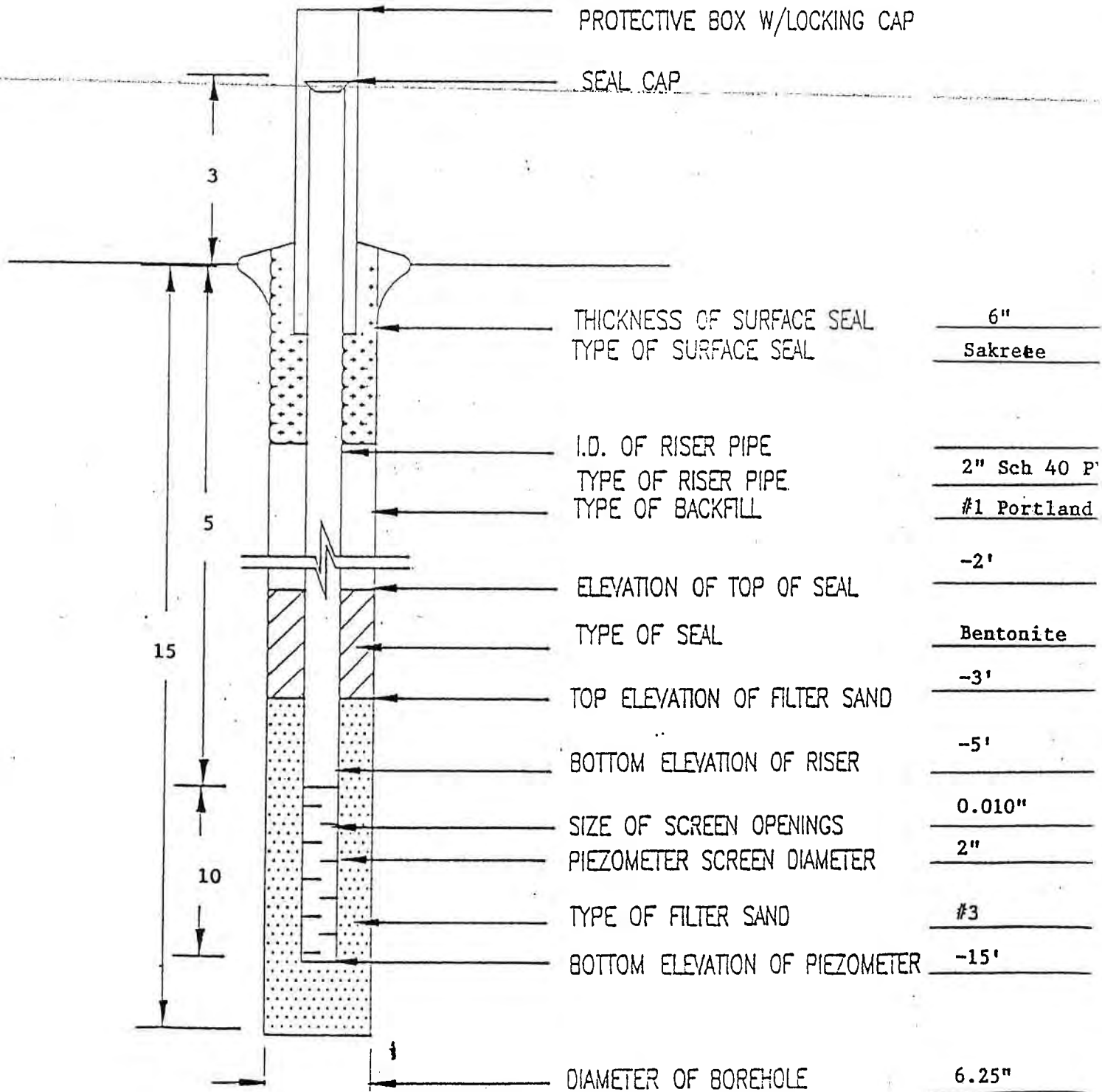
SIGNATURE OF CONTRACTOR OR AGENT

DATE



MONITORING WELL INSTALLATION SKETCH

PROJECT Manninton PIEZOMETER NUMBER MW-25
 GROUND ELEVATION _____ DEPTH TO WATER LEVEL _____
 BENCH MARK DATA _____ ELEVATION OF WATER LEVEL _____
 ELEVATION OF TOP OF PIEZOMETER _____



| For Office Use Only | |
|---------------------|------------------|
| Quad. No. _____ | Serial No. _____ |
| Lat. _____ | Long. _____ |
| Minor Basin _____ | Basin Code _____ |
| Header Ent. _____ | GW-1 Ent. _____ |

WELL CONSTRUCTION RECORD

Well Identification MW-26A
 Drilling Contractor Geologic Exploration
 Driller Registration Number 1175

State Well Construction Permit
 Number: On Client Property

1. Well Location: (Show sketch of the location below)

Nearest Town: Lexington, NC

County: Davidson Co.

NC Hwy. 8 and Victor St.
 (Road, Community, or Subdivision and Lot No.)

2. Owner Mannington Mills, Inc.
 Address P.O. Box 30
 (Street or Route No.)
Salem NJ 08079
 City State Zip Code

3. Date Drilled 5/21/99
 4. Total Depth 17.3'
 5. Does Well Replace Existing Well Yes
 6. Static Water Level NM Feet Below Top Of Casing

Top of Casing 3 Feet Above Land Surface
 7. Yield (gpm): NA Test Method

8. Water Zones: NA (depth)

9. Chlorination: NA Amount

10. Casing:

| Depth (ft.) | | Diameter | Wall Thickness | Material |
|-------------|----|----------|----------------|------------|
| From | To | | | |
| 7.3'-0' | | 2" | Sch 40 | PVC Sch 40 |

11. Grout:

| Depth (ft.) | | Material | Method |
|-------------|----|-----------------|--------|
| From | To | | |
| 3'-0' | | Type I Portland | Pour |
| 5'-3' | | Bentonite | Pour |

12. Screen:

| Depth (ft.) | | Diameter | Slot Size | Material |
|-------------|----|----------|-----------|------------|
| From | To | | | |
| 17.3'-7.3' | | 2" | 0.010" | PVC Sch 40 |

13. Gravel Pack:

| Depth (ft.) | | Size | Material |
|-------------|----|----------------|----------------|
| From | To | | |
| 17.3'-5' | | #3 Filter Sand | #3 Filter Sand |

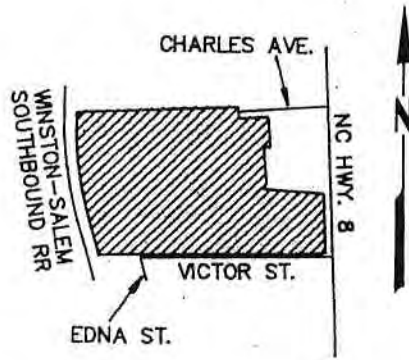
14. Remarks:

| Depth | | Drill Log |
|---------|----|---|
| From | To | Formation Description |
| 0'-6" | | Grass / Topsoil |
| 6'-3' | | Red, brown sandy slightly micaceous Clay. |
| 3'-8' | | Brown, sandy Clay |
| 8'-9' | | Brown, olive slightly micaceous clayey Silt, silty Clay. Moist. |
| 9'-11' | | Grey, olive slightly micaceous fine sandy clayey Silt. Moist. |
| 11'-12' | | Brown, yellow clayey Sand. Moist. ~12' hit auger refusal. |
| | | Will switch to roller cone then core. |
| 13'-18' | | Granite / Competant rock. Fracture zones @ ~18' |

If additional space is needed, use back of form.

Location Sketch

(Show direction & distance from at least two State Roads, or other map reference points)



VICINITY MAP
 1"=1000'±

I do hereby certify that this well was constructed in accordance with 15 NCAC 2C, well construction standards, and that a copy of this record has been provided to the well owner.

Signature of Contractor or Agent _____ Date _____
 Submit original to Division of Environmental Management & copy to well owner.

Boring / Well Construction Log

Well Construction Permit Number _____

Aquaterra, Inc.

| | | | |
|--------------|--------------------|------------------|------------------------------------|
| I. D. Number | <u>MW-26A</u> | Purpose | <u>Monitoring Well Replacement</u> |
| Project Name | <u>Porcelanite</u> | Contractor | <u>Geologic Exploration</u> |
| Project No. | <u>3105804</u> | Registration No. | <u>1175</u> |
| Geologist | <u>Tom Haynes</u> | Driller | <u>Mike</u> |
| Start Date | <u>5/20/99</u> | Complete Date | <u>5/21/99</u> |
| | | Equipment | <u>Mobile B-61</u> |

| | | | |
|---|-------------------------------------|---|--|
| Drilling Metho <i>Hollow Stem Auger / Core Drill</i> | | | |
| Comments <i>Auger to ~12', roller cone to ~13', rock core to 18'</i> | | | |
| | | | FID / PID (ppm) @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. | <i>8 1/2" to 12"; 3" at 12'-18'</i> | <i>0'-6"</i> | <i>Grass / Topsoil</i> |
| Riser Type | <i>PVC Sch 40</i> | <i>6"-3'</i> | <i>Red, brown sandy slightly micaceous Clay.</i> |
| Diameter | <i>2"</i> | | |
| Screen Type | <i>PVC Sch 40</i> | <i>3'-8'</i> | <i>Brown, sandy Clay</i> |
| Diameter | <i>2"</i> | <i>8'-9'</i> | <i>Brown, olive slightly micaceous clayey Silt, silty Clay. Moist.</i> |
| Riser Interval | <i>7.3'-0'</i> | <i>9'-11'</i> | <i>Grey, olive clightly micaceous fine sandy clayey Silt. Moist.</i> |
| Screen Interval | <i>17.3'-7.3'</i> | <i>11'-12'</i> | <i>Brown, yellow clayey Sand. Moist. ~12' hit auger refusal.</i> |
| Slot Size | <i>0.010"</i> | | <i>Will switch to roller cone then core.</i> |
| Grout Type | <i>Type I Portland</i> | <i>13'-18'</i> | <i>Granite / Competant rock. Fracture zones @ ~18'</i> |
| Interval | <i>3'-0'</i> | | |
| Bentonite Type | <i>3/8" Pellets</i> | | |
| Interval | <i>5'-3'</i> | | |
| Filter Pack | <i>#3 Filter Sand</i> | | |
| Interval | <i>17.3'-5'</i> | | |
| Total Depth | <i>17.3'</i> | | |
| R.P. Elevation | | | |
| Datum | | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

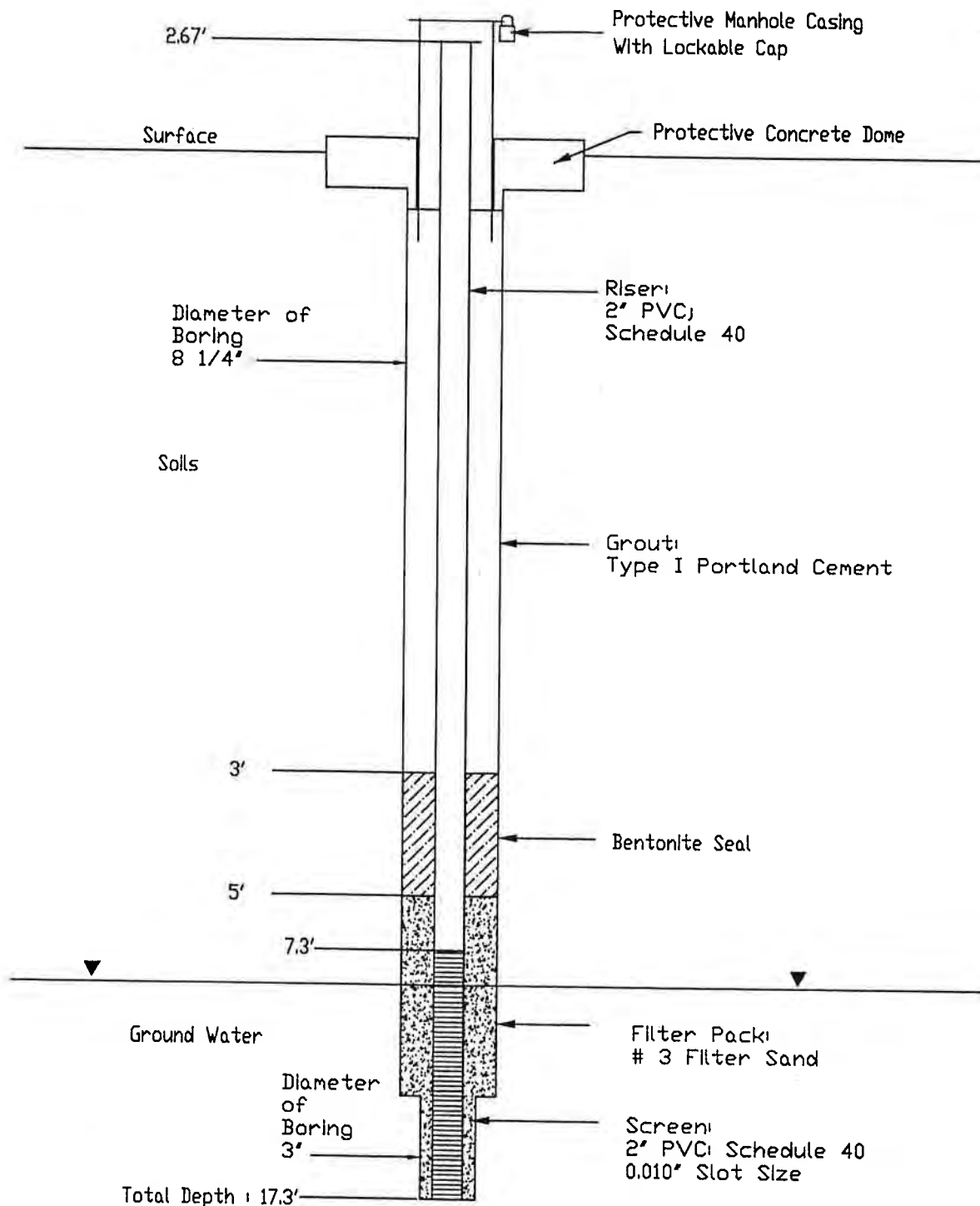
R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.



Appendix E-3
2007 Sampling and
Analysis Plan

November 2, 2007

Mr. Bob Glaser
North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Post Office Box 27687
Raleigh, North Carolina 27611-7687

Reference: October 2007 Revised Sampling and Analysis Plan (SAP)
Porcelanite, Inc.
Lexington, North Carolina
Waters Edge Environmental Job No. R1-21

Dear Mr. Glaser:

Based on our October 15, 2007 meeting and recommendations made by Ms. Mary Siedlicki, we have attached the following revisions to the most recently approved SAP:

1. We would monitor wells MW-1, MW-9, MW-12, MW-22A, MW-26-A-2 and MW-28 in both March and September.
2. All wells would be analyzed for boron, cadmium, chromium, cobalt, lead, manganese and zinc.

If you have any questions regarding this report or require additional information, please call me at 919.859.9987.

Sincerely,

WATERS EDGE ENVIRONMENTAL, LLC

Phillip L. Rahn, P.G.
President

07-122/PLR/aht

**October 2007 Revised SAP
Porcelanite, Inc.
Lexington, North Carolina
November 2, 2007**

Prepared For

**Porcelanite, Inc.
(Mannington Mills)
Lexington, North Carolina**

Prepared By

**Waters Edge Environmental, LLC
Raleigh, North Carolina**

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**October 2007 Revised SAP
Porcelanite, Inc.
Lexington, North Carolina
November 2, 2007**

1 Introduction

Porcelanite, Inc. 1995-present (formerly Mannington Ceramic Tile 1986-1995) was a ceramic tile manufacturing company that operated a facility in Lexington, Davidson County, North Carolina (see Figure 1). Two solid waste management units were created to handle waste previously generated from the ceramic tile manufacturing process. These units include the waste water settling ponds and the waste ceramic tile pile (see Figure 2). The settling ponds were used to settle solids contained in production waste water and then discharged to the Rat Spring Branch of the Yadkin-Pee Dee River Basin under a National Pollution Discharge Elimination System (NPDES) permit. The waste ceramic tile pile was used to dispose of off-specification ceramic tile materials. Currently the plant is closed and is for sell by Porcelanite.

Previous site evaluations of the solid waste management units revealed that both units are regulated by the Resource Conservation and Recovery Act (RCRA) due to toxicity associated with leachable lead content. Closure of the settling ponds and ceramic tile pile unit are complete. A total of twenty six (26) ground water monitoring wells were originally installed for detection and assessment monitoring around the former settling ponds and the waste ceramic tile pile of which 18 currently exist. Exceedances of ground water standards have been detected in some of the monitoring wells.

This Ground water Sampling and Analysis Plan (SAP) supersedes the February 2005 SAP generated by Waters Edge. Revisions in the SAP were based on comments made by the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Waste Management (DWM) in our October 15, 2007 meeting. The significant differences between this SAP and the previous SAP include:

- Increase in the amount of wells sampled and analyte list for both the March and September sampling rounds.

2 Site Setting

2.1 Topographic Setting

The site is located in the central portion of the Piedmont physiographic province in North Carolina. The Piedmont region is characterized by a rolling hill topography. This topography was developed by tectonic uplift and subsequent erosion of the region between the Blue Ridge Mountains and the Atlantic Ocean.

The site lies on the margin of a minor first order stream known as Walltown Drain. Site topography is dictated by the stream valley and is characterized by an average topographic grade of approximately 0.085 ft/ft sloping toward the northeast. A map depicting ground water flow is presented in Figure 3.

2.2 *Geologic Setting*

The site is situated in the eastern portion of the Charlotte Lithotectonic Belt which is a zone of regionally metamorphosed amphibolite facies igneous rocks with a similar character, bounded on the east and west sides by shear zones. Lithologies, which occur beneath the Porcelanite facility, are mapped as Late Proterozoic-aged undivided metavolcanic rocks according to the Charlotte U.S.G.S. geologic quadrangle map (Gair, 1989).

Two cross-sectional diagrams and flow nets are contained in Appendix A. These cross sections and flow nets were prepared by Waters Edge to illustrate relevant site geology and contaminant flow paths. As seen in the cross-sections, the predominant lithology encountered at the site was described as pink to tan silty sand textured residual soils (saprolite) weathered in place from the underlying bedrock. The saprolite grades from intensely weathered rock near the surface to slightly weathered rock with increasing depth. In some areas, sandy clay to clayey sand soils have developed in the upper 5 to 10 feet of saprolite.

As seen in the cross-section diagrams, underlying bedrock lithologies encountered at the site consist of partially weathered to highly fracture granite to granodiorite. This observation is contrary to the above-mentioned mapped lithologies. As confirmation of the rock types observed at the site, quartz diorite has been recognized in the vicinity of the site at the Lexington Quarry (Gair, 1989). The distribution of these intrusive rocks has been mapped or subdivided from the metavolcanics in the area. Based upon the lithology and location of these intrusive rocks, it is likely that the granite to granodiorite is associated with the Devonian-aged Yadkin Pluton. No significant ore deposits have been recognized or mined extensively in the immediate area surrounding Lexington. However, significant deposits of a number of ores including silver, lead, cobalt, zinc, gold and copper have been recognized and mined in the regions located 5 to 20 miles south and east of the site (Gair, 1989).

2.3 *Hydrogeologic Setting*

As is typical of the Piedmont Physiographic Province, ground water occurs in two interconnected zones underlying the site. These zones include the unconsolidated (saprolite) water table aquifer and the underlying fractured bedrock aquifer. Ground water in the water table aquifer is transmitted in a generally laminar fashion through the pores in the "B-Horizon" and "C-Horizon" soil zones. These soil zones (saprolite) tend to have a fairly uniform porosity and permeability and have a relatively large storage capacity in the regolith overlying fractured bedrock. The two water bearing zones are directly interconnected and are

not separated by a confining layer at the site. The saprolite/regolith zone acts as the storage reservoir for the underlying bedrock zone, thus recharging the bedrock aquifer in response to any withdrawal of water from the bedrock.

Ground water in the saprolite water table zone has been mapped to illustrate the direction and gradient of ground water flow. To illustrate the direction and gradient of ground water flow at the site, the most recent water table contour map (December 2004) is provided in Figure 3. As seen in Figure 3, ground water is flowing toward the northeast under an average hydraulic gradient of approximately 0.028 ft/ft. The depicted ground water flow and gradient is in general agreement with previous observations. The local point of ground water discharge from the water table aquifer appears to be the Walltown Drain. Recharge to the water table zone apparently occurs as surface water infiltration over the topographically higher regions southwest of the site.

In order to gain information about the permeability of the water table and bedrock aquifers, ENSCI Environmental (November 1992) conducted single well slug tests on fifteen monitoring wells. Results of these tests indicated the hydraulic conductivity of the water table aquifer is fairly consistent across the site. The hydraulic conductivity values derived from the slug tests were averaged by calculating the geometric mean, resulting in a derived aquifer permeability of 0.40 feet/day. Utilizing the derived hydraulic conductivity, average hydraulic gradient and estimates of the effective porosity of the aquifer, ENSCI estimated that the ground water flow velocity at the site ranges from 0.030 feet/day to 0.054 feet/day.

The site is situated in the eastern portion of the Charlotte lithotectonic belt, which is a zone of regionally metamorphosed amphibolite facies igneous rocks with a similar character, bounded on the east and west sides by shear zones. According to the Charlotte geologic quadrangle map, the site is underlain by Late Proterozoic-aged undivided metavolcanic rocks. However, bedrock lithologies encountered at the site consist of massive, quartz-potassium feldspar-muscovite granite to granodiorite that are likely associated with the Pennsylvanian to Permian-aged Churchland Pluton.

2.4 *Monitoring Well System*

As of April 10, 1997, 19 ground water monitor wells were used to monitor ground water at the site. In preparation for closure of the ceramic tile chip pile, on April 10, 1997, the following six monitoring wells were abandoned; MW-3, MW-7, MW-8, MW-21, MW-22 and MW-26A. All wells except MW-8 were replaced in the same approximate locations upon completion of closure activities. Of the eighteen (18) monitoring wells currently existing at the site, fourteen (14) are Type II monitoring wells installed to monitor the shallow aquifer, and four Type III monitoring wells (MW-9 and MW-11, MW-19 and MW-28) installed to monitor the saprolite aquifer. Appendix B contains available monitoring well construction records for existing monitoring wells.

This SAP includes six monitoring wells (MW-1, MW-9, MW-12, MW-22A, MW-26-A-2, and MW-28) as described in Table 2 to be used to monitor the Tile Pile and Settling Ponds with sampling being accomplished in March and September of each year. The parameters for sampling will be boron, cadmium, chromium, cobalt, manganese, lead and zinc.

3 Health and Safety

As required in 29 CFR Part 1910.120 a health and safety plan (HASP) for the hydrogeologic assessment was previously developed. The HASP includes the following items:

- safety and standard operating procedures
- anticipated hazards
- exposure limits
- levels of dermal and respiratory protection
- emergency medical care of personnel
- contingency plan for sudden releases of hazardous materials by the drilling program
- emergency procedures and ambient air monitoring

All personnel and subcontractors are monitored under an approved medical program including baseline and annual physicals. All personnel will have 32 to 40 hours of hazardous waste health and safety training. Personnel will be fit tested for respirators, OSHA trained in the use of negative and positive pressure respiratory protection, and the proper use of personal protective equipment (PPE).

4 Ground Water Sample Collection

4.1 Ground Water Sampling Preparation

The sampling team and site manager will review the ground water sampling plan prior to beginning sampling activities. The team and site manager will develop a sampling schedule and determine which samples will be duplicated for QA/QC purposes. The correct number of sample containers will be secured for each sampling round.

4.2 Ground Water Sample Collection Logbook

The following data will be recorded in the on-site water sample collection logbook (hereafter referred to as the “logbook”) maintained by the Mannington site manager:

- name(s) of people present
- date of the sampling event

- environmental conditions
- date and procedure used for equipment calibration will be documented in the logbook

For each well sampled:

- well condition
- date and time of measurement and/or purging
- equipment used for purging
- well depth below measuring point (to the nearest 0.01 feet)
- elevation of the water level
- length of water column in the well
- volume of water column in the well
- approximate volume of water removed during purging
- sample collection time and date
- equipment used for sample collection
- field measurements
- types and number of sample containers
- any special handling procedures

4.3 *Measurement of Water Levels*

Well caps with air/water tight seals will be removed from all of the wells, and the wells will be allowed to equilibrate with atmospheric pressure for a minimum of 15 minutes prior to measurement of water levels. Water levels will be measured to the nearest 0.01-foot using an electronic water level meter. The top of the Grundfos wellhead water level probe port has been selected as the reference measuring point for each well (see Table 1). Static water level measurements will be obtained from all wells prior to beginning the well purging procedure at any well. Water level measurements will proceed from the least to the most contaminated wells based on the “most recent” historical analytical data. This order of water level measurements will help to minimize the potential for cross contamination between wells.

All sampling personnel will wear protective non-reactive nitrile gloves throughout the water level monitoring procedures. Depth to ground water measurements (including calculated ground water elevations) and other data will be recorded in the facility ground water sample collection logbook.

4.3.1 *Decontamination of Water Level Probe*

The water level probe will be decontaminated prior to initial use and between each well before measuring the water levels. The electric probe and length of cable inserted into the monitoring well will be rinsed with deionized (or distilled) water, scrubbed in a phosphate-

free low-residue soap, rinsed with deionized (or distilled) water, rinsed with a 5% nitric acid solution, rinsed with deionized (or distilled) water, rinsed with isopropyl alcohol, rinsed with deionized (or distilled) water and air dried as long as possible between wells.

4.4 Well Development and Purging

Clean, disposable gloves (powder free, vinyl or latex) will be worn by sampling personnel during water level monitoring, purging, sampling, and decontamination procedures. New gloves will be utilized for each activity and each well.

Utilizing the well volume information gathered from the water level measurement procedures, three well volumes will be calculated for each well to determine the minimum volume to be purged prior to sampling. Removal of the minimum three casing volumes and allowing the wells to stabilize should insure that all of standing water in the well casing is removed. Newly installed wells will be allowed to stabilize for a minimum of one week following development before being purged and sampled.

A dedicated Grundfos Redi-Flo2 brand electric submersible impeller pump will be used to purge and sample each well if feasible. If this is not feasible due to obstructions in the well, disposable bailers will be attempted. As requested in the HWS correspondence dated November 8, 1996, a new survey of the replacement monitoring well measuring points has been completed. This included surveying the top of casing elevations and surveying the Grundfos dedicated wellhead measuring point (water level probe port) for the replacement well heads. Table 1 specifies the pump intake in relation to the top of well casing for all monitoring wells currently located at the facility.

An individual pump will be dedicated to each well, thus eliminating the potential for cross contamination and eliminating the need for decontamination between sampling events. The pump will be secured in the well with a stainless steel cable. Discharge tubing will be Teflon and will also be dedicated, eliminating the need for decontamination between sampling events.

The purging process will involve pumping a minimum of three well volumes of water continuously at a low flow rate (approximately 0.25 gallons per minute). Pumping at the low flow rate will reduce or eliminate the collection of well bore sediments and provide a more representative ground water sample. Field parameters of pH, temperature and conductivity will be measured for each well volume. The purging will continue until field parameters and water level stabilize. Stabilization consists of three consecutive readings collected at 5-minute intervals over a 15 minute period. Each well will be purged until visibly clear water flows from the discharge hose of the pump. We will also note the stabilized water level to insure that the sample is entering the pump directly from the formation.

In the event that an existing well contains insufficient water to purge three well volumes or until field parameters have stabilized, the Redi-Flo2 pump will be operated until it will not yield water and the ground water samples will be obtained following sufficient recharge of the well.

4.5 *Ground Water Sample Collection*

The order of ground water purging and sample collection will proceed from the well with the most recent lowest concentrations of constituents to the well with the most recent highest constituent concentrations. This order of ground water purging and sample collection will help to minimize the potential for cross contamination between wells. Clean, disposable nitrile gloves (powder free) will be worn by sampling personnel during water level monitoring, purging, sampling, and decontamination procedures. New gloves will be utilized for each activity and each well.

Once the purging process is completed, the water will be transferred into the appropriate sample containers without interrupting the pumping/purging process. Prior to commencement of field activities, the contracting laboratory prepares the appropriate sample containers for the sampling event. Containers are labeled for each well and sample parameter. If required, the laboratory facility adds preservatives to the appropriate sample containers. Sample containers, preservation techniques and holding times utilized in the sampling event are conducted in accordance with the methods presented in *EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Table 2-33*. Table 3 specifies the sample container volume, preservative, holding time and analytical method to be employed to analyze the sample at the laboratory. Upon filling, the sample containers will be immediately labeled with the appropriate information and placed on ice to lower the temperature of the samples to approximately 4°C. Permanent ink will be used for all sample container label entries to ensure information remains legible when wet. Reported field parameters will be obtained following acquisition of all ground water samples that are to be sent to the laboratory for analysis.

4.6 *Disposal of Purged Water*

The purged ground water from the monitoring wells will be containerized in labeled 55-gallon drums, labeled as purge water and stored on site while awaiting proper disposal.

4.7 *Field Quality Control*

In the event that the Redi-Flo2 Pump malfunctions, the pump will be removed from the well and repaired in the field if possible. If field repair of the pump is not possible, the pump will be removed, the well head will be fitted with a temporary locking expansion cap and the pump will be shipped to the manufacturer for repair. Prior to returning the pump and discharge plumbing to the well, all downhole portions of the pump, discharge hose and

suspension cable will be fully decontaminated in the same manner described in Section 4.3.1 of this report.

5 Quality Assurance/Quality Control Program

5.1 Introduction

A quality assurance (QA) program will be used to assure valid analytical data. A quality control (QC) program will be in effect in the form of the field sampling procedures. The analytical laboratory to be used is an EPA approved laboratory that will use a QA/QC program that complies with EPA SW-846 methods.

The QA programs used for the ground water will consist of duplicate samples, split samples, field blanks, and travel blanks as requested by the NCDENR. Any deviations from the specifications of this SAP and/or approved procedures will be documented in the quarterly report generated to document ground water and site conditions.

5.2 Duplicate Samples

A least one duplicate sample will be randomly collected from a monitoring well during each day of sample collection for each semiannual sampling event. The sample will be acquired from the monitoring well in a manner identical to the primary sample (same time, same location, using the same sampling equipment, etc.). These samples will be collected in identical containers that have been similarly prepared and filled to the same volume. Duplicate samples will be preserved and handled in an identical fashion.

5.3 Split Samples

Split samples are not planned for the program unless requested by the NCDENR, the analytical laboratory results become suspect, or unexpected contaminants are detected.

5.4 Field Blanks

Field blanks will consist of laboratory prepared deionized analyte free water that will be containerized, treated (if preservatives are used), and handled in the same manner as the samples collected from the monitoring wells.

5.5 Method Blanks

The analytical laboratory is required to collect, analyze, and report the data associated with a method blank. A method blank is required at the beginning and end of each day that an analysis for the site is conducted. For example, if 10 samples were submitted for analysis

from this particular site, and they were all analyzed on the same day, then one set of method blanks would be submitted. However, if a portion was analyzed one day, and the remainder analyzed on another day, then two sets of method blanks, one for each day, would be submitted.

The analytical data from each sampling event is compared to the historical database developed for the site to determine whether an anomaly exists. If information is suspected of being anomalous, then the wells associated with the anomaly will be resampled for verification.

6 Monitoring Parameters / Schedule

Porcelanite will employ the schedule and analytical methods outlined in Table 2 for the ongoing evaluation of ground water at the site. For the assessment program, Porcelanite will follow the schedule, parameter list, and sample locations (i.e. wells) described in this document or applicable correspondence from NCNCDENR. As indicated in Table 2, there are currently 18 wells; however, we are only proposing to analyze six wells based on the historical analysis conducted at the site. Table 3 specifies the sample container size, preservative, holding time, and analytical test method to be utilized during the analysis of the recovered ground water sample.

7 Chain of Custody Protocols

7.1 Sample Labels

Preprinted labels will be affixed to the sample containers by the laboratory. Preprinted items on the labels will include the laboratory name, address and preservative added to the container. Once a sample is collected in the field, the date, time, sample location, project name, sampler name and target analytical methods will be recorded. All label entries will be made using permanent ink.

7.2 Chain of Custody Record

A form will be supplied by the laboratory in a format for recording all pertinent sampling data to maintain a record of the chain of custody of samples collected. The form will be completed in the field prior to delivery of the samples to the laboratory. Information to be included on the chain of custody record will include, at a minimum, the following:

- project name
- project number
- sample location, well number
- sampling date & time
- preservatives & number of containers
- sampler identification
- custody signatures
- laboratory North Carolina Certification Number

- requested analysis
- inclusive dates of sample possession

7.3 *Sample Transportation*

Following collection, samples will be placed in a cooler and immediately chilled on ice to approximately 4°C. Sample containers will be packed in the cooler with plastic foam packing materials or equivalent to prevent breakage of sample containers during transportation. Sample coolers will remain in custody of field sampling personnel until delivered to laboratory personnel or until shipped via a commercial overnight shipping firm to the laboratory.

8 Reporting

A report will be generated within 60 days of sample collection to document details of the sample collection event and laboratory results.

Table 1

**Porcelanite, Inc.
October 2007 Sampling & Analysis Plan
Ground Water Monitoring Well Data**

| Monitoring Well Identification | Top of Casing Elevation | Ground Water Elevation | Pump Intake Elevation |
|---------------------------------------|--------------------------------|-------------------------------|------------------------------|
| MW-1 | 769.71 | 750.86 | 749.41 |
| MW-3A | 764.49 | 730.38 | 735.42 |
| MW-7A | 742.38 | 736.79 | 724.57 |
| MW-9 (D) | 749.79 | 727.86 | 699.97 |
| MW-10 | 757.81 | 742.52 | 738.81* |
| MW-11 (D) | 755.10 | 742.72 | 690.62 |
| MW-12 (D) | 749.59 | 729.6 | 727.80 |
| MW-13 | 752.86 | 734.94 | 729.86* |
| MW-14 | 756.92 | 744.22 | 740.92* |
| MW-18 | 733.44 | 726.09 | 721.28 |
| MW-19 (D) | 732.40 | 725.8 | 699.73 |
| MW-21A | 739.11 | 734.26 | 725.09 |
| MW-22A | 753.25 | 735.1 | 730.73 |
| MW-23A | 752.31 | 740.28 | 737.02 |
| MW-24 | 729.42 | 725.59 | 716.30 |
| MW-25 | 731.59 | 725.64 | 718.93 |
| MW-26-A-2 | 749.59 | NM | NM |
| MW-28 (D) | 749.39 | 726.75 | 669.72 |

NM – Not Measured since MW-26-A-2 installed in September 2007

D = Deep Well

Ground surface datum collected on May 15, 1997 and August 2000

**- Pump intakes lowered on October 3, 2001*

Waters Edge Environmental Job No. R1-21

Table 2

**Porcelanite, Inc.
October 2007 Sampling and Analysis Plan
Target Analyte List and Sampling Schedule**

| Well ID # | March | September |
|------------------|--------------|------------------|
| MW-1 | A | A |
| MW-9 | A | A |
| MW-12 | A | A |
| MW-22A | A | A |
| MW-26-A-2 | A | A |
| MW-28 | A | A |

PARAMETERS

A: Boron, Cadmium, Chromium, Cobalt, Lead, Manganese and Zinc

Table 3







**Porcelanite, Inc.
Target Analyte List
Container Size, Preservative, Holding Time and Analytical Methodology**

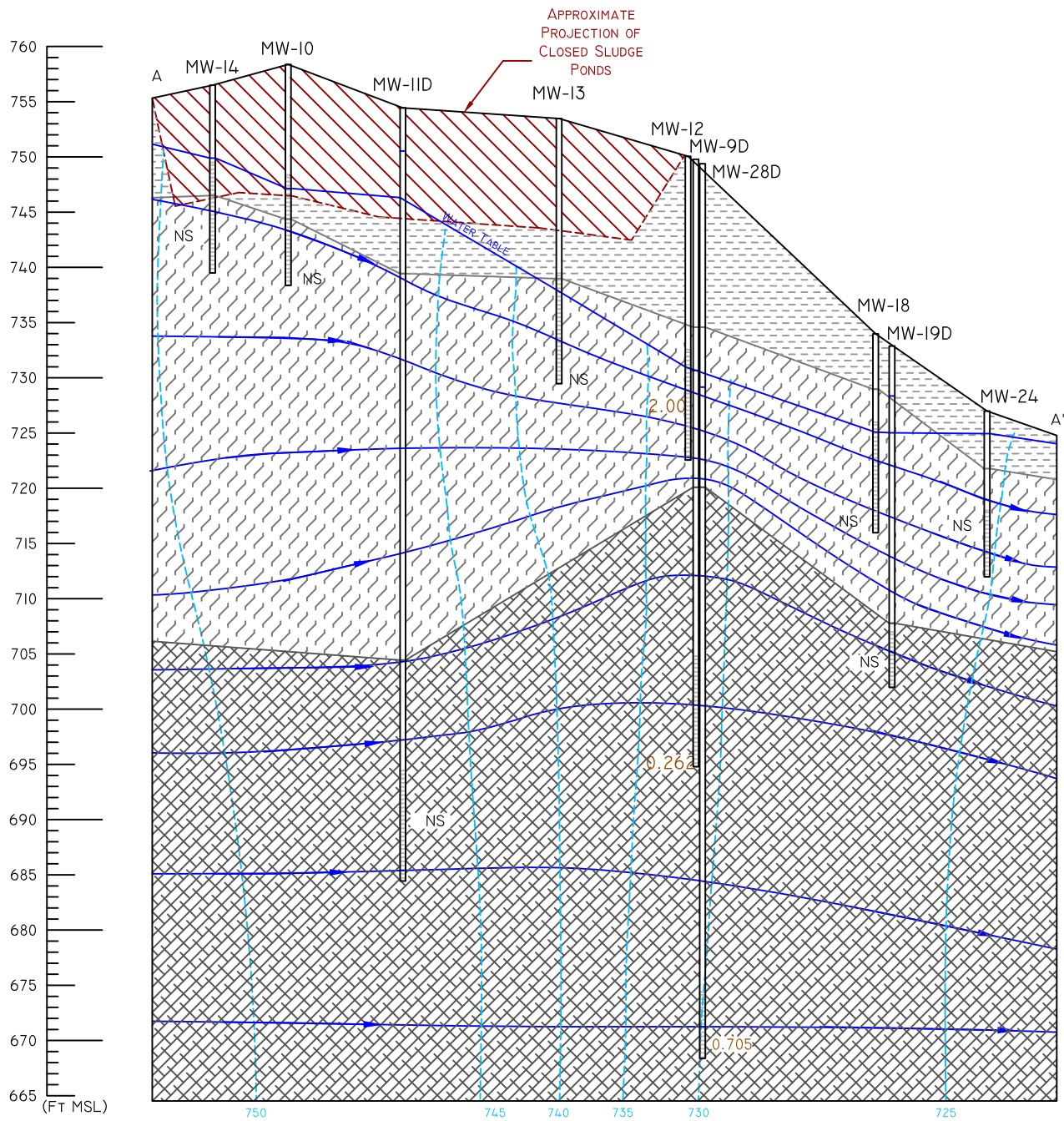
| Parameter | Container | Preservative | Holding Time | Analytical Method |
|------------------|------------------|---------------------|---------------------|--------------------------|
| Boron | 950 ml | HNO ₃ | 6 months | 200.7 |
| Cadmium | 950 ml | HNO ₃ | 6 months | 200.7 |
| Chromium | 950 ml | HNO ₃ | 6 months | 200.7 |
| Cobalt | 950 ml | HNO ₃ | 6 months | 200.7 |
| Lead | 950 ml | HNO ₃ | 6 months | 200.7 |
| Manganese | 950 ml | HNO ₃ | 6 months | 200.7 |
| Zinc | 950 ml | HNO ₃ | 6 months | 200.7 |

Note: With use of EPA Method 200.7, the lowest possible detection limit will be obtained with each analyte tested. Sample containers, preservation techniques and holding times utilized in the sampling events are conducted in accordance with the methods presented in *EPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Table 2-33*.

Appendix E-4
Cross-Sections (September
2016)







LEGEND

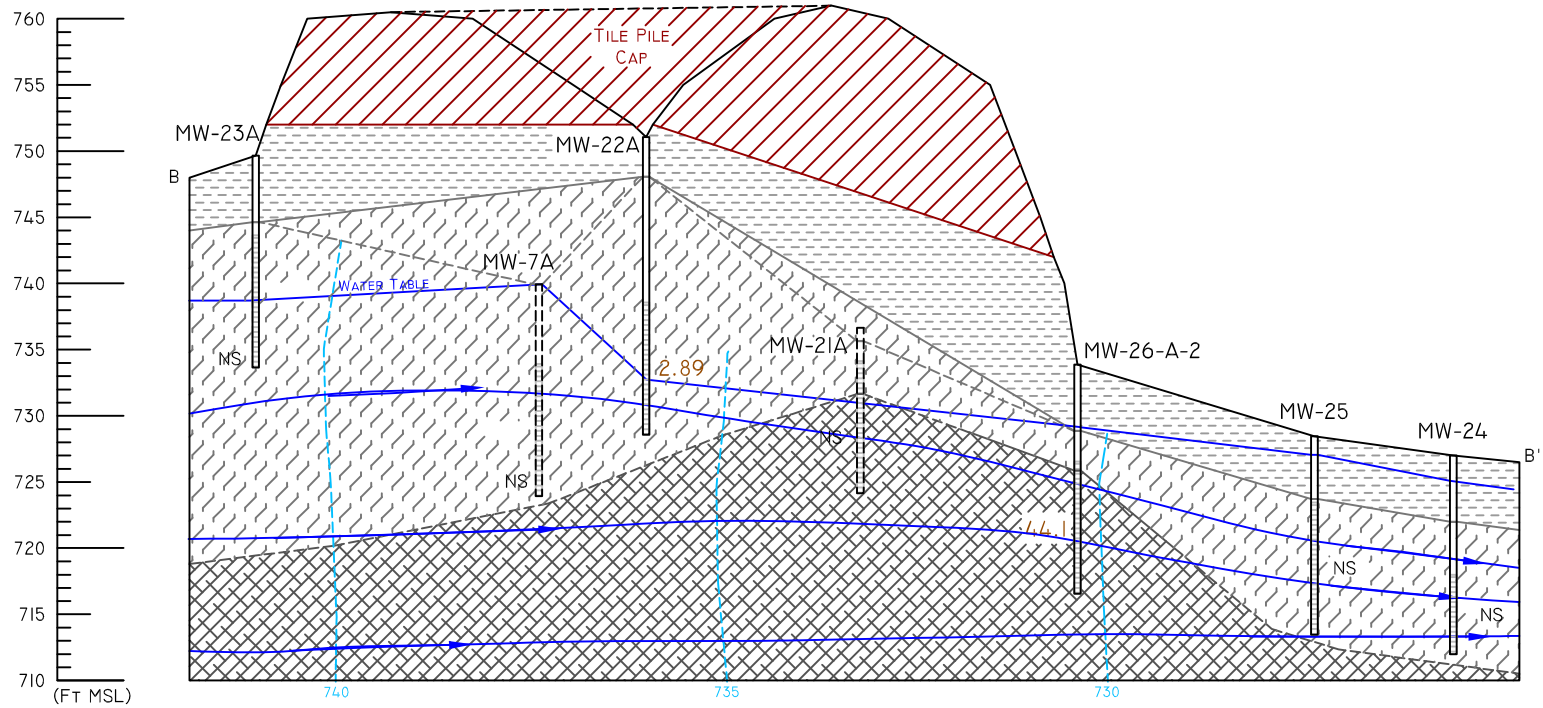
-  CLAYEY SAND SURFICIAL SOILS
-  SILTY SAND SAPROLITE SOILS
-  PARTIALLY WEATHERED GRANODIORITIC BEDROCK
-  CLOSED SLUDGE PONDS
- 1.06 BORON CONCENTRATION (IN MG/L)*
- NS MONITORING WELL NOT SAMPLED
-  EQUIPOTENTIAL LINE
-  GROUND WATER FLOW LINE / DIRECTION



| | | | | |
|------------------|----------------------|-------------------|--------------------------------|--|
| Author plr | Drawing App E-4 | Layers | Date 4.11.16 | Title Geologic Cross Section and Flow Net A and A' (September 15, 2016) |
| Job No. R1-21 | Revision 10.28.16 | Figure App E-4 | Scale 1" = 150' VE = 10x | Project Former Porcelanite Facility Lexington, North Carolina |

LEGEND

-  CLAYEY SAND SURFICIAL SOILS
-  SILTY SAND SAPROLITE SOILS
-  PARTIALLY WEATHERED GRANODIORITIC BEDROCK
-  CAPPED TILE PILE
- 1.06 BORON CONCENTRATION (IN MG/L)
- NS MONITORING WELL NOT SAMPLED
-  EQUIPOTENTIAL LINE
-  GROUND WATER FLOW LINE / DIRECTION



Part F
Hazard Prevention

Part F - Procedures to Prevent Hazards
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Appendix

F-1 Quarterly Inspection Log

PART F – Procedures to Prevent Hazards

F-1 Security

F-1a Security Procedures and Equipment

A seven-foot chain-link fence topped with barbed wire and locked gates surround the Facility as a barrier to entry.

F-1a (1) 24-Hour Surveillance System

Not applicable – This is a closed facility with no buildings or structures remaining. No guard or 24-hour surveillance system is necessary.

F-1a (2) Barrier and Means to Control Entry

F-1a (2)(a) Barrier

A seven-foot chain-link fence topped with barbed wire and locked gates with one key-coded lock entry surround the Facility as a barrier to entry. Remaining locks use a key.

F-1a (2)(b) Means to Control Entry

Five (5) drive-thru gates and one (1) personnel entrance gate are part of the fence surrounding the Facility. The gates are all locked with a chain and key padlock, with the exception of a key-coded lock on the “main gate” off Victor Drive, where employee parking and the guard house were previously located. Individuals with access to the Facility are limited to:

- Mr. Tony Shaw, retired Mannington Associate, and Lexington resident
- Mr. George Smith, phone number (336) 752-2945, retired Porcelanite/Condumex Associate, Lexington resident, and caretaker
- Mr. Phil Rahn and Mr. Tom Haynes, Waters Edge Environmental, LLC
- a Lexington police officer who inspects areas of the Facility property

F-1a (3) Warning Signs

Current signage at the Facility states: NO TRESPASSING – KEEP OUT

Condumex and Mannington will install signs which state “No Trespassing- Keep Out” at all entrances and any other ordinal sides of the facility to ensure there is a sign at every ordinal direction of the Facility.

F-1b Waiver

A Waiver is not requested.

F-1b (1) Injury to Intruder

Not applicable – This is a closed facility with no buildings, structures, or equipment remaining. Wastes remaining at the Facility are protected by NCDEQ approved caps.

F-1b (2) Violation Caused by Intruder

Not Applicable – This is a closed facility with no buildings, structures, or equipment remaining.

F-2 Inspection Schedule

The Facility is inspected quarterly by ConduMEX/Mannington personnel as part of the Facility's approved Post-Closure Care Plan with a Inspection Log contained in Appendix F-1. It is also inspected annually by a NCDEQ RCRA Compliance Inspector.

F-2a General Inspection Requirements

The Facility is in post-closure; therefore, many items listed in this Section are not applicable.

F-2a (1) Types of Problems

Types of potential problems related to conditions with respect to the Facility included in the quarterly inspections are as follows:

- Erosion Damage
- Vegetative/Stone/ & Asphalt Covers
- Run-on/Run-off Control System
- any Subsidence
- Monitoring wells
- Security Fence and Gates

F-2a (2) Frequency of Inspection

Post-closure inspections are conducted quarterly by ConduMEX/Mannington personnel and annually by a NCDEQ RCRA Compliance Inspector (see Inspection Log in Appendix F-1).

F-2b Facility Inspection Requirements

F-2b (1) Monitoring Equipment

The Facility is a closed facility and no fixed monitoring systems are present.

F-2b (2) Emergency Equipment

The Facility is a closed facility, and based on the lack of buildings and manufacturing activities, no fire or spill risks requiring equipment, and no hazards requiring emergency personal protective equipment (PPE) are present.

F-2b (3) Safety Equipment

The Facility is a closed facility, and based on the lack of buildings and manufacturing activities, no hazards requiring safety equipment are present.

F-2b (4) Security Equipment

The Facility is a closed facility, and based on the lack of buildings and manufacturing activities, no security risks requiring such equipment, other than the fences and locked gates described previously are present.

F-2b (5) Operating and Structural Equipment

The Facility is a closed facility, and based on the lack of buildings and manufacturing activities, there is no operating and/or structural equipment at the Facility requiring this type of inspection.

F-2b (6) Testing of Equipment

The Facility is a closed facility, and based on the lack of buildings and manufacturing equipment, no such equipment requiring such testing is present.

F-2c Specific Process Inspection Requirements

The Facility is a closed facility, and based on the lack of buildings and manufacturing activities, there are no specific processes to inspect.

F-2c (1) Container Inspection

The Facility is a closed facility, and there are no containers to inspect.

F-2c (2) Tank System Inspection

The Facility is a closed facility, and there are no tank systems to inspect.

F-2c (3) Waste Pile Inspection

The Facility is a closed facility, and there are no waste piles to inspect.

F-2c (4) Surface Impoundment Inspection

The Facility is a closed facility, and there are no operational surface impoundments to inspect. The two closed settling ponds (SWMU-2) are inspected during quarterly post-closure inspections conducted by Conduemex/Mannington personnel and annual compliance inspections conducted by NCDEQ.

F-2c (5) Incinerator Inspection

The Facility is a closed facility, and there are no incinerators to inspect.

F-2c (6) Landfill Inspection

The Facility is a closed facility, and there are no operational landfills to inspect. The closed Ceramic Tile Pile (SWMU-3) is inspected during quarterly post-closure inspections conducted by Conduemex/Mannington personnel and annual compliance inspections conducted by NCDEQ.

F-2c (7) Land Treatment Inspection

The Facility is a closed facility, and there are no land treatment operations to inspect.

F-2c (8) Miscellaneous Unit Inspections

The Facility is a closed facility, and there are no miscellaneous units, as described, to inspect.

F-2c (9) Boilers and Industrial Furnaces Inspections

The Facility is a closed facility, and there are no miscellaneous boilers or industrial furnaces to inspect.

F-2c (10) Drip Pad Inspections

The Facility is a closed facility, and there are no drip pads to inspect.

F-2c (11) Containment Building Inspections

The Facility is a closed facility, and there are no containment buildings to inspect.

F-2c (12) Subpart AA - Air Emission Standards for Process Vents

The Facility is a closed facility, and there are no process vents.

F-2c (13) Subpart BB - Air Emission Standards for Equipment Leaks

The Facility is a closed facility, and there is no air emissions equipment.

F-2c (14) Subpart CC - Air Emission Standards for Tanks, Surface Impoundments, and Containers

The Facility is a closed facility, and there are no attributes as covered under the Subpart CC checklist.

F-2d Remedial Action

Only a “handful” of individuals have access to the Facility. During their visits for groundwater monitoring events and other sampling events, and during quarterly inspections, problems are rarely found. Additionally, any problems that have been identified tend to be minor: for example, a damaged or fallen fence or a missing lock on a groundwater monitoring well. Repairs/actions are coordinated promptly depending on the issue identified.

F-2e Inspection Log

A sample of a blank checklist for quarterly owner/operator inspections is included as Appendix F-1. Quarterly inspections are typically performed by Mr. Tony Shaw.

Annual inspections are also completed by NCDEQ. The last inspection was completed by Mr. Ernest Lawrence, dated July 27, 2016. There were no reported findings. The previous inspection was conducted by Mr. Mark Burnette, dated Sept. 8, 2015. The only finding was a small access hole cut in the fence, which was promptly repaired. Quarterly inspection documentation is audited by NCDEQ personnel as part of the annual inspection.

F-3 Waiver of Preparedness and Prevention Requirements

A waiver is not requested.

F-3a Equipment Requirements

Wastes are no longer handled at the Facility.

F-3a (1) Internal Communications

Internal personnel are no longer located at the Facility.

F-3a (2) External Communications

No external communication requirements are needed except for those having access to the Facility to inspect or provide maintenance carry mobile phones.

F-3a (3) Emergency Equipment

The Facility is a closed facility, and there is no fire risk requiring this type of emergency equipment.

F-3a (4) Water for Fire Control

The Facility is a closed facility, and there is no water for fire control on site.

F-3b Aisle Space Requirements

The Facility is a closed facility, and there are no buildings, therefore no aisles.

F-4 Preventive Procedures, Structures, and Equipment

The Facility is a closed facility, and there are no structures or equipment.

F-4a Loading and Unloading Operations

The Facility is a closed facility, and there are no loading/unloading operations.

F-4b Run-Off

The Facility is a closed facility, and there are no hazardous waste handling areas.

F-4c Water Supplies

The Facility is a closed facility, and there are no water supplies.

F-4d Equipment and Power Failure

The Facility is a closed facility, and there is no equipment, therefore no risk from power outage.

F-4e Personal Protection Equipment

The Facility is a closed facility, and there is no hazardous waste handling requiring PPE.

F-4f Ventilation Equipment

The Facility is a closed facility, and there is no ventilation equipment.

F-5 Prevention of Reaction of Ignitable, Reactive and Incompatible Wastes

The Facility is a closed facility, and there is no ignitable, reactive, or incompatible waste generated at the Facility.

F-5a Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Wastes

The Facility is a closed facility, and there is no ignitable, reactive, or incompatible waste generated at the Facility.

F-5b General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

The Facility is a closed facility, and there is no ignitable, reactive, or mixing of incompatible wastes at the Facility.

F-5c Management of Ignitable or Reactive Wastes in Containers

The Facility is a closure facility, and there are no ignitable or reactive wastes in containers to manage.

F-5d Management of Incompatible Wastes in Containers

The Facility is a closed facility, and there is no incompatible waste in containers to manage.

F-5e Management of Ignitable or Reactive Wastes in Tanks

The Facility is a closed facility, and there is no ignitable or reactive waste in tanks to manage.

F-5f Incompatible Wastes in Tanks

The Facility is a closed facility, and there is no incompatible waste in tanks.

F-5g Ignitable or Reactive Wastes in Waste Piles

The Facility is a closed facility, and there is no ignitable or reactive waste in waste piles.

F-5h Incompatible Wastes in Waste Piles

The Facility is a closed facility, and there is no incompatible waste in waste piles.

F-5i Ignitable or Reactive Wastes in Surface Impoundments

The Facility is a closed facility, and there are no ignitable or reactive wastes in surface impoundments.

F-5j Incompatible Wastes in Surface Impoundments

The Facility is a closed facility, and there is no incompatible waste in surface impoundments.

F-5k Ignitable or Reactive Wastes in Landfills

The Facility is a closed facility, and there is no ignitable or reactive waste in landfills.

F-5l Incompatible Wastes in Landfills

The Facility is a closed facility, and there is no incompatible waste in landfills.

F-5m Ignitable or Reactive Wastes in Land Treatment

The Facility is a closed facility, and there is no land treatment.

F-5n Incompatible Wastes in Land Treatment

The Facility is a closed facility, and there is no land treatment.

Part F Appendix

Appendix F-1
Quarterly Inspection Logs

Appendix A

Quarterly Inspection Log

Porcelanite Tile Plant

Lexington, North Carolina
Davidson County

Settling Ponds

| | 1 ^s Quarter | 2 nd Quarter | 3 rd Quarter | 4 th Quarter |
|-------------------------------|---------------------------|----------------------------|----------------------------|----------------------------|
| Asphalt roadway cover | _____ | _____ | _____ | _____ |
| Run-on/Run-off Control System | _____ | _____ | _____ | _____ |
| Subsidence | _____ | _____ | _____ | _____ |
| Security Fence | _____ | _____ | _____ | _____ |
| Monitoring wells | _____ | _____ | _____ | _____ |

Tile Pile

| | 1 st Quarter | 2 nd Quarter | 3 rd Quarter | 4 th Quarter |
|-----------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Erosion Damage | _____ | _____ | _____ | _____ |
| Vegetative/Stone/or asphalt Cover | _____ | _____ | _____ | _____ |
| Run-on/Run-off Control System | _____ | _____ | _____ | _____ |
| Subsidence | _____ | _____ | _____ | _____ |
| Monitoring wells | _____ | _____ | _____ | _____ |
| Security Fence | _____ | _____ | _____ | _____ |

| | 1 st Quarter | 2 nd Quarter | 3 rd Quarter | 4 th Quarter |
|----------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Date of inspections: | _____ | _____ | _____ | _____ |
| Inspected By: | _____ | _____ | _____ | _____ |

Part I
Closure Plans, Post-Closure
Plans, and Financial
Requirements

Part I- Closure Plans, Post-Closure Plans, and Financial Requirements

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Appendices

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- I-3 Hazardous Waste Facility Certification of Liability Insurance Policy
- I-4 Indian Harbor Policy Endorsement (#31)

Acronym List

| | |
|-------------|---|
| AOC | Area of Concern |
| HWMU | Hazardous Waste Management Unit |
| HWS | Hazardous Waste Section |
| Mannington | Mannington Ceramic Tile |
| NC | North Carolina |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality (formerly NCDENR, and renamed effective September 18, 2015). |
| NCGS | North Carolina Groundwater Standards |
| Porcelanite | Porcelanite, Inc. |
| SWMU | Solid Waste Management Units |
| Waters Edge | Waters Edge Environmental, LLC |

Part I – Closure Plans, Post-Closure Plans, and Financial Requirements

I-1 Closure Plans, Post-Closure Plans, and Financial Requirements

This part of the application presents closure and post-closure plans, the post closure cost estimate, and financial assurance. The only HWMUs at the Facility are the Former Settling Ponds (SWMU-2) and the Former Ceramic Tile Pile (SWMU-3) which were closed in accordance with NCDEQ accepted closure plans and certified by NCDEQ on February 1, 2006 for SWMU-2 and March 14, 2005 for SWMU-3. This information is contained in Appendix I-1 and I-2 which includes:

- Closure Performance Standard (Part I-1a)
- Partial closure and Final Closure Activities (Part I-1b)
- Maximum Waste Inventory (Part I-1c)
- Schedule for Closure (Part I-1d but not applicable since both HWMUs are closed)
- Closure Procedures (Part I-1e)

There was also an additional 2005 RFA conducted by Booz Allen which identified 11 additional SWMUs and three (3) Areas of Concern, four of which were recommended for further assessment (SWMU-1, SWMU-7, AOC-1, and AOC-2) while the remainder were recommended by Booz Allen for a NFA designation. Further description of these SWMUs and AOCs including any additional data gaps requiring additional assessment is discussed in Part L.

I-2 Post-Closure Plans

A Post-Closure Care Plan for both the Closed Settling Ponds (SWMU-2) and Closed Ceramic Tile Pile (SWMU-3) is contained in Appendix I-1 for the Closed Ceramic Tile Pile and Appendix I-2 for the Closed Settling Ponds.

I-2a Inspection Plan

Both the Closed Settling Ponds and Closed Tile Pile are inspected quarterly according to the accepted Post-Closure Care Plan with an Inspection Log contained in Appendix F-1.

I-2b Monitoring Plan

The groundwater monitoring plan is specified in the most recently approved SAP which is contained in Appendix E-3. Leachate collection and removal is not applicable.

I-2c Maintenance Plan

I-2c (1) Repair of Security Control Devices

Security devices, such as fences, gates, signs, etc., will be maintained properly, and if warranted, repaired on a timely basis.

*RCRA Part B Post-Closure Permit Application
Part I – Closure Plans, Post-Closure Plans, and Financial Requirements
Former Porcelanite Facility
Lexington, Davidson County, North Carolina
March 6, 2017*

I-2c (2) Erosion Damage Repair

Repair will be made to the asphalt parking surface for SWMU-2 if there is any significant degradation of the surface which would allow for precipitation to infiltrate the cap. This would include resurfacing the asphalt when required. Repairs shall be made to the cover from any erosion damage and prevention of additional erosion for both SWMU-2 and SWMU-3. Additional topsoil, reseeded, etc. will be used for repairing for SWMU-3.

I-2c (3) Correction of Settlement, Subsidence, and Displacement

Addition of topsoil, sand, reseeded, etc. shall occur if settlement, subsidence, or displacement is evident to prevent further damage.

I-2c (4) Mowing, Fertilization, and Vegetative Cover Maintenance

The vegetation cover (Kentucky 31 Fescue) will be mowed to keep below a maximum 12-inch height. No additional watering other than rainfall will be necessary for maintenance, unless during extreme drought conditions for prevention of vegetation loss. An application of fertilizer may be warranted from time to time for proper vegetation root growth.

I-2c (5) Repair of Run-on and Runoff Control Structures

The SWMU-2 asphalt cover and SWMU-3 vegetative cap will be kept clear of any miscellaneous storage items and maintained to allow for proper run-on and run-off control. If warranted, repairs will be made in a prompt manner.

I-2c (6) Groundwater Monitoring Well Replacement

If a ground-water monitoring well becomes ineffective for monitoring, due to collapse of the well casing or some other means, it will be abandoned and filled with a grout/bentonite mixture. A replacement monitoring well will be installed in close proximity. Procedures for monitoring well installation are presented in Part E- Section E-1e (1).

I-2d Land Treatment

Not applicable

I-2e Post-Closure Care for Miscellaneous Units

This is specified in the Post-Closure Care Plans (see Appendix I-2).

I-2f Post-Closure Security

There is no exposure to hazardous waste so this is not applicable.

I-2g Post-Closure Contact

This is specified in our Part A Permit Application (Mr. David Kitts- VP Environment).

I-3 Notices Required for Disposal Facilities

This was complied with during the closure of both SWMU-2 and SWMU-3 and is currently not applicable since this is a closed facility.

I-4 Closure Cost Estimate

This was complied with during the closure of both SWMU-2 and SWMU-3 and is currently not applicable since this is a closed facility.

I-5 Financial Assurance Mechanism for Closure

This was complied with during the closure of both SWMU-2 and SWMU-3 and is currently not applicable since this is a closed facility.

I-6 Post-Closure Cost Estimate

This was complied with during the closure of both SWMU-2 and SWMU-3 and is currently not applicable since this is a closed facility.

I-7 Financial Assurance Mechanism for Post-Closure

I-7a Post-Closure Trust Fund

An Escrow account is held with U.S Bank N.A. ABA091000022 Account # is 173103781824. Contact person is Lisa Moorehead (Phone # of 704-335-4597). The escrow is adjusted annually using current inflation factors provided by Jenny Lopp, Financial Analyst, NCDEQ DWM, HWS.

I-7b Surety Bond

Not applicable- see I-7a & Escrow Account

I-7c Post Closure Letter of Credit

Not applicable- see I-7a & Escrow Account

I-7d Post-Closure Insurance

Not applicable- see I-7a & Escrow Account

I-7e Financial Test and Corporate Guarantee for Post-Closure

Not applicable- see I-7a & Escrow Account

I-7f Combinations

Not applicable- see I-7a & Escrow Account

I-8 Liability Requirements

I-8a Sudden Insurance

An insurance policy is held with Indian Harbor Insurance Company, part of XL Catlin (Policy #PEC000801603). The contact person is Kevin O’Grady, Underwriter (Telephone-610-968-9500). Included in policy is RCRA Amendatory Endorsement via Indian Harbor Insurance. A certificate of evidence was sent to NCDEQ by Anthony Gentile, VP of Indian Harbor on February 12, 2017 which is documented in Appendix I-3.

A copy of both the Indian Harbor Policy Endorsement (#31) & also the North Carolina Hazardous Waste certificate is included in Appendix I-4.

I-8b NonSudden Insurance

Not applicable-See coverage description in I-8a.

I-8c Variance Procedures and Regional Administrator Adjustments

Not applicable- There are no currently applicable variances.

I-9 State Financial Mechanism

Not applicable- There are no unique state-required financial mechanisms that apply.

Part I Appendices

**Appendix I-1 Closure Plans
and Closure Certifications
(SWMU-2 and SWMU-3)**

NCD 986181451

15' B

C

**Closure Plan and
Post-Closure Care Plan
Ceramic Chip Tile Pile
Porcelanite, Inc.
Lexington, North Carolina
February 11, 1997**

Prepared For:

**Mannington Mills, Inc.
Salem, New Jersey**

**Porcelanite, Inc.
Lexington, North Carolina**

Prepared By:

**Aquaterra, Inc.
Raleigh, North Carolina**



**CORPORATE HEADQUARTERS:
POST OFFICE BOX 37579 • RALEIGH, NC • 27627-7579 • (919) 859-9987 • FAX (919) 859-9930**

**Closure Plan and
Post-Closure Care Plan
Ceramic Chip Tile Pile
Porcelanite, Inc.
Lexington, North Carolina
February 11, 1997**

Prepared For:

**Mannington Mills, Inc.
Salem, New Jersey**

**Porcelanite, Inc.
Lexington, North Carolina**

Prepared By:

**Aquaterra, Inc.
Raleigh, North Carolina**

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Chapter 1 Introduction

1.1 *Ceramic Chip Tile Pile*

The Porcelanite, Inc. (Porcelanite) facility is located at 20 Victor Street in Davidson County, Lexington, North Carolina as shown on the Vicinity Map (see Figure 1-1). The facility area consists of approximately 7.5 acres. The area is bounded on the north by the Charles Avenue right of way and the Lexington City Cemetery; on the east by Cotton Grove Road (North Carolina Highway 8); on the south by Victor Street (State Road 1261); and on the west by the Porcelanite parking area. The Winston-Salem southbound railway and undeveloped wooded property are located west of the manufacturing facility. Several residential homes are located on the south side of Victor Street (see Figure 1-2).

Material in the stockpile consists of glazed and unglazed, fired and unfired ceramic tile scraps, and some sludges from the two former lagoons along the northwestern side of the manufacturing building. The stockpile contains toxic concentrations of leachable lead as analyzed using the Toxicity Leaching Characteristic Procedure (TCLP). The area of the tile pile is approximately 4 acres.

Mannington Mills, Inc. (Mannington) sold the Mannington Ceramic Tile facility in 1994 to P&M Tile, Inc. P&M Tile, Inc. later renamed to Porcelanite, Inc. Porcelanite is now the owner of the facility, and Mannington has retained responsibility for the closure of the tile pile.

1.2 *Regional and Local Hydrogeology*

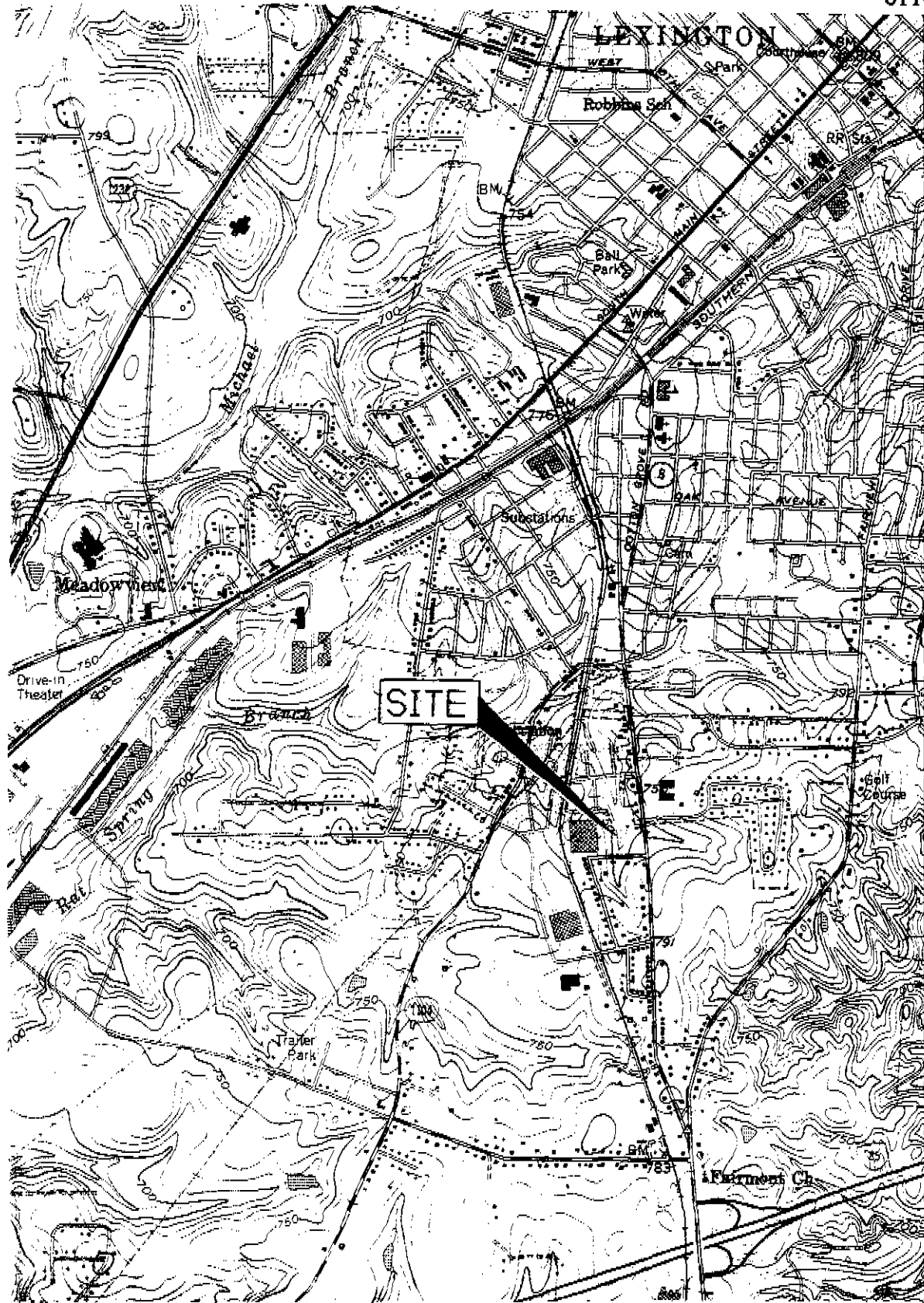
1.2.1 *Site Topography*

The elevation of the site varies from approximately 770 feet above mean sea level (MSL) to approximately 730 feet MSL at Walltown Drain. Walltown Drain, a creek which flows through the eastern portion of the site, was placed in a concrete culvert in 1992/1993.

1.2.2 *Geology and Soils*

The Lexington area of Davidson County is located in the southern part of the Charlotte Belt in the Piedmont Physiographic Province, which consists predominantly of igneous and meta-igneous rocks. The bedrock at the Porcelanite facility has been mapped as Precambrian to Paleozoic metamorphosed mafic rock, consisting of an intermediate intrusive and felsic intrusive complex. These units typically consist of metagabbros, metadiorites, and mafic plutonic-volcanic complexes.

Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir



| Author | Drawing | Layers | Date | Title | Vicinity Map |
|--------------------|----------|---------------|---------------------|---------|--|
| Job No. 3106801 | Revision | Figure 1-1 | Scale 1" = 2000' | Project | Porcelanite, Inc. Lexington, North Carolina |

Cemetery

Closed Lagoons

Concrete Ped

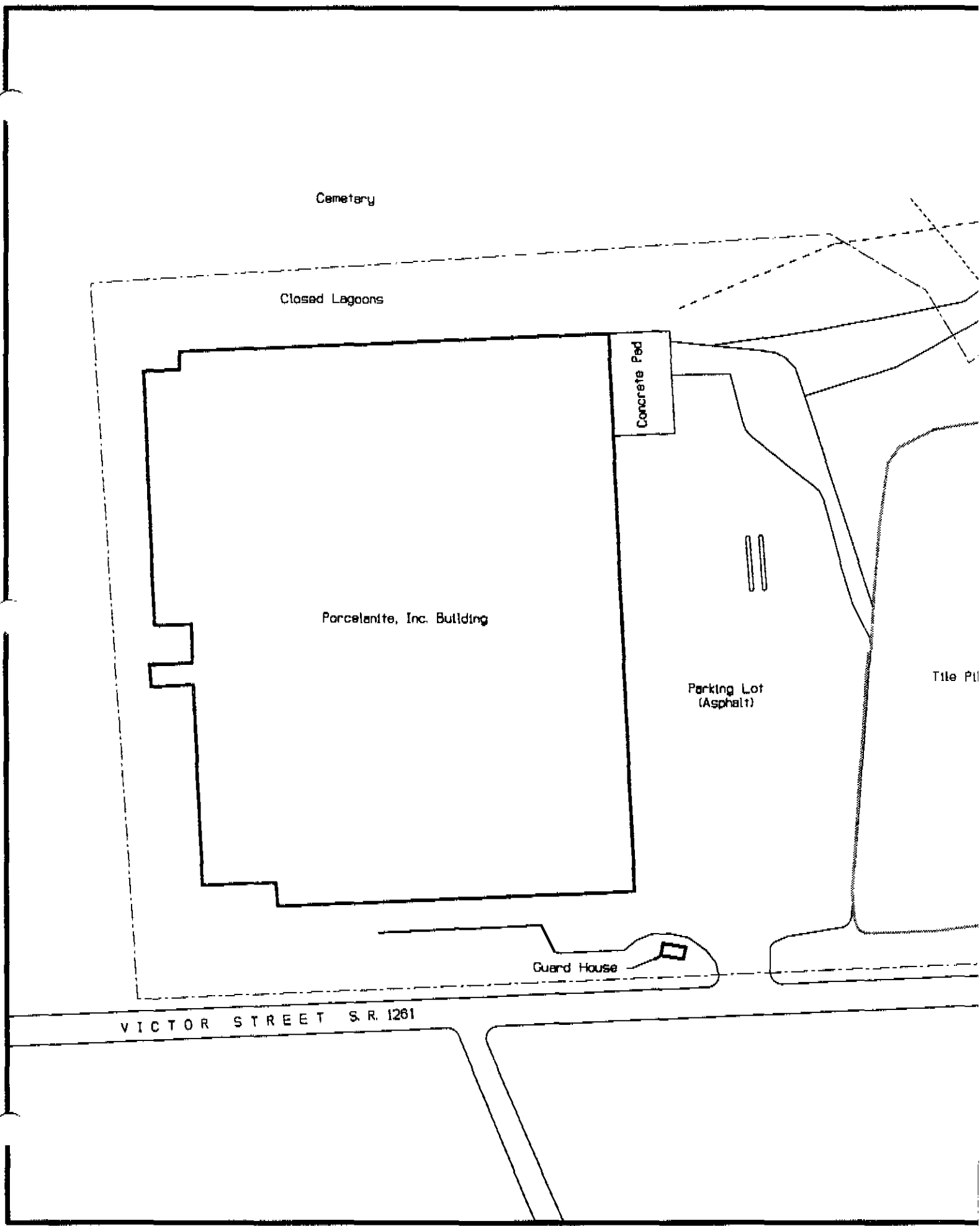
Porcelanite, Inc. Building

Parking Lot
(Asphalt)

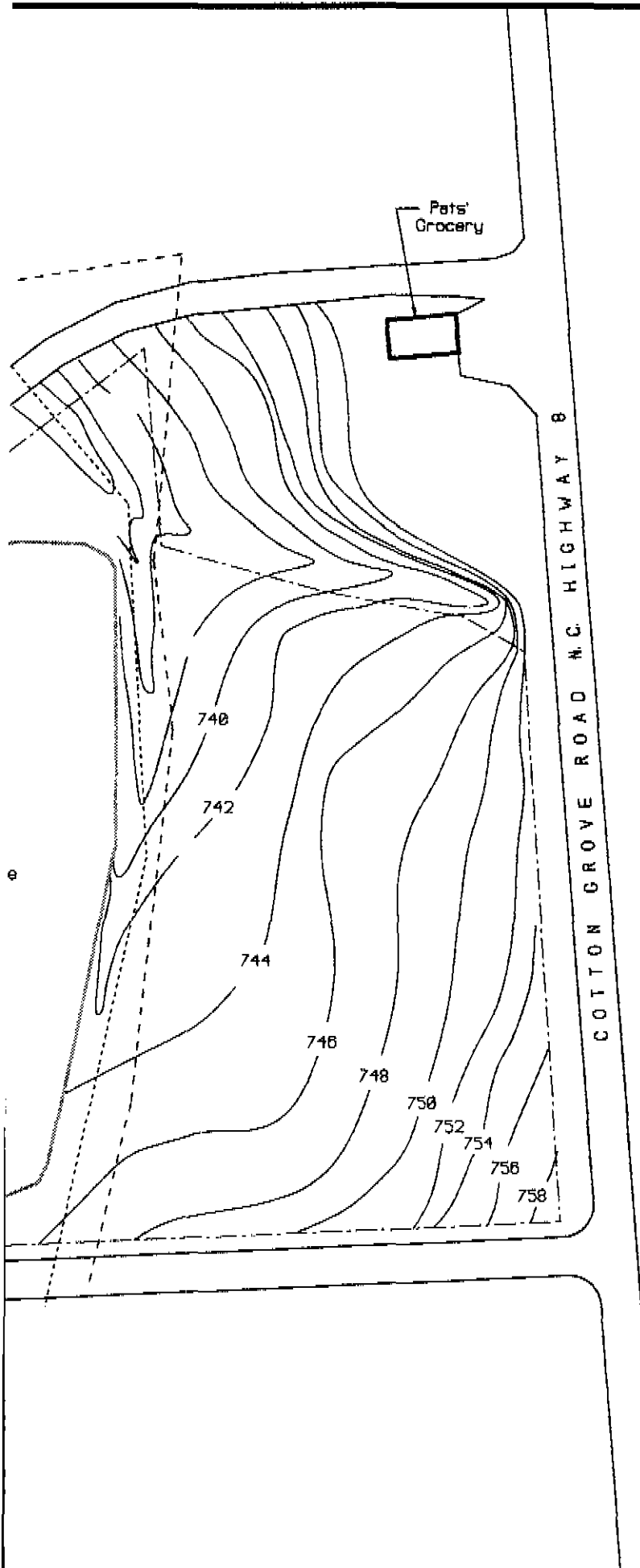
Tile Pit

Guard House

VICTOR STREET S. R. 1261

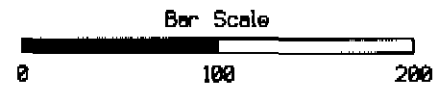


Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir



Legend

- 8" Sewer Line
- Storm Drain
- _____ Tile Pile Boundary
- ~~~~~ Topo Line Location



| | | | |
|--|-----------------|---------------|--------------|
| Title | | | |
| Site Layout of Closed Tile Pile | | | |
| Project | | | |
| Porcelanite, Inc. Lexington, North Carolina | | | |
| Author | Drawing | Layers | Date |
| EVC | 31058-1 | 0,6,7,13 | 1-14-97 |
| Job No. | Revision | Figure | Scale |
| 3105803 | 2-9-97 | 1-2 | 1" = 100' |



Thick saprolite sequences are common above bedrock in the Piedmont Physiographic Province. Saprolite grades from intensely weathered rock near the surface to slightly weathered rock with increasing depth. Soils typically have formed in the upper 5 to 6 feet of saprolite on uplands and slopes. Soils along stream floodplains have formed in alluvial material and are typically less developed.

According to the Davidson County Soil Survey Map (ENSCI, 1993), soils at the site have been mapped as the Chewacla series in the drainage at the east end of the facility, Vance series on the slopes above the drainage, and an Urban unit at the Porcelanite plant.

1.2.3 Hydrogeology

Previous site investigations at the Porcelanite facility have recognized two aquifer units. The uppermost unit is comprised of the residual soil (saprolite) as described above. The lower unit of the aquifer consists of slightly weathered bedrock and fractured bedrock.

The residual soil unit contains the vadose zone and the water table aquifer. Ground water saturated soils occur in this unit from a depth of about 5.5 to 24 feet below land surface and extend to the top of the partially weathered rock unit at a subsurface depth of between 27 and 50 feet. From previous investigations, ground water in the water table aquifer at the site was found to be flowing from the southwest toward the northeast under an average hydraulic gradient of about 0.028 foot/foot. The gradient generally steepens on the northeastern side of the property as ground water approaches the tributary stream known as Walltown Drain.

1.2.4 Surface Water and Wetlands

Runoff from the facility area discharges to Walltown Drain. Walltown Drain runs north approximately 0.5 miles to Rat Springs Branch, which flows to the southwest approximately 2 miles to Swearing Creek, a tributary of the Yadkin River. As indicated by Mr. Abner Brady of the Winston-Salem Regional Water Quality Office, Rat Springs Branch has a "C" surface water classification, based on classifications established by the North Carolina Environmental Management Commission (ENSCI, 1993).

Walltown Drain, located at the toe of the tile pile, was piped in 1992/1993. The construction was performed under a Nationwide 26 permit. In his letter dated July 23, 1992 (Appendix C of the ENSCI 1993 *Closure Plan for Scrap Tile Pile*), Mr. Wayne Wright, Regulatory Branch Chief, underground storage tanks United States Army Corps of Engineers indicated that a site visit was conducted by Mr. John Thomas on May 18, 1992. The purpose of the site visit was to review plans to construct a culvert, fill a section of Walltown Drain, and to inspect the site for wetlands subject to Department of the Army permitting authority.

Authorization was provided by the Army Corps of Engineers to proceed with piping the creek under a Nationwide 26 permit. The authorization was based on the determination that less than one acre of waters of the United States, located above the headwaters of Rat Springs Branch, would be impacted by the construction. (The impacted area is 0.11 acres.) No wetlands are present at this site.

1.3 Historical and Archaeological Sites/Critical Habitats/Recreational Areas

1.3.1 Historical and Archaeological Sites

The North Carolina Department of Cultural Resources, Division of Archives and History indicated in a letter dated July 29, 1993, (see Appendix O of the ENSCI 1993 *Closure Plan for Scrap Tile Pile*), that it had conducted a review of the project and concluded that there are no known properties of architectural, historic, or archaeological significance which would be affected by the proposed beneficial fill project. The search was conducted pursuant to Section 106 of the National Historic Preservation Act of 1966 and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800.

1.3.2 Critical Habitat of Endangered or Threatened Species

According to Mr. Marshall Ellis, Resource Management Specialist for the North Carolina Division of Parks and Recreation, the Division of Parks and Recreation's Natural Heritage Program has no records of any rare or threatened species or critical habitats in the area downslope of the chip pile (see ENSCI 1993, Appendix O).

1.3.3 Recreational Areas

According to Mr. Marshall Ellis, Resource Management Specialist for the Division of Parks and Recreation, the proposed embankment for the closure of the chip pile will not adversely affect any state parks, state trails, registered natural heritage areas, or state recreational areas (see ENSCI 1993, Appendix O). Ms. Kathy Shoaf of the Lexington City Department of Parks and Recreation indicated that the closest recreational area was Washington Park and Pool located at Linwood Road and Booker Street (see ENSCI 1993, Appendix O). ENSCI identified a golf course approximately 3,200 feet east of the facility (ENSCI, 1993).

1.4 Closure Plan Development

Porcelanite and Mannington have contracted Aquaterra, Inc. (Aquaterra) to develop and implement the 1997 closure plan and post-closure care plan. The requirements of 40 CFR 265, Subpart L-Waste Piles and the general requirements of Subpart G-Closure and Post-Closure were used as requirements for closure and post-closure care.

The closure plan for the ceramic chip tile pile is presented in Chapter 3.0. The closure will be a "dirty" closure requiring post-closure care. The post-closure care plan is presented in Chapter 4.0.

1.5 Health and Safety Plan

Prior to any work at the site, a health and safety plan (HASP) will be developed for the tile pile as required under 29 CFR Part 1910. The HASP will address safety and standard operating procedures, anticipated hazards, exposure limits, levels of dermal and respiratory protection, emergency medical care of personnel, contingency plan for sudden releases of hazardous materials, emergency procedures, and ambient air monitoring.

All Aquaterra personnel and subcontractors having direct contact with the tile pile materials will be under an approved medical monitoring program including baseline and annual physicals. All personnel will have 32 to 40 hours of hazardous waste, health and safety training including negative pressure respirators and positive pressure breathing equipment. All personnel will be "fit tested" for respirators and be clean shaven and groomed in order to provide a good seal between face and respirator or breathing apparatus.

1.6 Maintenance of Plans

Porcelanite will maintain an on-site copy of the approved closure plan and post-closure care plan and all revisions. The closure plan will be maintained until the certificate of closure has been submitted and accepted by the North Carolina Department of Environment, Health, and Natural Resources, Division of Waste Management, Hazardous Waste Section (HWS). One copy of the plans and all revisions will be kept in the Environmental Health/Safety Engineer's office. The current EHS engineer's name and address is:

Mr. Tony Shaw
Porcelanite, Inc.
Post Office Box 1777
Lexington, North Carolina 27293-1777

Phone# (910) 242-5636
Fax# (910) 242-5601

Chapter 2 Waste Characterization

2.1 Previous Investigations

The chemical characteristics of the existing ceramic tile pile material have been developed from several previous investigations. These investigations include:

- A soil assessment conducted by Aquaterra in November and December of 1989. *Soil Boring Assessment, Mannington Ceramic Tile, Lexington, North Carolina*, Aquaterra report number R835-90, dated January 31, 1990.
- A tile pile material assessment conducted by Aquaterra in October 1991. *Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*, Aquaterra report number R1547-92, dated January 7, 1992.
- An additional tile pile material assessment conducted by Aquaterra in March 1992. *Additional Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*. Aquaterra report number R1646-92, dated April 1, 1992.
- Additional tile pile testing and treatability study conducted by ENSCI during September 1992. *Comprehensive Tile Pile Testing Program and Treatability Study, Mannington Ceramic Tile, Lexington, North Carolina*, ENSCI report dated October 20, 1992.
- A December 1996 soil assessment and tile pile material investigation by Aquaterra.

Figures showing the approximate location of all the previous sample locations are contained in Appendix A.

2.2 Results of the Waste Characterization Investigations

2.2.1 1989 Soil/Tile Material Assessment

The 1989 soil assessment consisted of 14 soil test borings in background native soils (B-1, B-2, and B-3), fill material (B-4, B-5, B-6, B-7, B-8, B-9, B-10, B-13, and B-14), and tile material (B-5, B-8, and B-10). A photocopy of the data tables and a figure showing location of borings are contained in Appendix A. The samples were analyzed for the eight RCRA metals. The only sample to have detectable total metals was the tile material sample from B-8 which contained 0.2 mg/kg of cadmium and 74 mg/kg of lead.

2.2.2 October 1992 Tile Pile Material Assessment

The October 1991 tile pile assessment consisted of excavating four test pits approximately 16 to 18 feet deep. Samples were collected every 2 feet and composited into one composite sample per test pit (TP-1, TP-2, TP-3, and TP-4). The samples were analyzed for the following total metals:

| | | |
|----------|--------------|-----------|
| aluminum | iron | sodium |
| antimony | lead | tin |
| barium | magnesium | titanium |
| boron | nickel | vanadium |
| calcium | potassium | zinc |
| chromium | praseodymium | zirconium |
| cobalt | silver | |

The samples were also analyzed for the following additional inorganic parameters:

| | | |
|------------|------------|----------|
| alkalinity | fluoride | pH units |
| bromide | phosphates | |
| chloride | sulfates | |

Finally, the samples were analyzed for the TCLP metals and the following radionuclides:

| | | |
|-------------|------------|------------|
| gross alpha | radium 226 | radium 228 |
| gross beta | | |

The photocopies of the analytical results and figures showing the sample locations are shown in Appendix A. Only lead exceeded the regulatory levels for the TCLP extract. Lead ranged from 47 mg/L to 130 mg/L in the TCLP extract.

The radionuclide results in picocuries per gram (pCi/g) were

| | <u>TP-1</u> | <u>TP-2</u> | <u>TP-3</u> | <u>TP-4</u> |
|-------------|-------------|-------------|-------------|-------------|
| Gross Alpha | 16 ± 6.0 | 22 ± 7.0 | 21 ± 7.0 | 21 ± 7.0 |
| Gross Beta | 34 ± 3.0 | 30 ± 3.0 | 35 ± 3.0 | 39 ± 3.0 |
| Radium 226 | 1.5 ± 0.2 | 1.4 ± 0.1 | 1.8 ± 0.2 | 1.9 ± 0.2 |
| Radium 228 | 1.2 ± 0.2 | 1.2 ± 0.1 | 1.3 ± 0.2 | 1.3 ± 0.2 |

2.2.3 March 1992 Tile Pile Material Assessment

The March 1992 tile pile material assessment consisted of four soil borings (B-1, B-2, B-3, and B-4) to depths of approximately 22 to 24.5 feet. The samples were analyzed for SW-846 Method 8240 volatile organic compounds (VOCs), Method 8270 semivolatile organic compounds (SVOCs), and formaldehyde. Photocopies of the analytical data table and figure showing boring locations are contained in Appendix A.

The only VOC detected was ethylene chloride ranging from 820 µg/kg to 860 µg/kg. The only SVOC detected was bis(2-ethylhexyl) phthalate ranging from 1,900 µg/kg to 5,300

µg/kg. No formaldehyde was detected. It was suspected that the ethylene chloride was a laboratory artifact and that the bis(2-ethylhexyl) phthalate probably came from the vinyl gloves worn by the samplers and the analytical personnel.

2.2.4 September 1992 Tile Pile Material Assessment

The September 1992 tile pile material assessment consisted of four test pits (EX-1, EX-2, EX-3, and EX-4) placed as close as possible to the four test pits (TP-1, TP-2, TP-3, and TP-4) discussed in Section 2.2.2 *October 1991 Tile Pile Material Assessment*. The four test pits were excavated to 21 feet. Samples were collected in EX-1 at 18 feet, EX-2 at 20 feet, EX-3 at 16 feet, and EX-4 at 21 feet. The samples were analyzed for VOCs (Method 8240), SVOCs (Method 8270), formaldehyde by colorimetric analysis, and the radionuclides gross alpha, gross beta, radium 226, radium 228, and uranium 238. Summary data tables and a figure showing test pit locations are contained in Appendix A.

No VOCs, SVOCs, or formaldehyde were detected in the samples.

The radionuclide results in pCi/g were:

| | <u>EX-1</u> | <u>EX-2</u> | <u>EX-3</u> | <u>EX-4</u> |
|-------------|---------------|---------------|---------------|---------------|
| Gross Alpha | 7.78 ± 3.90 | 11.17 ± 5.13 | 3.92 ± 2.55 | 2.77 ± 3.10 |
| Gross Beta | 5.47 ± 2.49 | 10.42 ± 3.17 | 10.04 ± 3.11 | 9.01 ± 2.89 |
| Radium 226 | 1.222 ± 0.175 | 1.778 ± 0.174 | 1.565 ± 0.163 | 1.624 ± 0.134 |
| Radium 228 | 1.303 ± 0.325 | 1.322 ± 0.268 | 1.280 ± 0.272 | 1.258 ± 0.223 |
| Uranium 238 | 1.390 ± 0.537 | 1.390 ± 0.464 | 1.388 ± 0.488 | 1.097 ± 0.366 |

As reported by ENSCI (1992), the three naturally occurring radioisotopes (radium 226, radium 228, and uranium 238) were detected at levels near the levels commonly observed in native soils. Mr. Jim Watson of the University of North Carolina School of Public Health, reported to ENSCI (1992) that these naturally occurring radioisotopes occur in North Carolina soils in ranges of 1 to 3 pCi/g.

ENSCI (1992), as requested by the HWS, converted the concentrations of the radium 226, radium 228, and uranium 238 to units of millirems per year using the following formulas and assumptions.

“Beta particle energy (MeV/disintegration) x 0.037 (disintegrations/second/pCi) x isotope concentration (pCi/g) x 1.602 x 10⁻⁶ (ergs/MeV) x 1 rem (0.01 g/erg) = rem/sec beta radiation absorbed from the concentration of the isotope in 1 gram of the tile material by 1 gram of human tissue.

This conversion is true given the following assumptions:

1. The deposition rate is equal to the production rate, i.e., all beta particles are absorbed.
2. The beta particles are absorbed equally by all parts of the body.
3. The material is ingested so that the exposure rate is constant.
4. Absorbed dosage is cumulative.”

Based on the above assumptions, the dosages in millirems per year that would be absorbed by a 180-pound man ingesting 1 gram/day of tile material for 1 year are:

| <u>Isotope</u> | <u>EX-1</u> | <u>EX-2</u> | <u>EX-3</u> | <u>EX-4</u> |
|----------------|-----------------|-----------------|-----------------|-----------------|
| Uranium 238 | 0.001161 | 0.001162 | 0.001160 | 0.000917 |
| Radium 226 | 0.000366 | 0.000534 | 0.000469 | 0.000487 |
| Radium 228 | <u>0.001840</u> | <u>0.001868</u> | <u>0.001803</u> | <u>0.001778</u> |
| Total | 0.003367 | 0.003564 | 0.002967 | 0.002719 |

Based on this scenario, radiologic results indicate a total exposure of significantly less than 4 millirems per year, which is the EPA National Interim Primary Drinking Water Standard (ENSCI, 1992).

2.2.5 December 1996 Tile Pile Material Assessment

Four soil borings (SB-1, SB-2, SB-3, and SB-4) were installed on the tile pile from depths of 15 to 30 feet (see Figure 2-1). One sample from each boring was randomly chosen (SB-1-15', SB-2-10', SB-3-15', and SB-4-5') and then two samples from the four (SB-1-15' and SB-4-5') were submitted to the laboratory. The samples were analyzed for the total metals:

| | | | |
|---------|-----------|--------------|----------|
| arsenic | chromium | mercury | silver |
| barium | cobalt | nickel | titanium |
| boron | lead | praseodymium | vanadium |
| cadmium | manganese | selenium | zinc |

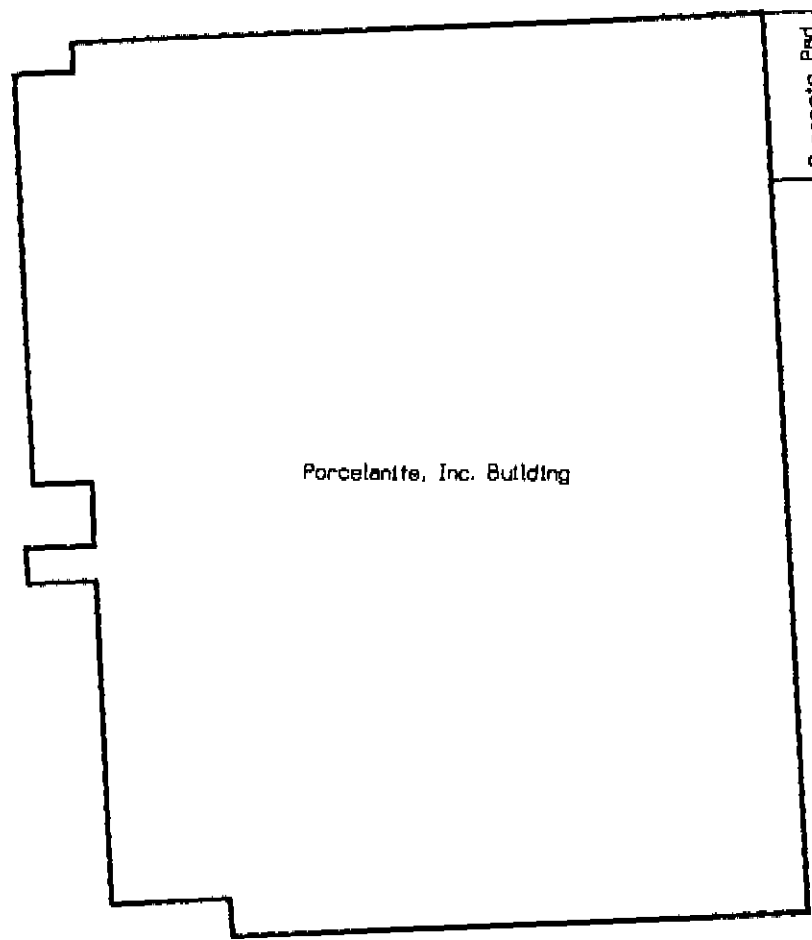
The inorganics bromide, nitrates, sulfates, phenols, and the radionuclides gross alpha and gross beta were also analyzed for each sample. One composite sample of the four random samples was analyzed for the TCLP metals.

The analytical results for SB-1-15' and SB-4-5' are summarized in Table 1 in Appendix B. The results show elevated levels of barium, boron, lead, and zinc above the background samples, HA-2, HA-3, HA-4, and HA-5 (see Table 2 in Appendix B). The other metals and inorganic parameters were non-detect or at concentrations equal to or less than the background soil samples. The gross alpha and gross beta values were approximately the same as the background values for HA-4 and HA-5 (see Tables 1 and 2 in Appendix B). The TCLP results are summarized in Table 3 in Appendix B.

2.2.6 Conclusions from Tile Pile Material Assessments

As indicated by the TCLP results, the tile pile material is hazardous based on lead.

Based on the radionuclide data, the tile pile material does not appear to be hazardous. The values from the tile pile were approximately the same or less than the values for the background soil samples. In addition, the tile pile materials appear to contribute doses of radium 226, radium 228, and uranium 238 at concentrations significantly less than 4 millirems per year (average value of 0.003 millirems per year).

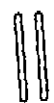


Porcelanite, Inc. Building



Concrete Pad

Parking Lot
(Asphalt)



Tile Pile

• S

• SB-4

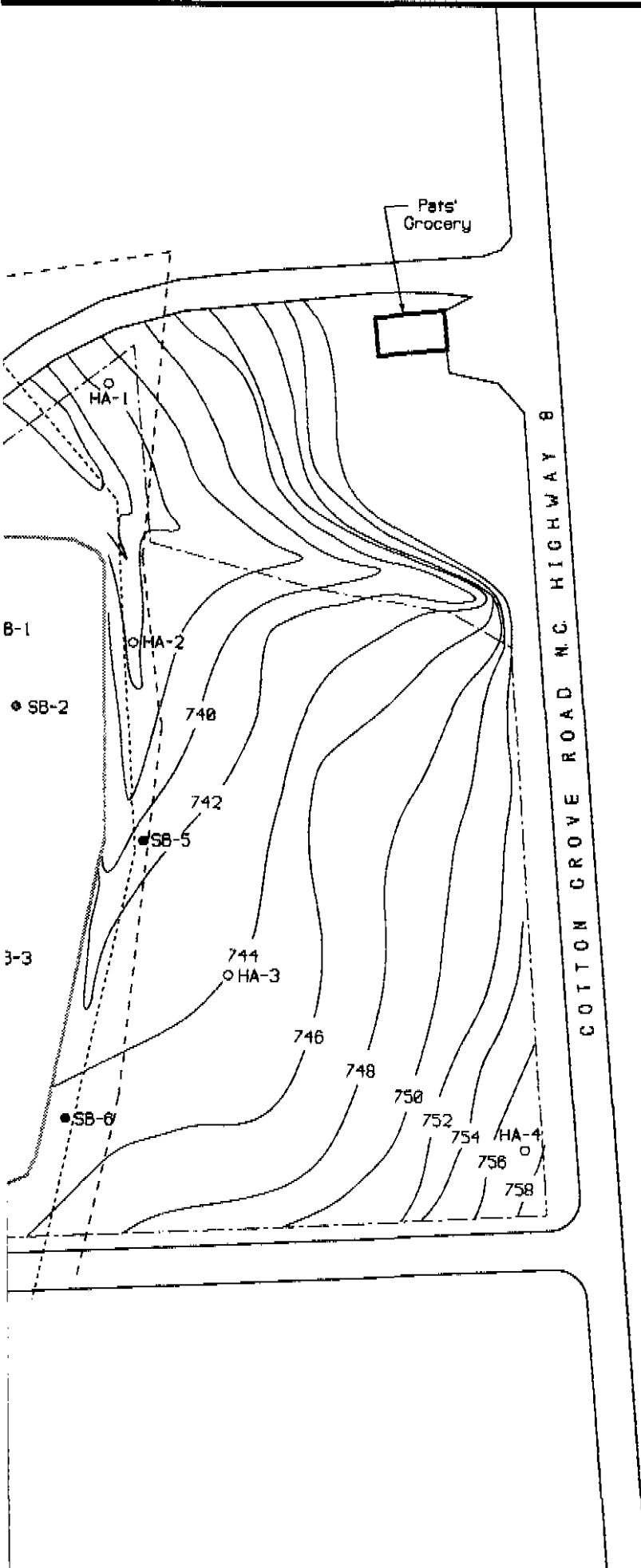


Guard House

HA-5 ○

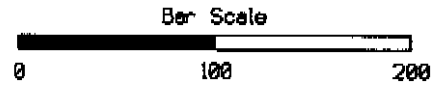
VICTOR STREET S.R. 1261

Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir



Legend

- - - 8" Sewer Line
- Storm Drain
- Tile Pile Boundary
- Soil Borings By Hollow Stem Auger Rig
- Hand Auger Boring
- ~ Topo Line Location



Title December 1996 Sample Locations

Project Porcelanite, Inc.
 Lexington, North Carolina

| Author | Drawing | Layers | Date |
|--------|---------|----------|---------|
| EVC | 31058-1 | 0,6,7,10 | 1-14-97 |

| Job No. | Revision | Figure | Scale |
|---------|----------|--------|-----------|
| 3105803 | 2-9-97 | 2-1 | 1" = 100' |



2.3 Soil Assessment Beneath/Downgradient of Tile Pile

2.3.1 September 1992 Tile Pile Soil Assessment

ENSCI (1992) installed four soil borings (SB-11, SB-12, SB-13, and SB-14) adjacent to the four test pits, EX-1 (SB-11), EX-2 (SB-12), EX-3 (SB-13), and EX-4 (SB-14). The borings were extended into native soil beneath the tile pile where a sample of the native soil was collected. The samples (SB-11 through SB-14) were analyzed for VOCs (Method 8240), SVOCs (Method 8270); and, in addition SB-13 and SB-14 were analyzed for the TCLP metals. Summary tables of analytical data and figure showing boring locations are contained in Appendix A.

Based on the TCLP analytical results, the native soils are not hazardous.

2.3.2 December 1996 Tile Pile Soil Assessment

Aquaterra personnel collected one upgradient native soil sample (HA-5) and seven native soil samples (SB-5-2.5', SB-6-2.5', HA-1, HA-2, HA-3, and HA-4) east of the tile pile on December 10-11, 1996. The sample locations are shown on Figure 2-1. The analytical results are summarized in Tables 1 and 2 located in Appendix B.

Soil borings SB-5-2.5' and SB-6-2.5' and hand auger boring HA-1 were placed parallel to the toe of the tile pile and adjacent to the now piped Walltown Drain. These samples were collected to evaluate if any metals had migrated from the tile pile into the downgradient native soils. Hand auger borings HA-2, HA-3, and HA-4 were placed east of the tile pile and topographically uphill from the toe of the tile pile. HA-5 was placed upgradient and west of the tile pile and approximately 250 feet east of MW-1. These soil samples represented undisturbed native background soil samples.

The concentrations for the four samples (HA-2, HA-3, HA-4, and HA-5) were compared as an average range of background values and then compared against samples SB-5-2.5', SB-6-2.5', and HA-1. HA-1 showed elevated levels of lead and zinc compared to the background samples. However, the concentrations were well below the levels of lead and zinc seen in the tile pile samples SB-1-16' and SB-4-10' (see Table 1 in Appendix B). It appears from these data that there has not been significant migration of constituents from the tile pile into the native soils.

Radionuclide samples were collected from SB-5-2.5', HA-4, and HA-5 for developing a background value for gross alpha and gross beta. The background values for gross alpha and gross beta are higher than in sample SB-5-2.5' (see Table 2 in Appendix B).

2.4 Ground Water Assessment Downgradient of Tile Pile

The ground water quality downgradient of the tile pile was reviewed based on historical data. The following Tetra Technologies Group, P.A. reports were evaluated:

1995 Annual Groundwater Assessment Update Report, Former Wastewater Holding Ponds and Waste Ceramic Tile Pile P & M Tile, Inc. Facility, Lexington, North Carolina, dated March 14, 1996.

*Second Quarter 1996 Groundwater Assessment Report, Porcelanite, Inc.,
Lexington, North Carolina, dated November 4, 1996.*

*Third Quarter 1996 Groundwater Assessment Report, Porcelanite, Inc.,
Lexington, North Carolina, dated November 4, 1996.*

Based on the data presented in these reports, boron (MW-21, 22, and 23) and gross beta (MW-26A) were found in the downgradient monitoring wells to exceed North Carolina 2L standards and MW-1 background levels (for gross beta). Photocopies of these data tables and figures are contained in Appendix A.

Even though the tile pile is classified as hazardous based on lead, no ground water samples contained lead at values close to the 2L standards.

Porcelanite proposes to monitor the constituents in the tile pile that were elevated above background and that might potentially leach to the ground water. These constituents are boron and lead. Gross alpha and gross beta do not appear to have any more probability to show up in the ground water from the tile pile material than from the surrounding native soils. However, gross beta analysis will be conducted until sufficient data are available to verify if it is background or tile pile related.

Chapter 3 Closure Plan

3.1 *Closure Plan Objectives*

The following Closure Plan has been prepared for "dirty" closure conditions to comply with the closure requirements of Subpart G-Closure and Post-Closure (40 CFR 265.110 to 265.120) and, Subpart L-Waste Pile (40 CFR 265.250 to 265.258), Subpart N-Landfills (40 CFR 265.300 to 265.316) and to reflect the closure performance standards addressed in 40 CFR 265.111. Porcelanite will close the tile pile such that:

- (a) There is minimal need for further maintenance;
- (b) The closure protects human health and the environment and minimizes or eliminates the escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the atmosphere, ground water and surface water; and
- (c) The Closure Plan complies with the closure requirements of this subpart (Subpart G-Closure and Post Closure) and Subpart L-Waste Pile and Subpart N-Landfills.

3.2 *Maximum Inventory of Hazardous Waste*

The total volume of tile pile waste was calculated by ENSCI (1993). The total volume of tile material calculated was approximately 107,000 cubic yards. Assuming a bulk unit weight (density) of 120.6 pounds per cubic foot, the weight of tile material was calculated at approximately 174,200 tons.

3.3 *Closure of the Chip Pile*

3.3.1 *General Information and Objectives*

The chip pile cap system will consist of a flat top surface cap and a downgradient sloping cap. The upgradient portion of the chip pile is bordered (contained) by natural soils (saprolite). The cap system will be designed

- to have a hydraulic conductivity less than the chip pile material and equal to or less than the naturally occurring soils
- to require low maintenance even under future land use plans for the chip pile and cap.

The flat surface of the cap will be used for employee parking and a truck turnaround. In the near future, a warehouse will be built on the flat surface of the cap. The slope of the cap will be used for a second drive way to the plant (see Figure 3-1).

The following sections describe the design details for the cap, geotechnical design testing of the site soils and borrow material (also includes analytical quality of

Concrete Pad

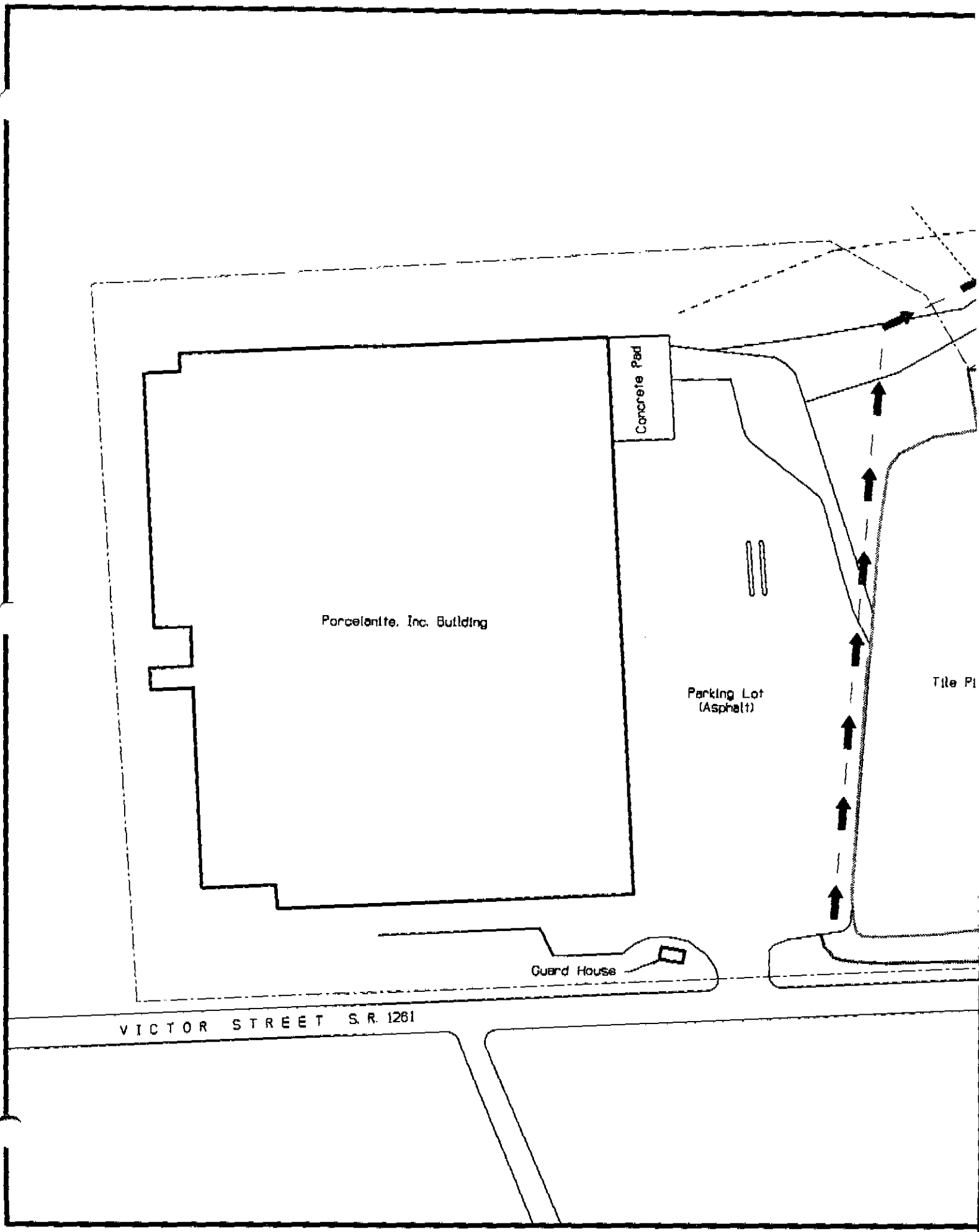
Porcelanite, Inc. Building

Parking Lot
(Asphalt)

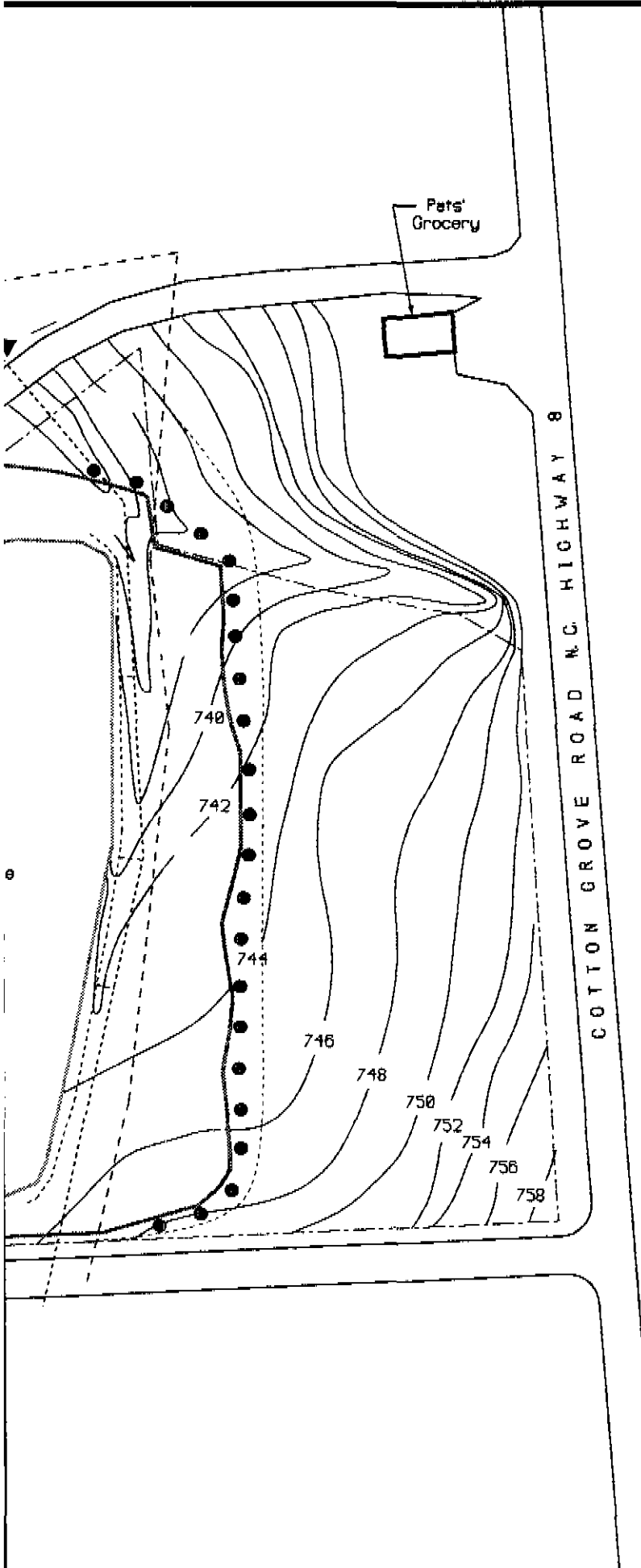
Title Pl

Guard House

VICTOR STREET S.R. 1261

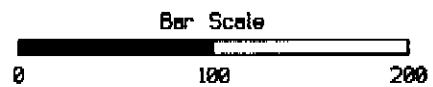


Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir



Legend

- 8" Sewer Line
- Storm Drain
- Tile Pile Boundary
- Toe Embankment Drain
- . - . - . Proposed Soil Embankment II
- ~ Topo Line Location
- Proposed Relocated 8" Sewer Line
- ● ● Storm Water Runoff Division Ditch
- Storm Water Collection Drain From Parking Lots



Title Plan View of Closed Tile Pile

Project Porcelanite, Inc.
 Lexington, North Carolina

| Author | Drawing | Layers | Date |
|--------|---------|----------|---------|
| EVC | 31058-1 | 0,6,7,11 | 1-14-97 |

| Job No. | Revision | Figure | Scale |
|---------|----------|--------|-----------|
| 3105803 | 2-9-97 | 3-1 | 1" = 100' |



borrow soils), the preparation of the chip pile, and the installation and quality control for the cap system.

3.3.2 Cap Design

The cap design consist of four parts (see Figure 3-2). These include:

- the flat top surface cap
- the slope surface cap
- storm water control
- ground water seepage control

3.3.2.1 Flat Top Surface Cap

The flat top surface cap will consist of 24-inches of compacted clayey silt to silty clay soils (see Figure 3-3). The upper tile pile surface will be graded and compacted to design grade to promote surface water drainage from the overlying cap.

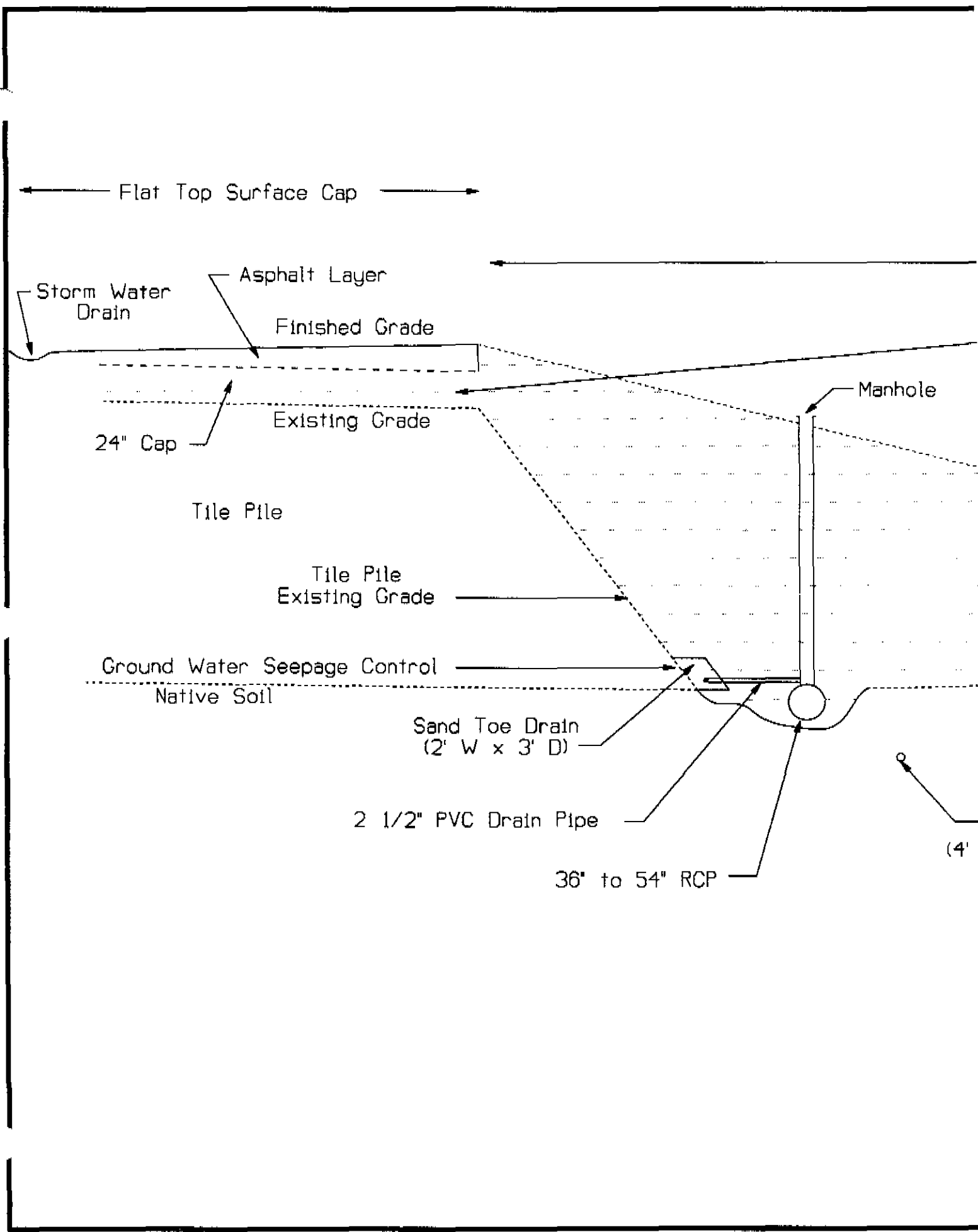
The 24-inches of compacted clayey silt material will be the same material proposed for the slope cap. The clayey silt will be compacted to airport runway densities (95 percent modified Proctor).

Overlying the 24-inches of compacted soil cap is a 12-inch asphalt cover to protect the cap from vehicles and to promote runoff. The asphalt cover will consist of three layers. The first layer will consist of a minimum of 6-inches of compacted base course (crush and run, North Carolina, Department of Transportation (NCDOT) *Standard Specification for Roads and Structures, Section 520-Aggregate Base Course*). The next layer consists of 4-inches of binder course. The third and top layer consists of 2-inches of compacted surface course. The base course will be wetted and compacted to 95 percent modified Proctor. The asphalt cover is suitable for Traffic Class IV (urban minor arterial and light industrial streets, rural major collectors and minor arterial highways) for an approximate range of heavy trucks of 700,000 to 1,500,000 during the design period (Asphalt Institute Traffic Classifications, Lindeburg, 1989).

The compaction to 95 percent modified Proctor (ASTM D 1557 for the cap and asphalt base course will insure that the future warehouse and any vehicular traffic does not compromise the integrity of the cap. Where the utilities (power, gas, water, and sewer) run to the warehouse, the base course will be increased to a minimum thickness of 12-inches to allow the utilities to be installed without trenching into the cap.

The flat top surface cap and asphalt cover will be sloped to drain back to the intersection of the existing parking lot. The runoff will be collected in a drain running parallel to the existing parking lot. The runoff will then be directed north, eventually discharging into the Walltown Drain downgradient of the closed tile pile (see Figure 3-2). A curb will be installed along the eastern edge of the surface cap and asphalt cover to prevent any runoff from the asphalt surface running down the slope surface cap.

The flat top surface cap will merge into the slope surface cap to prevent seepage down along the contact of the tile pile slope and the slope surface cap.



Flat Top Surface Cap

Storm Water Drain

Asphalt Layer

Finished Grade

24" Cap

Existing Grade

Tile Pile

Tile Pile Existing Grade

Ground Water Seepage Control

Native Soil

Sand Toe Drain (2' W x 3' D)

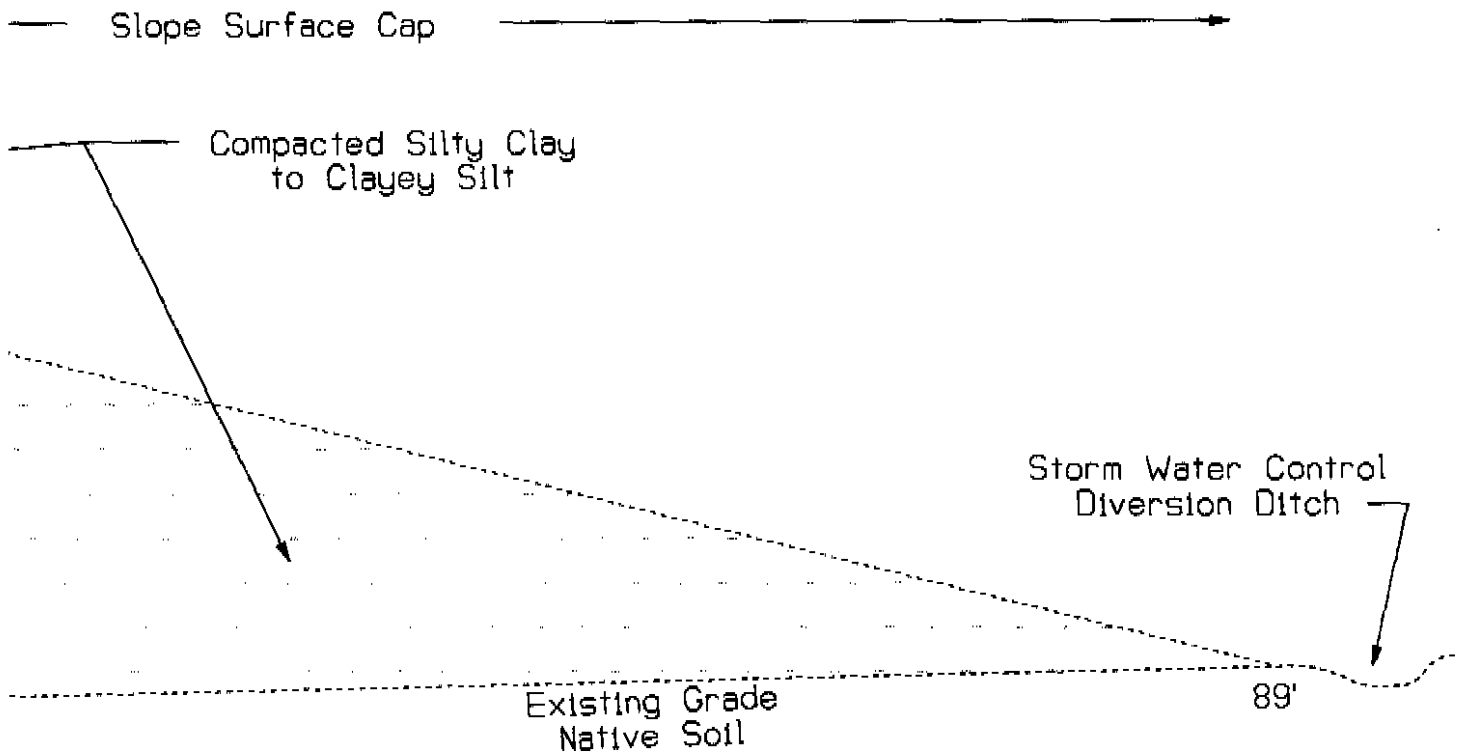
2 1/2" PVC Drain Pipe

36" to 54" RCP


Manhole

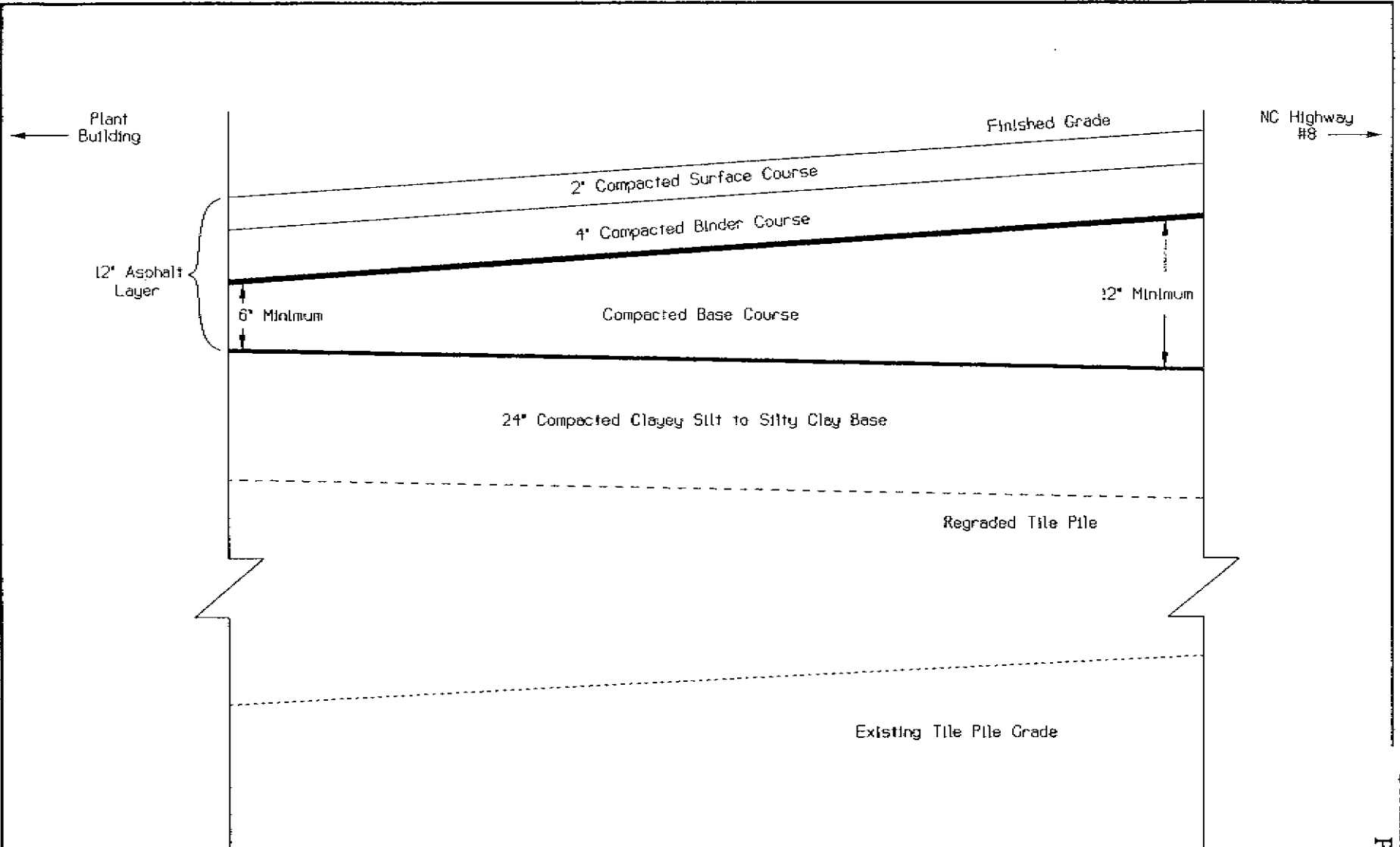
(4')

Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir




8" Sanitary Sewer
 (to 5' Below Grade Line)

| | | | |
|---|----------------------------|----------------------|------------------------|
| <i>Title</i> Typical Cross-Section of Parts of Design | | | |
| <i>Project</i> Porcelanite, Inc. Lexington, North Carolina | | | |
| <i>Author</i> EVC | <i>Drawing</i> 31058-4a | <i>Layers</i> 0,1 | <i>Date</i> 1-14-97 |
| <i>Job No.</i> 3105803 | <i>Revision</i> 1-28-97 | <i>Figure</i> 3-2 | <i>Scale</i> NTS |
|  AQUATERRA <small>A GREAT LAKES CHEMICAL CORPORATION COMPANY</small> | | | |



Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir

| | | | | | |
|---|--------------------|---------------------|---------------|-----------------|---|
|  A GREAT LAKES CHEMICAL CORPORATION COMPANY | Author EVC | Drawing 31058-3 | Layers 0,1 | Date 1-14-97 | Title Cross-Section of Flat Top Surface Cap |
| | Job No. 3105803 | Revision 2-11-97 | Figure 3-3 | Scale NTS | Project Porcelanite, Inc. Lexington, North Carolina |

3.3.2.2 Slope Surface Cap

General Design

The cap proposed for the chip pile slope is an earthen embankment of compacted clayey silt to silty clay soils on an average 4 horizontal to 1 vertical slope. The cap will consist of an interior drain along the toe of the existing tile pile to collect any seepage from the tile pile and native soils. The slope surface cap will then be placed against the drain and existing tile pile (see Figure 3-4). A surface runoff collection ditch will be placed along the toe of the slope surface cap.

Cap Placement

Cap material shall be clean clayey silt to silty clay soils that when compacted are less permeable than the underlying tile materials, fill, and native soils. Cap material shall be free of all organic materials, sod, peat, perishable, or other deleterious materials. No gravel or stones greater than two inches in any direction will be allowed in the cover soil.

Cap materials shall be placed in horizontal lifts not exceeding 12 inches in uncompacted thickness. Each lift shall be compacted to a minimum density of 90 percent of the maximum dry density as determined in accordance with ASTM D 1557 (modified Proctor).

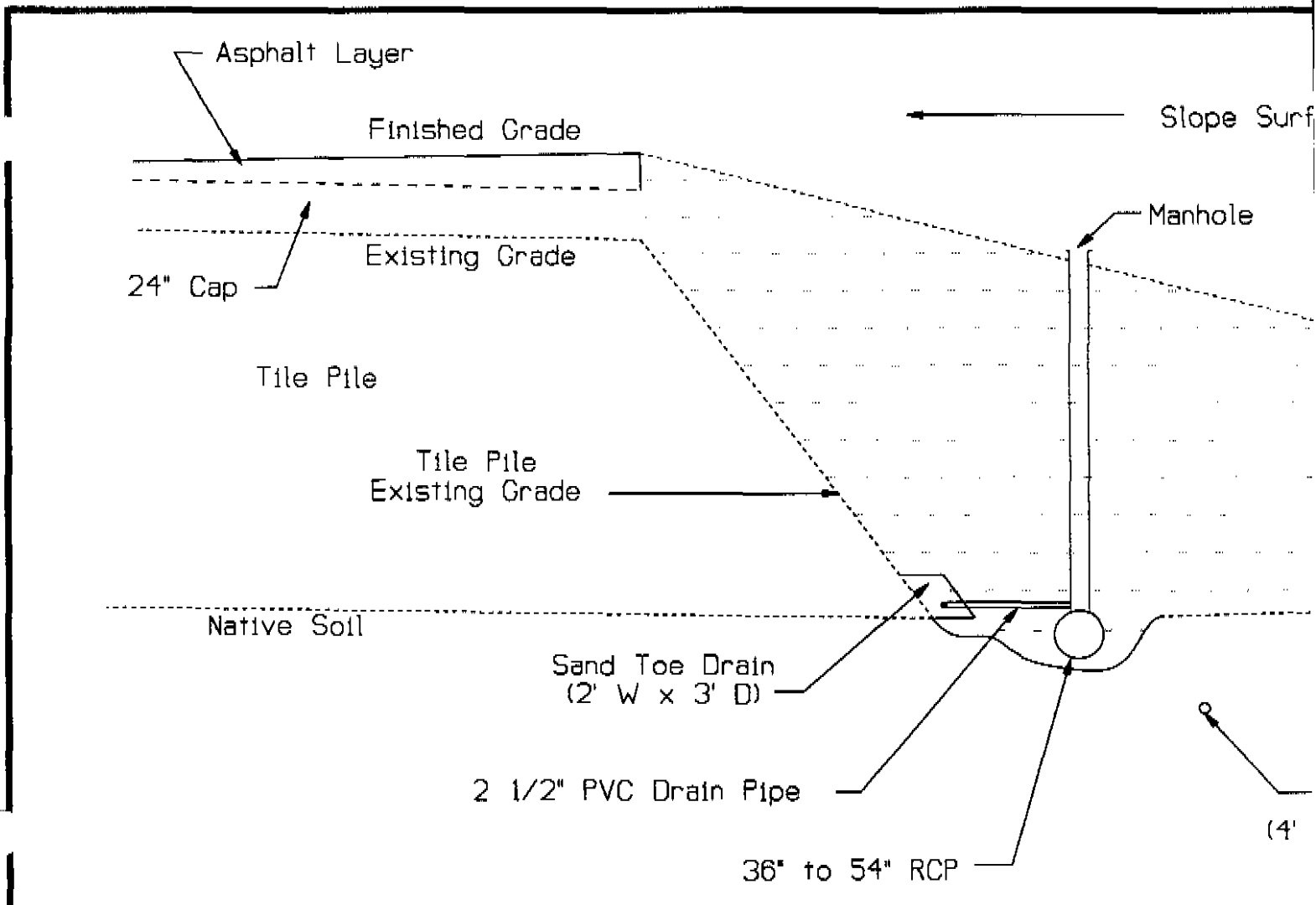
Upon completion of placement of the compacted clayey silt to silty clay, the upper surface shall be trimmed to a smooth surface and then compacted to provide a smooth, flat surface placed to the grade shown in Figure 3-4.

Placement of Topsoil Material

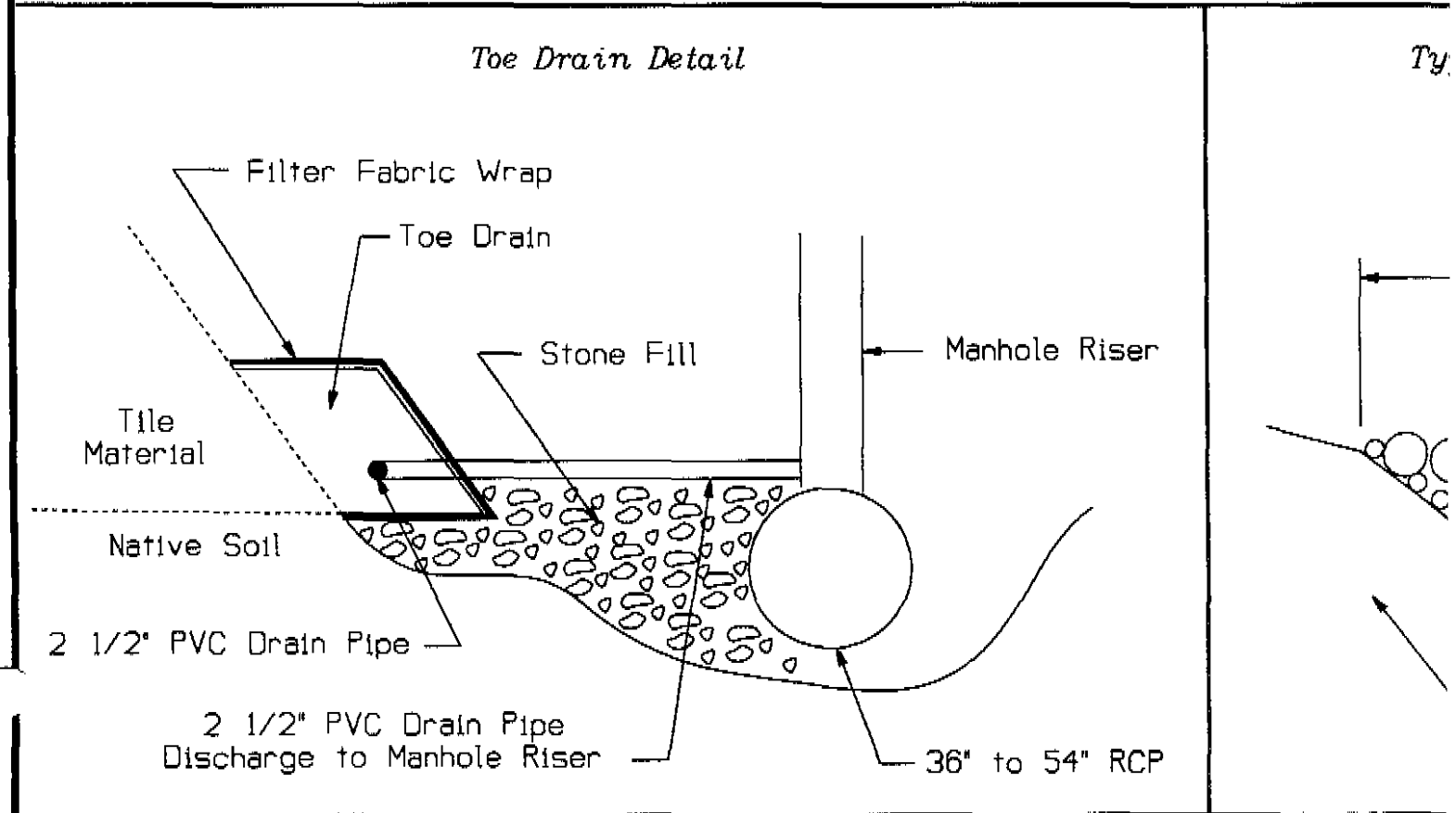
Topsoil material shall consist of clean off-site borrow materials. Topsoil shall be free of trash, perishable, or other deleterious materials. No cobbles, stones, or rock fragments greater than 3 inches in any direction will be allowed to be placed in the topsoil layer. Topsoil materials will be sufficiently compacted by placement activities, no further compaction of the topsoil will be required. No in-place density testing will be required on topsoil materials. The topsoil will be planted with shallow root plants to prevent the roots from penetrating the cap and reaching the tile material.

Mulching and seeding will occur after the topsoil is in place. The topsoil will be loosened to a depth of approximately 5 inches with the top 2 to 3 inches formed into a seedbed. Seedbed materials will meet NCDOT Division 10, Article 1060 requirements. Seeds will be distributed uniformly over the seedbed at the required rate of application, and immediately harrowed, dragged, raked, or worked to cover the seed. Immediately after the seedbed is covered, it will be lightly compacted. The following materials and application rates (in pounds per acre) will be applied:

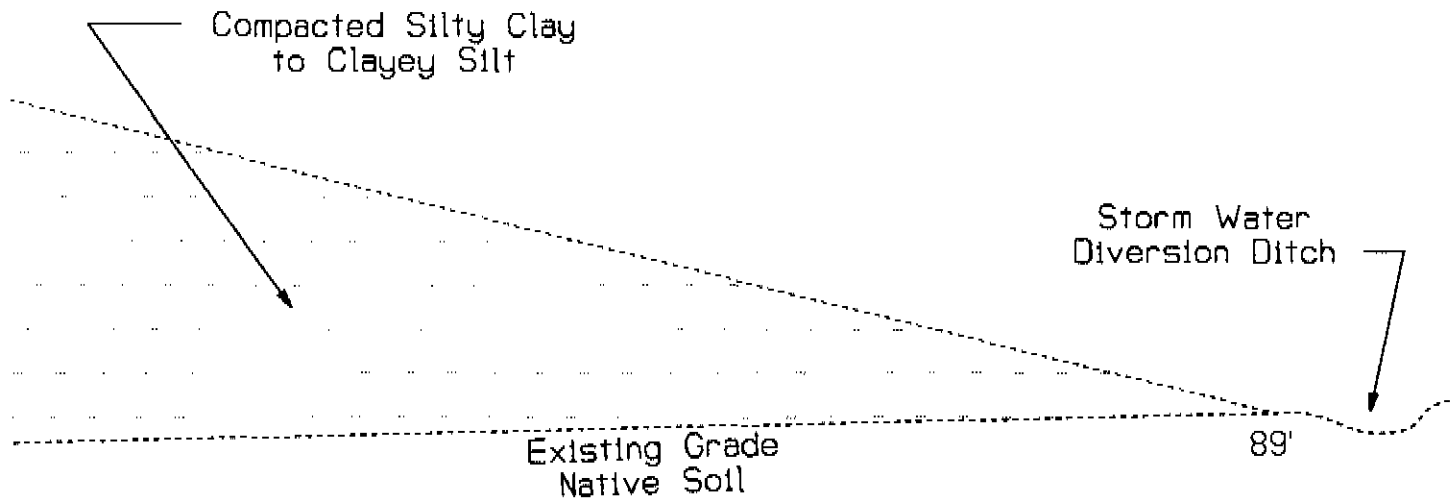
- 40 pounds rye grain
- 70 pounds Kentucky tall fescue
- 1,000 pounds fertilizer (10-10-10)
- 2,000 pounds lime



Toe Drain Detail

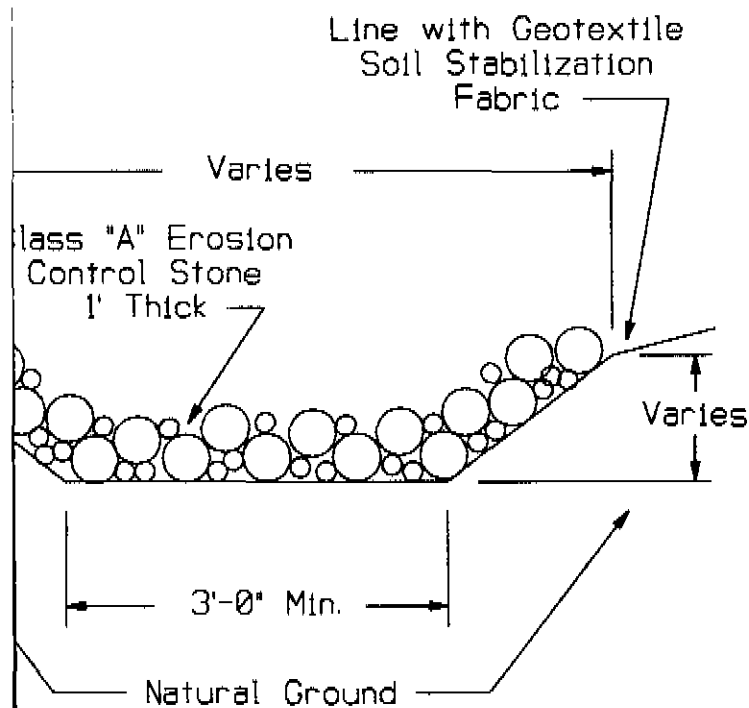


Surface Cap →



8" Sanitary Sewer
 (to 5' Below Grade Line)

Typical Storm Water Ditch Detail



| | | | |
|---|----------------------------|----------------------|------------------------|
| Title Cross-Section of Slope Surface Cap with Details | | | |
| Project Porcelanite, Inc. Lexington, North Carolina | | | |
| Author EVC | Drawing 31058-4 | Layers 0,1 | Date 1-14-97 |
| Job No. 3105803 | Revision 1-28-97 | Figure 3-4 | Scale NTS |



3.3.2.3 Toe Drain

The toe drain will consist of an interior drain along the toe of the existing tile pile to collect any seepage from the tile pile and native soils. The drain will consist of a base of gravel (no gravel larger than 3-inches in any direction) to bring the ground surface to the level of the surface water diversion pipe presently installed in the Walltown Drain. A geotextile fabric (Mirafi 500 or similar) will be placed over the top of the stone, up the slope of the tile pile, and up along a form parallel to the diversion pipe (see Figure 3-4). The geotextile fabric is placed over the sand layer to prevent clogging of the sand from the infiltration of the fines from the tile pile or compacted soils.

Six inches of compacted washed stone (North Carolina Aggregate Gradation Standard Size 78M, Section 1005 of NCDOT 1990 Specifications) will be placed to bed the drainpipe. A 2 1/2-inch PVC schedule 80 drainpipe will be placed over the compacted stone. The 2 1/2-inch drainpipe will be sloped to the north and will discharge into the surface water diversion pipe through the side of the manhole. Eight inches of compacted Standard Size 78M washed stone will be placed around and over the PVC pipeline. A minimum of 10-inches of compacted Standard Size 57 stone will then be placed over the Standard Size 78M stone. The geotextile will then be wrapped over the top of the toe drain from both the tile pile side and the diversion pipe side. The overlap shall be a minimum of 12 inches. Pins shall be used to hold the geotextile in place until the compacted cap soils are placed.

3.3.2.4 Surface Water Diversion Ditch

A surface water runoff ditch will be installed parallel to the toe of the cap to collect runoff from the cap and from the remainder of the site east to North Carolina Highway 8 (see Figures 3-3 and 3-4). The diversion ditch will carry the runoff to the north discharging to the Walltown Drain. The ditch will be constructed in the native soils and will consist of a finished trapezoidal ditch approximately 3 feet wide and 2 to 3 feet deep. The side slopes will be 2 feet horizontal to 1 foot vertical. A geotextile fabric (Mirafi 500 or similar) will be placed over the top of the excavated ditch prior to placing the stone lining for the ditch. The stone lining will be Class A erosion control stone 1-foot thick. The details of the ditch are shown in Figure 3-4.

3.3.3 *Testing and Monitoring*

3.3.3.1 Borrow Soil Testing

Chemical Quality of the Soils

All borrow sources for the fill soil, cap soil, and topsoil will be sampled and analyzed for SW-846 Methods 8240 (Purgeable Organic Compounds), 8270 (Base, Neutral, and Acid Extractable Compounds), and the priority pollutant metals plus the specific metals related to Porcelanite. No contaminated borrow material will be allowed on-site at Porcelanite.

Geotechnical Properties of Soil

The borrow sources for the cap soils will be drilled and sampled to determine the uniformity of the borrow soils. Samples will then be submitted to the soil laboratory and analyzed for the maximum dry density as determined in accordance with ASTM D 1557 (modified Proctor). Based on these results, quality control data will be generated for the different design densities. Soil samples at these different design densities will be analyzed for hydraulic conductivity properties to insure that the cap is less permeable than the tile materials or native soils.

Geotechnical quality control data for the stone and gravel will be supplied by the quarry where the stone and gravel are mined and screened. In general, NCDOT standards will be used.

3.3.3.2 Construction Soil Testing

All placement activities will be continuously monitored by a qualified person familiar with soil placement and testing techniques and procedures. On-site testing will consist of determining in-place density by the Sand Cone method in accordance with ASTM D 1556, the Rubber Balloon method in accordance with ASTM D 2167, or by the Nuclear method in accordance with ASTM D 3017.

Prior to placement activities, moisture/density tests will be performed on representative samples of each material to be placed. The results of these tests will be the basis for determining acceptable in-place density criteria. If there is any discrepancy between testing results between methods, the Sand Cone shall be the standard to which all results shall be compared.

Testing frequency shall be a minimum of one test per lift per 100 linear feet. Any in-place materials not meeting the minimum density requirements shall be recompacted. Upon completion of the in-place test, the hole created for the test shall be cleaned of any remaining sand or other materials and shall be backfilled with commercially produced bentonite clay pellets, hand compacted in a maximum of two inch lifts, and hydrated.

3.3.4 *Subsidence*

The potential subsidence of this material will be negligible. The materials placed in accordance with the above procedures will exist in a compacted condition and will be over-consolidated due to the compactive effort during placement. Surcharge loads will be minimal consisting of vehicle parking and traffic and future warehousing. Since low surcharge load placed on the area by surface load and minimal seepage will be flowing downward through the placed material, there is no mechanism available to cause further compression of the cover, fill or subgrade materials.

3.3.5 *Time for Closure*

The closure activities will begin within 30 days of submittal of the closure plan to the HWS. Porcelanite will complete the closure activities within 180 days after start of closure.

3.3.6 *Decontamination of Equipment*

After closure of the tile pile area, equipment will be decontaminated on-site using dry decon procedures. Tires, compactors, and other pieces of equipment that come into contact with the tile materials will be brushed with heavy, stiff brooms to remove the tile pile materials. A temporary decontamination pad will be constructed and lined with an impermeable plastic material to collect tile materials. All dry solids in the lined decon pad will be removed by shovels and placed in drums which will be disposed of by the contractor. The impermeable plastic material used to line the decon pad along with any gravel will also be removed and disposed of by the contractor.

If dry decon is not adequate, equipment will be decontaminated on-site using high pressure stream and phosphate free soap. A temporary decontamination pad will be constructed and lined with an impermeable plastic material to collect washdown from the decontamination process. Equipment will be positioned during decontamination so that washdown is collected without runoff to any unlined portion of the soil. All washdown in the lined decon pad will be removed by a vacuum system and placed in drums which will be disposed of by the contractor. The impermeable plastic material used to line the decon pad along with any gravel will also be removed and disposed of by the contractor.

The dry solids and/or sludge and water from the washdown and the plastic and gravel will be sampled and analyzed for the hazardous waste constituents of concern identified in the Section 2.0 *Waste Characterization* and the resulting decon waste will be disposed of in accordance with the applicable requirements of 40 CFR 262. Completion of decontamination will be determined by visual inspection to ensure all tile materials have been removed from the equipment.

3.3.7 *Inspection and Maintenance*

Porcelanite will ensure that the closed tile pile is properly maintained by inspecting it regularly in the following areas:

1. Erosion damage
2. Vegetative cover
3. Run-on/run-off control system
4. Subsidence
5. Pavement wear and subsidence

The caps will be sloped to provide positive site drainage away from the tile pile as shown on the drawing. The sloped cap is designed so that the maximum drainage velocity leaving the cap is less than the velocity likely to cause erosion for the selected vegetation. The caps will be visually inspected annually to ensure that the positive drainage slopes are maintained. Should minor subsidence or spot irregularities be discovered, new topsoil will be placed on the slope cap, the area will be regraded, and the topsoil layer will be reseeded.

The sloped cap will also be protected from erosion by maintaining an appropriate vegetative cover. Maintenance activities for the vegetative cover will include mowing, seeding, and fertilizing during the year. The activities will be performed on an as-needed

basis due to the seasonal nature of vegetation. The vegetation will be mowed as required to control volunteer growth of trees and shrubs.

The paved parking lot surface (flat top surface cap) will be inspected for wear and subsidence. Areas of subsidence or wear that allow ponding and possible infiltration of the ponded waters will be patched or replaced as necessary. As necessary, the entire asphalt surface will be seal coated.

As discussed in Section 3.3.4 *Subsidence*, subsidence of the tile pile and caps are not expected since: (1) the tile pile material has settled over the 16 years since the last disposal of the chips, (2) the cap materials will be compacted, (3) runoff will be controlled, (4) infiltration through the cap will be minimized, and (5) only light surcharge loads will be placed on the cap. However, the topsoil layer will not be compacted and may settle. The topsoil layer will be visually inspected by a professional engineer or professional geologist. If subsidence is observed, topsoil will be added, the topsoil layer graded to promote runoff, and reseeded to minimize erosion.

3.3.8 *Site Security*

Site security is provided by perimeter fencing of the Porcelanite property which includes the present tile pile and all the proposed area affected by closure. Gates are locked at all times with the exception of the main gate at the plant on Victor Street. A guard is on duty at the main gate to prevent unauthorized access.

During the closure process, the contractor will provide personnel to control unauthorized access at any points in the fence that are open to allow truck traffic.

3.3.9 *Closure Cost and Financial Assurance*

3.3.9.1 *Closure Cost Estimate*

The closure cost information presented is submitted according to the requirements of 40 CFR 265.142, Cost Estimate for Closure. An estimated \$491,340 will be needed to close the Porcelanite tile pile. This estimation includes the capping of the tile pile, waste characterization and confirmation sampling, surveying, inspections, and reporting. These costs are broken down in more detail and summarized in Table 3-1.

These closure estimates will be kept on file at the Porcelanite facility and will be revised whenever a change in the Closure Plan affects the cost of closure. It will be adjusted annually from the date of its original development to reflect changes in the closure cost brought about by inflation. The Department of Commerce's Annual implicit Price Deflator for Gross National Product (published by U.S. Department of Commerce in its monthly publication "Survey of Current Business") will be used to make this adjustment.

3.3.9.2 *Financial Assurance Mechanism*

Mannington, as the operator of the tile pile, has retained responsibility for the closure of the tile pile. Mannington, as the operator and submitter of the closure plan and post-closure care plan, will continue to maintain the financial assurance and liability requirements in compliance with 40 CFR 265 Subpart H-*Financial Requirements*.

Table 3-1 Cost Estimate¹ for Closure of Ceramic Chip Tile Pile, Porcelanite, Inc., Lexington, North Carolina

| | |
|---|---------------------|
| 1. Grade and place surface cap (includes equipment, materials, and labor) | \$ 69,660 |
| 2. Grade, install drain, and place sloped cap (includes equipment, materials, and labor) | \$ 336,510 |
| 3. Environmental Consultant/Professional Engineer | |
| • Geotechnical QA/QC of cap construction | \$ 19,000 |
| • Install replacement monitoring well and sample | \$ 18,000 |
| • Professional engineer to certify closure | \$ 3,500 |
| | Subtotal \$ 446,670 |
| 4. Contingency (10 percent) | \$ 44,670 |
| | Total \$ 491,340 |

¹ *Costs are in 1997 dollars*
3105801

The financial assurance information is submitted according to the requirements of 40 CFR 265.143, Financial Assurance for Closure. Mannington has reviewed the five mechanisms for financial assurance and has chosen a mechanism for the Lexington facility.

3.3.9.2a Closure Trust Fund
Not applicable.

3.3.9.2b Surety Bond
Not applicable.

3.3.9.2c Closure Letter of Credit
Not applicable.

3.3.9.2d Closure Insurance
Not applicable.

3.3.9.2e Financial Test and Corporate Guarantee for Closure

Mannington meets the financial test criteria of 40 CFR 265.143. The following items have been submitted to the HWS for 1996 in accordance with Section 265.143. An updated financial assurance package will be submitted in 1997 by Mannington. The items that will be included are:

1. A copy of a letter signed by Mannington Chief Financial Officer that is worded as specified in Section 264.151(f).
2. A copy of the independent Certified Public Accountant's report on examination of Mannington's financial statement for the latest completed fiscal year.
3. A copy of the special report from Mannington's independent Certified Accountant to Mannington that:
 - (a) He has compared the data which the letter from the Chief Financial Officer specified as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and
 - (b) In connection with that procedure, no matters came to his attention which have caused him to believe that the specified data should be adjusted.

3.3.10 *Certificate of Closure*

Within 60 days of completing closure, Mannington and Porcelanite will submit to the HWS a certification by both Mannington and Porcelanite and an independent Registered Professional Engineer in the State of North Carolina that the tile pile has been closed according to the Closure Plan. Documentation supporting the independent registered professional engineer's certification will be maintained until the HWS (Regional Administrator) releases Mannington from the financial assurance requirements for closure under Section 40 CFR 265.143(h).

3.3.11 Notice to Local Land Authority

Porcelanite within 60 days after closure is completed, will submit to the Davidson County Register of Deeds and to the HWS a survey plat indicating the location and dimensions of the tile pile with respect to permanently surveyed benchmarks. This plat will be prepared and certified by a registered professional land surveyor in the State of North Carolina. The plat will contain a note, prominently displayed, which states Porcelanite's obligation to restrict disturbances of the site in accordance with 40 CFR 264.117(c) if all the hazardous waste can not be cleaned up and the tile pile must begin post-closure care.

Chapter 4 Post-Closure Care Plan

4.1 Introduction

Since the tile pile cannot be clean closed, a post-closure care plan has been developed. The following items are included:

1. Ground Water Monitoring Plan - Since the monitoring wells placed in the earlier assessments showed ground water contamination, a ground water monitoring plan has been prepared by a qualified geologist and is submitted with the Post-Closure Care Plan.

The ground water monitoring plan addresses:

- (i) the number, location and depth of wells;
 - (ii) sampling and analytical methods for those hazardous wastes or hazardous waste constituents found present in the facility;
 - (iii) evaluation procedures, including any use of previously gathered ground water quality information; and
 - (iv) a schedule of implementation.
2. A description of the planned ground water monitoring activities and frequencies at which they will be performed.
 3. A description of the planned maintenance activities and frequencies at which they will be performed for the cap, security fence and monitoring wells.
 4. The name, address, and phone number of the person or office to contact about the hazardous waste disposal unit during the post-closure care period.
 5. Recordkeeping and reporting during post-closure:
 - ground water monitoring data and evaluation of data;
 - annual report until closure is complete;
 - updates on costs of post-closure care; and
 - all records will be maintained for the post closure care period.
 6. Copies of the Post-Closure Care Plan will be maintained at:

Mr. Tony Shaw
Porcelanite, Inc.
Post Office Box 1777
Lexington, North Carolina 27293-1777

Phone# (910) 242-5636
Fax# (910) 242-5601

The person responsible for updating the Post-Closure Care Plan will be the facility representative mentioned or his designee. As the Post-Closure Care Plan is updated or amended, the date and number of the revision will be noted on the plan's title page.

7. A Financial Assurance mechanism adopted by Mannington will be included.

4.2 *Ground Water Monitoring Plan*

4.2.1 *Ground Water Assessment To Date*

Ground water monitoring has determined that the ground water downgradient of the tile pile is contaminated. The ground water has been found to contain boron, nickel, vanadium, and gross beta that exceed North Carolina ground water standards.

4.2.2 *Ground Water Assessment Plan*

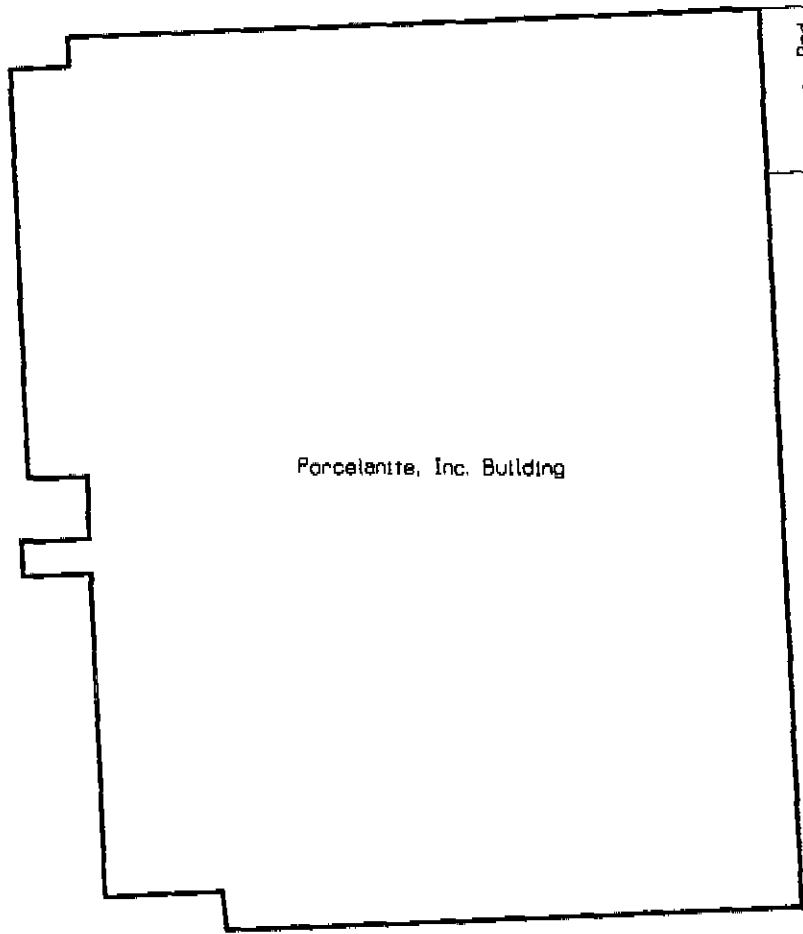
Since there is contaminated ground water associated with the tile pile, there is little need for a ground water monitoring program to detect if hazardous waste or hazardous waste constituents have entered the ground water. Porcelanite proposes to modify the ground water monitoring program discussed in 40 CFR 265.91 and 40 CFR 265.92 in accordance with 40 CFR 265.90(d).

4.2.2.1 *Number, Location, and Depth of Wells*

Porcelanite has developed an alternate ground water monitoring system that addresses the requirements in 40 CFR 265.93(d)(3); that determines the rate and extent of migration and the concentration of the constituents in the ground water; that provides a written report per 40 CFR 265.93(d)(5); that monitors the plume extent, rate of migration, and concentration of the constituents; and that complies with the recordkeeping and reporting requirements in 40 CFR 265.94(b).

Porcelanite proposes to monitor one upgradient monitoring well (MW-1) and three downgradient monitoring wells. The downgradient monitoring wells will be new wells installed after the sloped cap installation is complete; and, they will replace monitoring wells MW-3, MW-7, MW-8, MW-21, MW-22, and MW-26A. The proposed locations are shown on Figure 4-1. The three new downgradient monitoring wells will be shallow wells.

Porcelanite proposes to sample the monitoring wells semiannually for the constituents determined to be present due to the tile pile (see Section 2.4 *Ground Water Assessment*).



Concrete Pad

Parking Lot
(Asphalt)

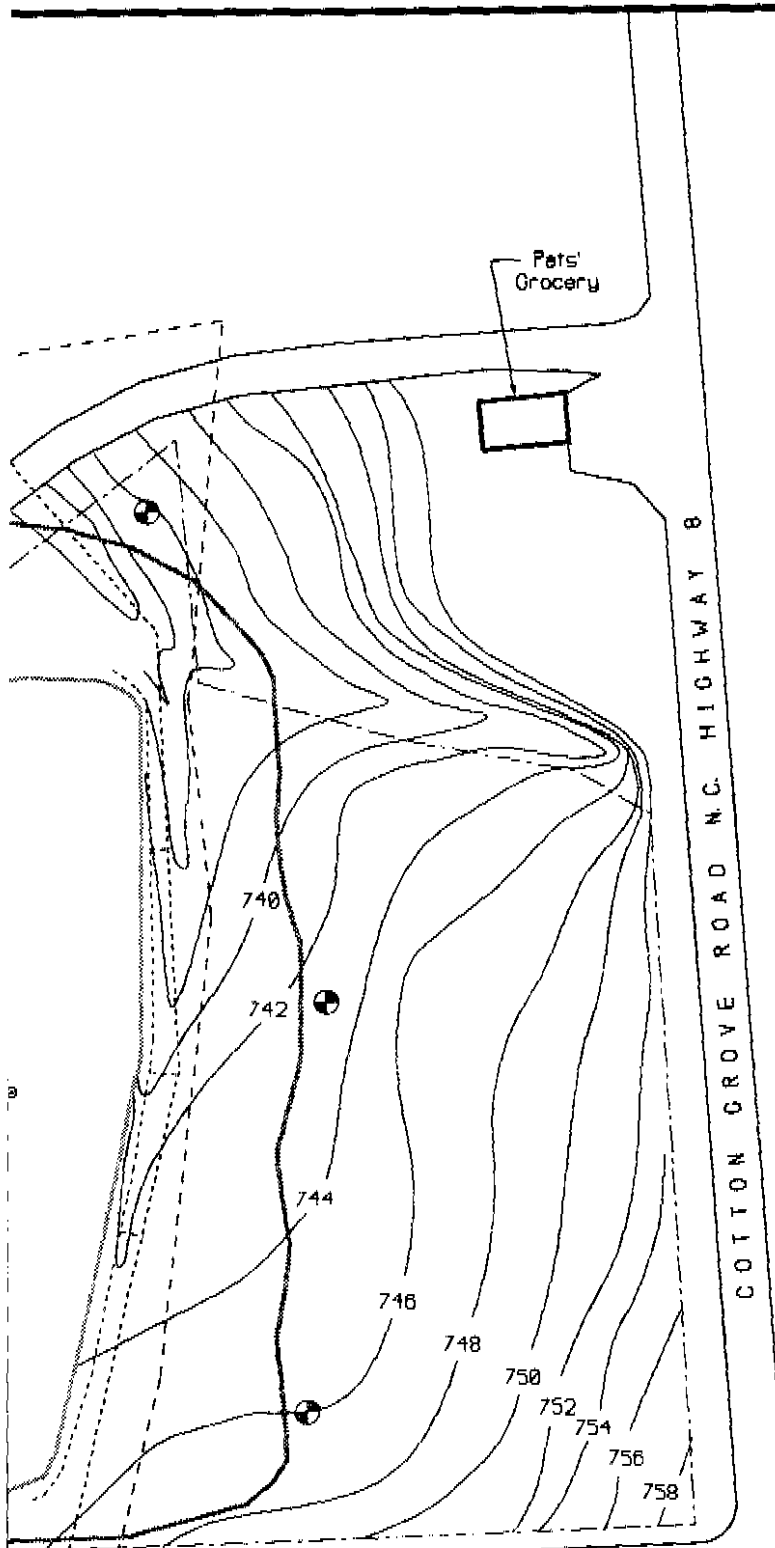
Title Pl

MW-1

Guard House

VICTOR STREET S.R. 1261

Tile Pile Closure
 Ceramic Chip Tile Pile
 Porcelanite, Inc.
 611024.Dir



Legend

- 8" Sewer Line
- Storm Drain
- Tile Pile Boundary
- Toe Embankment Drain
- Proposed Soil Embankment II
- ~~~~~ Topo Line Location
- ⊕ Post-closure Care Wells

Bar Scale



Title
 Location of Post-closure Care Monitoring Wells

Project
 Porcelanite, Inc.
 Lexington, North Carolina

| | | | |
|---------------------------|---------------------------|-----------------------------|---------------------------|
| Author EVC | Drawing 31058-1 | Layers 0,6,7,9,12 | Date 1-14-97 |
| Job No. 3105803 | Revision 2-9-97 | Figure 4-1 | Scale 1" = 100' |



The shallow wells (15 to 25 feet) will be constructed of schedule 40 two-inch PVC casing and screen. The PVC casing and screen will be connected by flush threaded connections. No PVC solvent or glue will be used to connect the pipe. Screens will consist of a 10-foot length of slotted or wire wrapped screen with screen openings of 0.010 inches.

The exact placement of the screen interval will depend on the water level encountered during the drilling.

4.2.2.2 Drilling and Well Installation

The drilling will be conducted with a rotary drill rig with hollow-stem augers. The hole will be drilled to a diameter of approximately 6 1/4 to 8 1/2 inches. Cuttings will be collected every five feet and logged by a geologist. The geologist will also record drilling rates, rod drops, etc. to help develop the geology of the boring.

Following the completion of the drilling, the monitoring well will be installed. All screens will have centralizers installed at their base and top to ensure that the screen will be centered within the boring. A sandpack consisting of clean washed sand and gravel containing less than five percent deleterious material by weight will be tremied around the screen and carried from two to four feet above the screen top. Deleterious materials are considered to be wood debris, other organic matter, heterogeneous material, and degradable materials.

Above the sandpack, bentonite clay will be placed to form a seal between the annular space and the well. After placement of the bentonite seal, a neat cement grout will be poured to ground surface. A lockable protective steel casing will be installed around the well. A concrete pad with dimensions of 3 feet by 3 feet by 6 inches thick will be poured as a base around the protective casing of the monitoring well.

Well locations to the nearest foot and vertical elevations to the nearest 0.01 foot will be surveyed by a registered surveyor in the State of North Carolina.

After the wells are installed, the wells will be cleaned of all clay, silt, or sand that may have accumulated in the well. The wells will be pumped or bailed for a sufficient length of time to settle the sandpack and remove any fines. The wells will be considered developed when the water removed from the well is reasonably free of sand, silt, and clay. All development water will be containerized and eventually discharged to the City of Lexington's waste water treatment plant.

No dispersing agents, acids, disinfectants, or other additives will be used during development or will at any other time be introduced to the well.

Each installed well shall be depicted in a well diagram. This diagram will graphically denote by depth from ground surface (unless otherwise specified):

- Screen location;
- bottom of boring;
- granular backfill;
- seals;
- grout;
- cave-in;
- height of casing stickup (above ground surface);
- protective casing details.

Upon completion of the monitoring wells, Aquaterra will submit Well Completion Form GW-1 for each well as required by North Carolina law. The originals will be submitted to the Division of Water Quality and copies will be submitted to the HWS.

4.2.2.3 Ground Water Sampling and Analytical Methods

Details of ground water sampling, including purging of the wells are contained in the latest ground water sampling and analysis plan (SAP) submitted on January 7, 1997, to the HWS (*Groundwater Sampling and Analysis Plan, Porcelanite, Inc. (Formerly P&M Tile, Inc.), NCD 986 181 451, Lexington, North Carolina, dated January 7, 1997*).

Porcelanite proposes to monitor the background well, MW-1, and the proposed three new downgradient replacement monitoring wells semiannually (see locations of monitoring wells on Figure 4-1). It is proposed to sample these wells in January and July of each year. The January sampling event and water level measurements will be used to develop the map of the ground water surface elevations, calculations of the rate of migration, extent of migration if any, concentration of analytes present, and discussion of the effectiveness of closure of the tile pile. This information will be presented in the semiannual post-closure care reports.

In the field, the samples will be analyzed for pH, specific conductance, and temperature in accordance with the January 7, 1997, SAP. The laboratory analysis will consist of total metals analysis of boron and lead and the radionuclied gross beta. The methods are reviewed in the SAP.

All data collected including copies of the semiannual reports will be maintained at the facility throughout the post-closure care period. The data will be maintained in the Environmental Health/Safety Engineer's office. The current EHS engineer's name and address:

Tony Shaw
Porcelanite, Inc.
Post Office Box 1777
Lexington, North Carolina 27293-1777

Phone # (910) 242-5636
Fax# (910) 242-5601

4.3 *Inspection and Maintenance*

Porcelanite will ensure that the closed tile pile is properly maintained by inspecting it regularly in the following areas:

1. Erosion damage
2. Vegetative cover
3. Run-on/run-off control system
4. Subsidence
5. Pavement wear and subsidence

The caps will be sloped to provide positive site drainage away from the tile pile as shown on the drawing. The sloped cap is designed so that the maximum drainage velocity leaving the cap is less than the velocity likely to cause erosion for the selected vegetation. The caps will be visually inspected annually to ensure that the positive drainage slopes are maintained. Should minor subsidence or spot irregularities be discovered, new topsoil will be placed on the slope cap, the area will be regraded, and the topsoil layer will be reseeded.

The sloped cap will also be protected from erosion by maintaining an appropriate vegetative cover. Maintenance activities for the vegetative cover will include mowing, seeding, and fertilizing during the year. The activities will be performed on an as-needed basis due to the seasonal nature of vegetation.

The paved parking lot surface (flat top surface cap) will be inspected for wear and subsidence. Areas of subsidence or wear that allow ponding and possible infiltration of the ponded waters will be patched or replaced as necessary. As necessary, the entire asphalt surface will be seal coated.

As discussed in Section 3.3.4 *Subsidence*, subsidence of the tile pile and caps are not expected since: (1) the tile pile material have settled over the 16 years since the last disposal of the chips, (2) the cap materials will be compacted, (3) runoff will be controlled, (4) infiltration through the cap will be minimized, and (5) only light surcharge loads will be placed on the cap. However, the topsoil layer will not be compacted and may settle. The topsoil layer will be visually inspected by a professional engineer or professional geologist. If subsidence is observed, topsoil will be added, the topsoil layer graded to promote runoff, and reseeded to minimize erosion.

4.4 *Site Security*

Site security is provided by perimeter fencing of the Porcelanite property which includes the present tile pile and all the proposed area affected by closure. Gates are locked at all times with the exception of the main gate at the plant on Victor Street. A guard is on duty at the main gate to prevent unauthorized access.

During the closure process, the contractor will provide personnel to control unauthorized access at any points in the fence that are open to allow truck traffic.

4.5 *Post-Closure Cost and Financial Assurance*

4.5.1 *Post-Closure Cost Estimate*

The post-closure cost information presented is submitted according to the requirements of 40 CFR 265.144, *Cost Estimate for Post-Closure Care*. An estimated \$226,800 will be needed to perform post-closure care of the Porcelanite tile pile. These costs are broken down in more detail and summarized in Table 4-1.

These post-closure care estimates will be kept on file at the Porcelanite facility and will be revised whenever a change in the Post-Closure Care Plan affects the cost of post-closure. It will be adjusted annually from the date of its original development to reflect changes in the post-closure cost brought about by inflation. The Department of Commerce's Annual implicit Price Deflator for Gross National Product (published by U.S. Department of Commerce in its monthly publication "Survey of Current Business") will be used to make this adjustment.

4.5.2 *Financial Assurance Mechanism*

Mannington, as the operator of the tile pile, has retained responsibility for the post-closure care of the tile pile. Mannington, as the operator and submitter of the post-closure care plan and post-closure care plan, will continue to maintain the financial assurance and liability requirements in compliance with 40 CFR 265 Subpart H-*Financial Requirements*.

The financial assurance information is submitted according to the requirements of 40 CFR 265.145, *Financial Assurance for Post-Closure Care*. Mannington has reviewed the five mechanisms for financial assurance and has chosen a mechanism for the Lexington facility.

4.5.2a *Post-Closure Trust Fund*
Not applicable.

4.5.2b *Surety Bond*
Not applicable.

4.5.2c *Post-Closure Letter of Credit*
Not applicable.

4.5.2d *Post-Closure Insurance*
Not applicable.

**Table 4-1. Cost Estimate¹ for Post-Closure Care of Ceramic Chip Tile Pile,
Porcelanite, Inc., Lexington, North Carolina.**

| | |
|--|--|
| 1. Two Semiannual Sampling Events of Monitoring Wells (includes equipment, analysis, labor, and report) | \$ 2,600 |
| 2. Maintain Grass Cover on Slope Surface Cap (includes mowing and fertilizing) | \$ 1,200 |
| 3. Inspections and Maintenance of Cap System | |
| • Porcelanite inspections | \$ 760 |
| • Asphalt and drain maintenance | \$ 1,900 |
| • PE or PG to do annual inspection | \$ 1,100 |
| | Subtotal \$ 3,760 |
| | Annual Total \$ 7,560 |
| | Post-closure Care Period Multiplier 30 years |
| | TOTAL FOR 30 YEARS \$226,800 |

¹ Costs are in 1997 dollars
3105801

4.5.2e Financial Test and Corporate Guarantee for Post-Closure Care

Mannington meets the financial test criteria of 40 CFR 265.145. The following items have been submitted to the HWS for 1996 in accordance with Section 265.145. An updated financial assurance package will be submitted to the HWS as required in 1997 by Mannington. The items that will be addressed are:

1. A copy of a letter signed by Mannington's Chief Financial Officer that is worded as specified in Section 264.151(f).
2. A copy of the independent Certified Public Accountant's report on examination of Mannington's financial statement for the latest completed fiscal year.
3. A copy of the special report from Mannington's independent Certified Accountant to Mannington that:
 - (a) He has compared the data which the letter from the Chief Financial Officer specified as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and
 - (b) In connection with that procedure, no matters came to his attention which have caused him to believe that the specified data should be adjusted.

4.6 Certificate of Completion of Post-Closure Care

Within 60 days of completing the established post-closure care period for the tile pile Mannington and Porcelanite will submit to the HWS a certification by both Mannington and Porcelanite and an independent Registered Professional Engineer in the State of North Carolina that the tile pile post-closure care for the post-closure care period has been performed according to the Post-Closure Care Plan. Documentation supporting the independent registered professional engineer's certification will be furnished to the HWS (Regional Administrator) upon request.

4.7 Notice to Local Land Authority

Porcelanite, within 60 days after nonclean closure is completed, will submit to the Davidson County Register of Deeds and to the HWS a survey plat indicating the location and dimensions of the tile pile with respect to permanently surveyed benchmarks. This plat will be prepared and certified by a registered professional land surveyor in the State of North Carolina. The plat will contain a note, prominently displayed, which states Porcelanite's obligation to restrict disturbances of the site in accordance with 40 CFR 264.117(c) if all the hazardous waste can not be cleaned up and the tile pile area must begin post-closure care.

Chapter 5 References

- Aquaterra, Inc., 1990, *Soil Boring Assessment, Mannington Ceramic Tile, Lexington, North Carolina*: Aquaterra, Inc. report number R835-90, Raleigh, North Carolina, January 31.
- Aquaterra, Inc., 1992, *Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*: Aquaterra report number R1547-92, Raleigh, North Carolina, January 7.
- Aquaterra, Inc., 1992, *Additional Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*: Aquaterra report number R1646-92, Raleigh, North Carolina, April 1.
- ENSCI Engineering Group, P.A., 1992, *Comprehensive Tile Pile Testing Program and Treatability Study, Mannington Ceramic Tile, Lexington, North Carolina*: High Point, North Carolina, October 20, 1992.
- ENSCI Engineering Group, P.A., 1993, *Closure Plan for Scrap Tile Pile, Mannington Ceramic Tile, Lexington, North Carolina*: High Point, North Carolina, December 21.
- ENSCI Engineering Group, P.A., 1994, *P&M Tile Incorporated (Formerly Mannington Ceramic Tile), Lexington, North Carolina, Groundwater Assessment Plan, NCD 986 181 451*: High Point, North Carolina, October 20, 1992.
- Tetra Technologies Group, P.A., 1996, *1995 Annual Groundwater Assessment Update Report, Former Wastewater Holding Ponds and Waste Ceramic Tile Pile P & M Tile, Inc. Facility, Lexington, North Carolina*: High Point, North Carolina, March 14.
- Tetra Technologies Group, P.A., 1996, *Second Quarter 1996 Groundwater Assessment Report, Porcelanite, Inc., Lexington, North Carolina*: High Point, North Carolina, November 4.
- Tetra Technologies Group, P.A., 1996, *Third Quarter 1996 Groundwater Assessment Report, Porcelanite, Inc., Lexington, North Carolina*: High Point, North Carolina, November 4.
- Tetra Technologies Group, P.A., 1997, *Groundwater Sampling and Analysis Plan, Porcelanite, Inc., (Formerly P&M Tile, Inc.), NCD 986 181 451, Lexington, North Carolina*: High Point, North Carolina, January 7.



Tile Pile Closure
611024
February 11, 1997

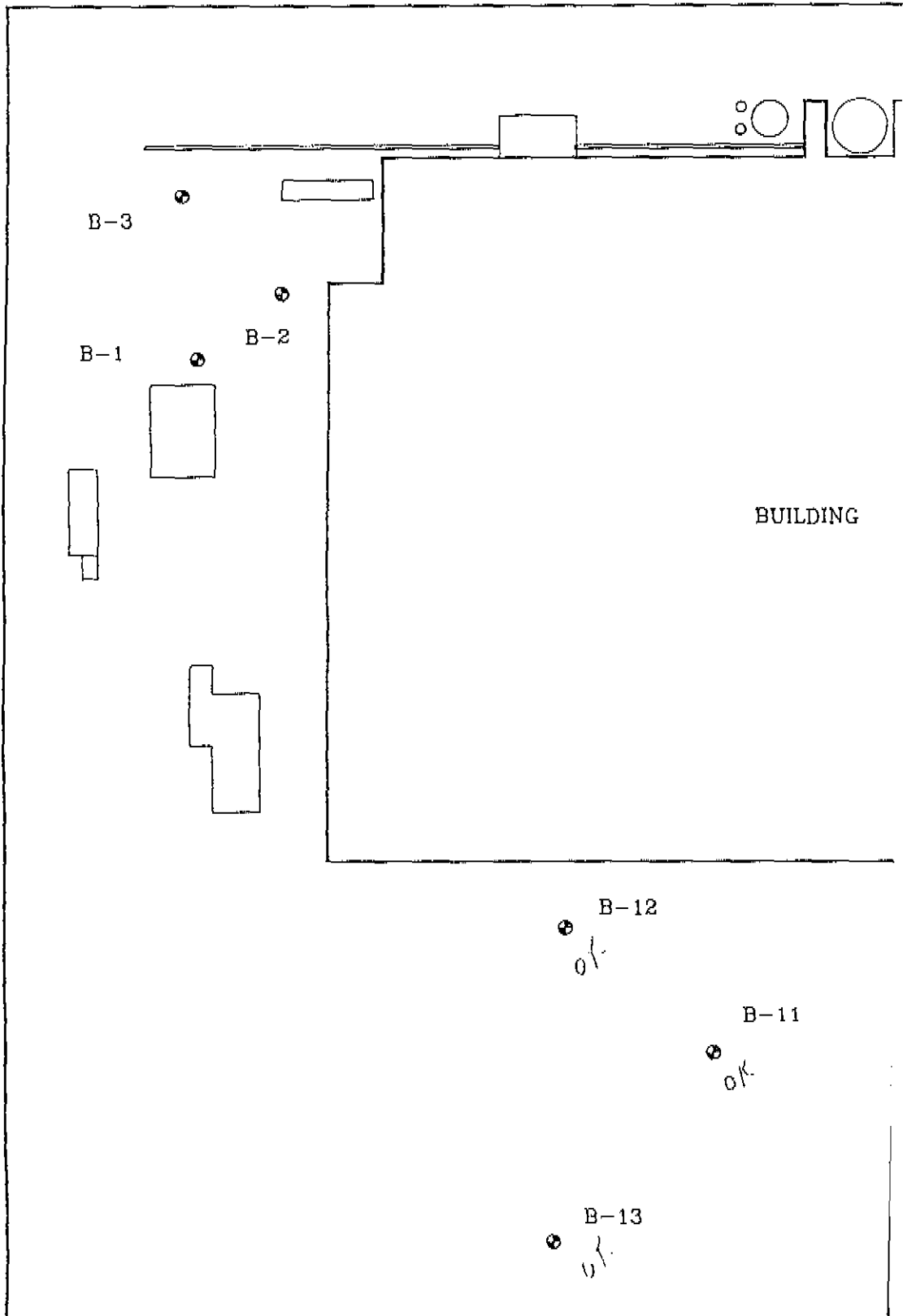
APPENDIX A
PREVIOUS INVESTIGATIONS

Tile Pile Closure
611024
February 11, 1997

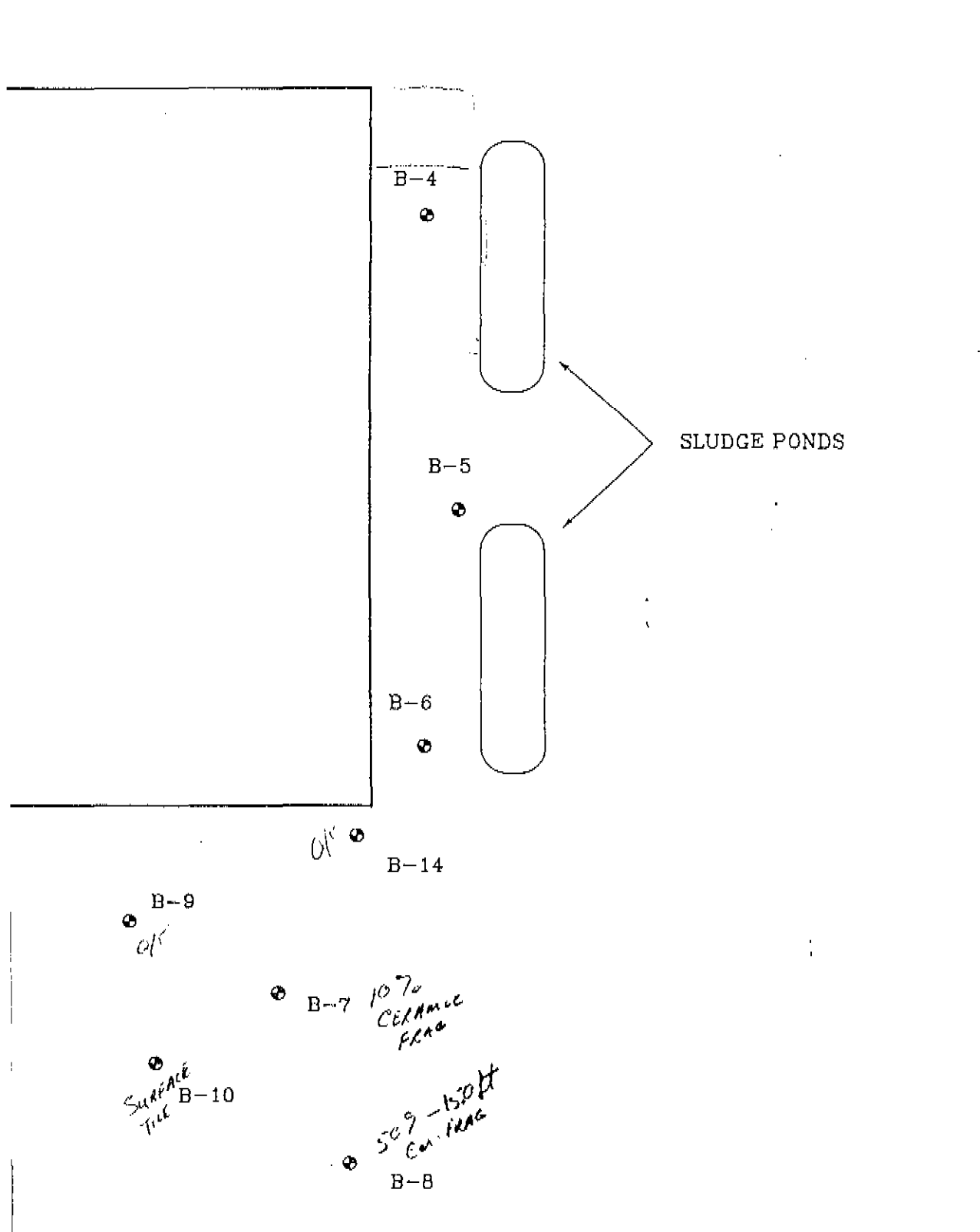
Appendix A

Aquaterra Report Number R835-90

**Soil Boring Assessment
Mannington Ceramic Tile
Lexington, North Carolina
January 31, 1990**



| | | |
|--|-------------------|--------------|
| PROJECT: MANNINGTON CERAMIC TILE LEXINGTON, NORTH CAROLINA | TITLE: SOIL BO | |
| | JOB: 27T | DRAW: 27T |



| | | | |
|------------------|---------------------|---|---|
| ING LOCATION MAP | |  | AQUATERRA, INC. RALEIGH, GREENSBORO, CHARLOTTE NORTH CAROLINA |
| FIGURE: 2 | SCALE: 1' = 100' | | |

Table 1 Total Metals Analysis From Soil Boring Assessment, Mannington Ceramic Tile, Lexington, North Carolina

| Location | Date | Depth | As | Ba | Cd | Cr | Hg | Pb | Ag | Se |
|----------|----------|---------------|--------|------|--------|--------|----------|--------|--------|--------|
| B-1 | 11-29-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| | | 10.0' - 11.5' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-2 | 11-29-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-3 | 11-22-89 | 3.5' - 5.0' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| B-4 | 11-22-89 | 6.0' - 7.5' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| B-5 | 11-24-89 | 1' - 2.5' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| | | 6 - 7.5' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| B-6 | 11-24-89 | 2.5' - 4' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| | | 17.5' - 19' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| B-7 | 11-24-89 | 5' - 6.5' | < 1.0 | < 10 | < 0.50 | < 1.0 | < 0.2 | < 1.0 | < 1.0 | < 0.50 |
| B-8 | 11-27-89 | 7.5' - 9.0' | < 0.50 | < 10 | 0.2 | < 1.0 | < 0.2 | 74 | < 1.0 | < 0.50 |
| | | 20.0' - 21.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-9 | 11-27-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-10 | 1-28-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-11 | 11-28-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-12 | 11-28-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-13 | 11-28-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |
| B-14 | 11-29-89 | 2.5' - 4.0' | < 0.50 | < 10 | < 0.10 | < 0.50 | < 0.0005 | < 0.50 | < 0.50 | < 0.10 |

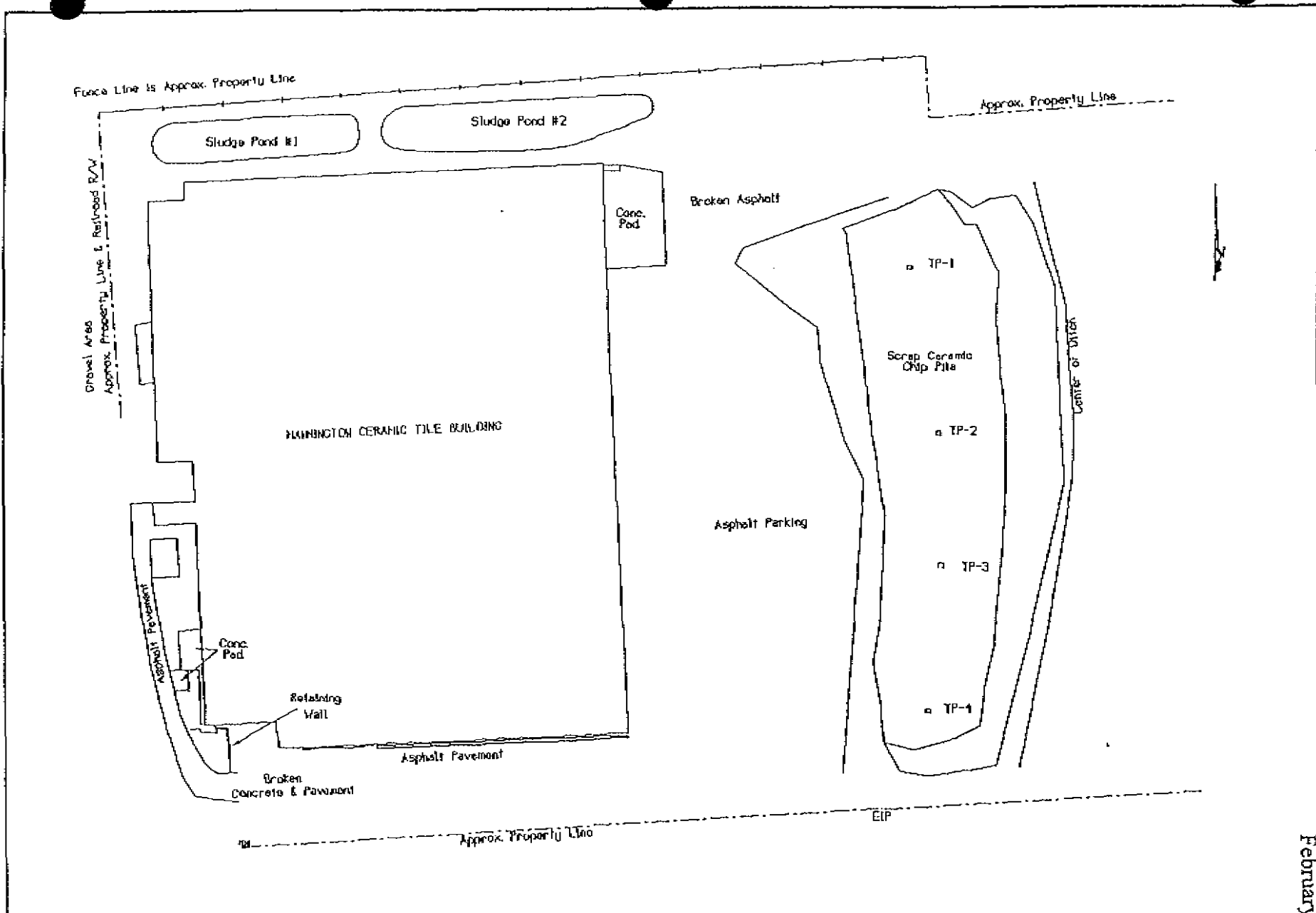
*Analytical Laboratory: Industrial and Environmental Analysts, Cary, North Carolina
Results in mg/kg
from R835-90*

Tile Pile Closure
611024
February 11, 1997

Appendix A

Aquaterra Report Number R1547-92

**Sampling of Waste Ceramic Chip Tile
Mannington Ceramic Tile
Lexington, North Carolina
January 7, 1992**



AQUATERRA, INC.
 RALEIGH, GREENSBORO, CHARLOTTE
 NORTH CAROLINA

| | | | | |
|------------------|----------------|-------------|--------------------|---|
| Author dlg/JJ | Drawing 354 | Layers | Date 01-6-92 | Title Test Pit Locations |
| Job No. 354 | Revision | Figure 2 | Scale 1" = 110' | Project Mannington Ceramic Tile Lexington, North Carolina |

February 11, 1997

Tile Pile Closure
 611024

Table 1 **TCLP Metal Results from Sampling of Waste Ceramic Chip Tile,
Mannington Ceramic Tile, Lexington, North Carolina**

| Parameters | TP-1 | TP-2 | TP-3 | TP-4 | Regulatory Level |
|------------|---------|---------|---------|---------|---------------------|
| Arsenic | < 0.52 | < 0.52 | < 0.52 | < 0.52 | 5.0 |
| Barium | 6.7 | 3.4 | 2.2 | 4.6 | 100.0 |
| Cadmium | < 0.11 | < 0.11 | < 0.11 | 0.15 | 1.0 |
| Chromium | < 0.56 | < 0.56 | < 0.56 | < 0.56 | 5.0 |
| Lead | 47 | 51 | 63 | 130 | 5.0 |
| Mercury | < 0.017 | < 0.017 | < 0.017 | < 0.017 | 0.2 |
| Selenium | < 0.30 | < 0.30 | < 0.30 | < 0.30 | 1.0 |
| Silver | < 0.83 | < 0.83 | < 0.83 | < 0.83 | 5.0 |

All Units are mg/L

Laboratory Analytical Laboratory: AnalytiKEM, Inc., Rock Hill, South Carolina

from R1547-92

Table 2 Summary of Analytical Data from Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina

| Parameter | TP-1 | TP-2 | TP-3 | TP-4 | Average |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|
| Metals | | | | | |
| Aluminum | 17000 | 19000 | 18000 | 22000 | 19000 |
| Antimony | < 2 | < 2 | < 2 | < 2 | < 2 |
| Barium | 490 | 310 | 220 | 820 | 535 |
| Boron | 53.0 | 130 | 200 | 240 | 156 |
| Calcium | 22000 | 23000 | 24000 | 26000 | 23800 |
| Chromium | 4.9 | 6.4 | 5.9 | 4.2 | 5.4 |
| Cobalt | 12.0 | 26.0 | 13.0 | 23.0 | 18.5 |
| Iron | 3900 | 2000 | 1300 | 1200 | 2100 |
| Lead | 1600 | 3100 | 3900 | 4000 | 3150 |
| Magnesium | 3900 | 4600 | 4800 | 4400 | 4420 |
| Nickel | 8.3 | 18.0 | < 4 | 12.0 | 10 |
| Potassium | < 100 | < 100 | < 100 | < 100 | < 100 |
| Praseodymium | < 10 | < 10 | < 10 | < 10 | < 10 |
| Silver | < 4 | < 4 | < 4 | 14.0 | 5 |
| Sodium | 370 | 500 | 510 | 670 | 512 |
| Tin | < 5 | < 5 | < 5 | < 5 | < 5 |
| Titanium | 100 | 110 | 110 | 100 | 105 |
| Vanadium | 10.0 | 7.3 | 8.5 | 9.7 | 8.9 |
| Zinc | 2400 | 2000 | 2700 | 6100 | 3300 |
| Zirconium | 65.0 | 67.0 | 100 | 150 | 95.5 |
| Inorganic | | | | | |
| Alkalinity | 3700 | 3200 | 4000 | 3700 | 3650 |
| Bromide | 4.4 | 4.2 | 3.2 | 4.1 | 4.0 |
| Chloride | 34.0 | 35.0 | 34.0 | 52.0 | 38.8 |
| Fluoride | 8.8 | 7.7 | 8.0 | 6.0 | 7.6 |
| pH (units) | 8.8 | 8.8 | 8.9 | 9.0 | 8.9 |
| Phosphates | 250 | 75.0 | 100 | 80 | 126 |
| Sulfates | 1,200 | 1,800 | 170 | 530 | 925 |
| Radionuclides (pCi/g)* | | | | | |
| Gross Alpha | 16 ± 6.0 | 22 ± 7.0 | 21 ± 7.0 | 21 ± 7.0 | 20 ± 6.7 |
| Gross Beta | 34 ± 3.0 | 30 ± 3.0 | 35 ± 3.0 | 39 ± 3.0 | 35 ± 3.5 |
| Radium 226 | 1.5 ± 0.2 | 1.4 ± 0.1 | 1.8 ± 0.2 | 1.9 ± 0.2 | 1.5 ± 0.2 |
| Radium 228 | 1.2 ± 0.2 | 1.2 ± 0.1 | 1.3 ± 0.2 | 1.3 ± 0.2 | 1.2 ± 0.2 |

All units are mg/kg, except as noted.

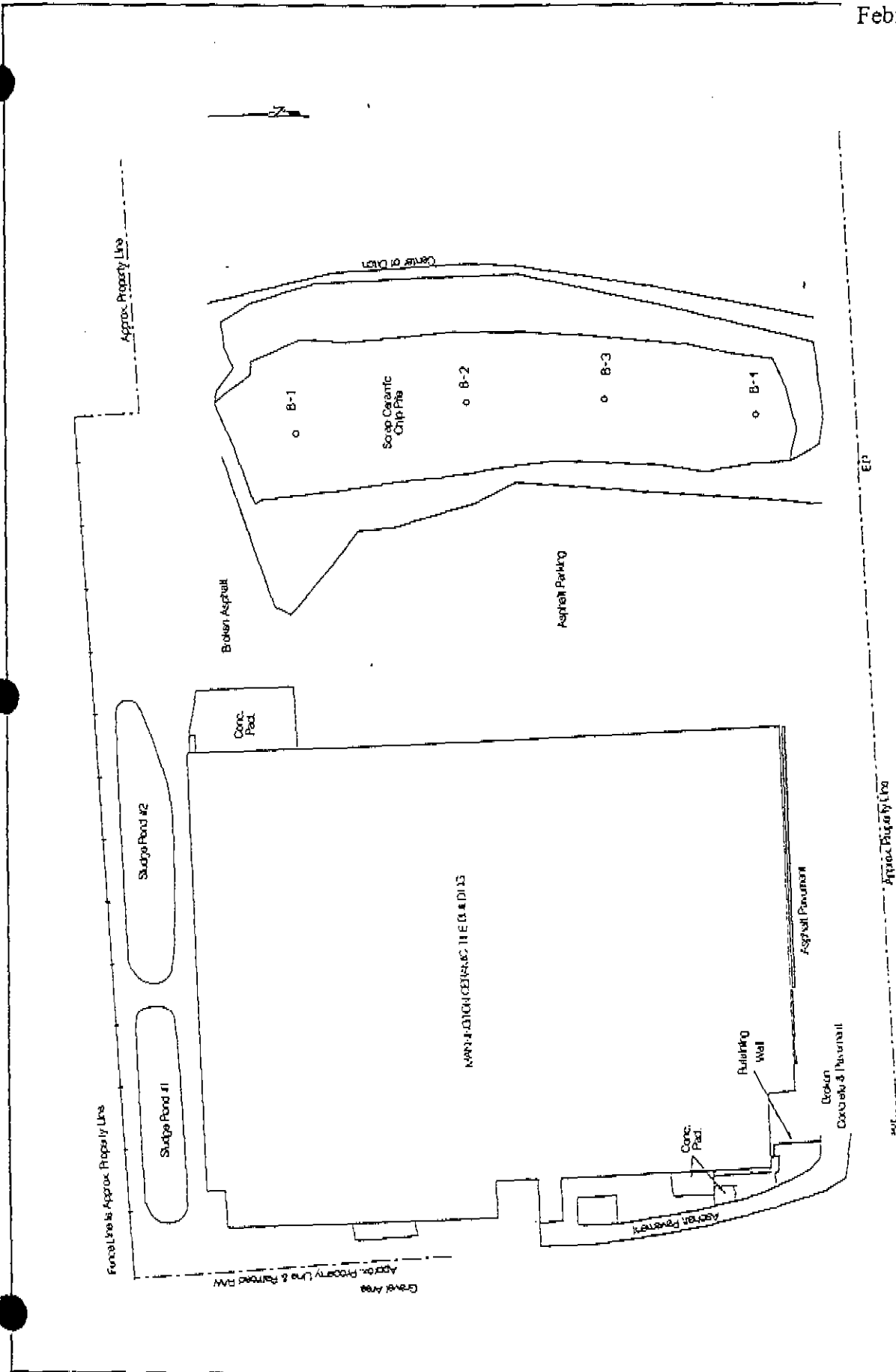
Laboratory: AnalytiKEM, Inc.
Rock Hill, South Carolina
* Teledyne Isotopes
Westwood, New Jersey
from 354R1547-92

Tile Pile Closure
611024
February 11, 1997

Appendix A

Aquaterra Report Number R1646-92

**Additional Sampling of Waste Ceramic Chip Tile
Mannington Ceramic Tile
Lexington, North Carolina
April 1, 1992**




| | | | | | | | | |
|---|--|--|----------|--------------------|----------------|----------------|------------------|---|
|  | | AQUATERRA, INC. RALEIGH, GREENSBORO, CHARLOTTE NORTH CAROLINA | | Author KI, JLLJ | Drawing 354 | Layers 0, 1 | Date 03-31-92 | Title Waste Chip Pile Boring Locations |
| | | Job No. 354 | Revision | Figure 2 | Scale NTS | | | Project Mannington Ceramic Tile Lexington, North Carolina |

Table 1 **Summary of Waste Ceramic Chip Pile Analytical Data from
Additional Sampling of Waste Ceramic Chip Tile, Mannington
Ceramic Tile, Lexington, North Carolina**

| Parameters | B-1 | B-2 | B-3 | B-4 |
|--------------------------------|--------|--------|--------|--------|
| Volatile Organics | | | | |
| Methylene Chloride | 850 | 820 | 860 | 850 |
| Semivolatile Organics | | | | |
| Bis(2-ethylhexyl) phthalate | 4600 | 1900 | 5300 | 3500 |
| Formaldehyde | < 1100 | < 1100 | < 1100 | < 1100 |

All units are $\mu\text{g}/\text{kg}$

*Laboratory Analytical Laboratory: AnalytiKEM, Inc.
Rock Hill, South Carolina*

from R1646-92

Appendix A

ENSCI Report

**Comprehensive Tile Pile Testing Program
And Treatability Study
Mannington Ceramic Tile
Lexington, North Carolina
October 20, 1992**

Tile Pile Closure
611024
February 11, 1997

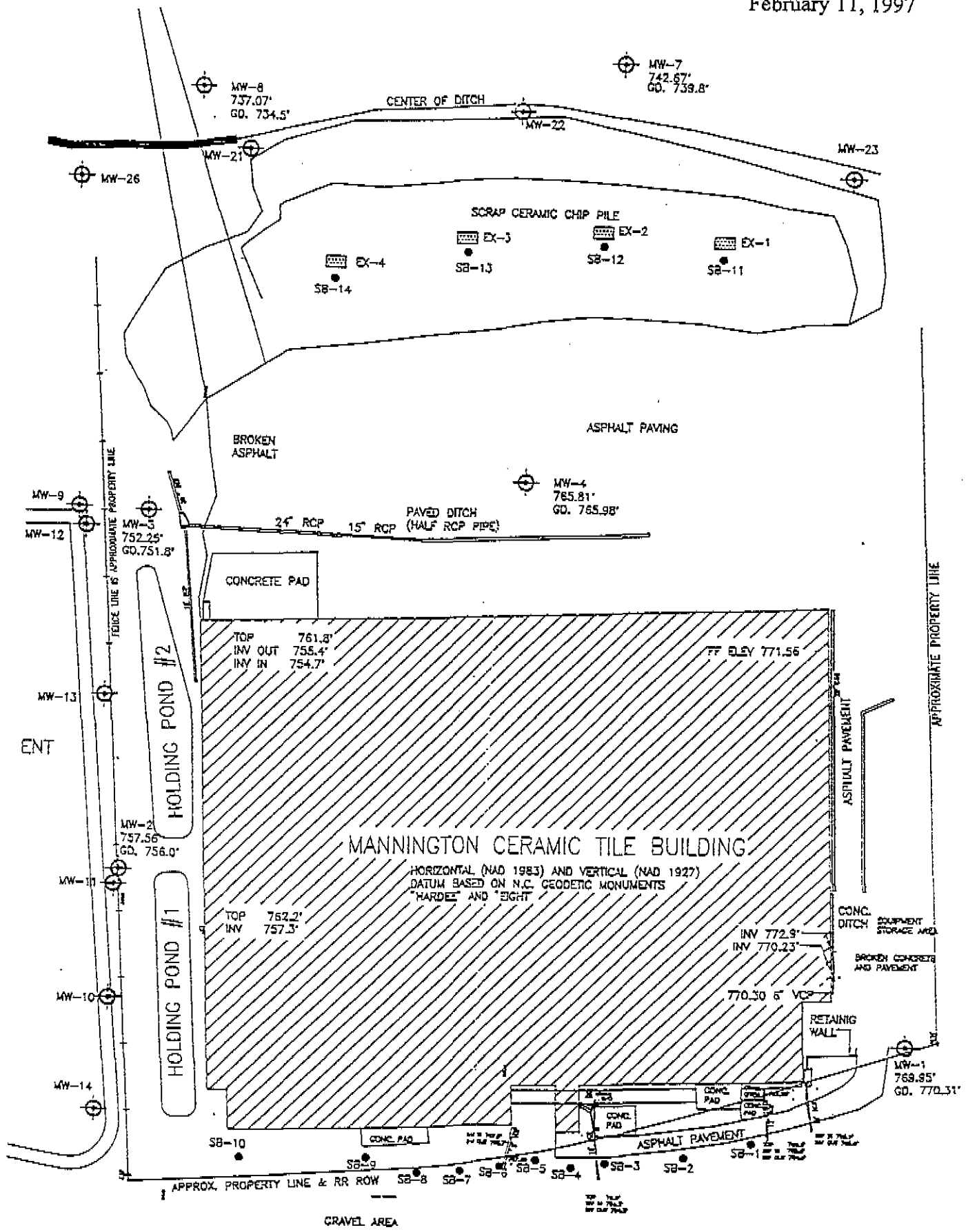


Table 1 **Results of Soil Analysis for Metals Using TCLP from Comprehensive
Tile Pile Testing Program and Treatability Study, Mannington
Ceramic Tile, Lexington, North Carolina**

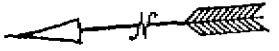
| Parameter | SB-13-40 | SB-14-45 |
|-----------|----------|----------|
| Arsenic | < 0.29 | < 0.29* |
| Barium | < 5.2 | < 5.2 |
| Cadmium | < 0.050 | < 0.050 |
| Chromium | < 0.33 | < 0.33 |
| Lead | < 0.34 | < 0.34 |
| Mercury | < 0.018 | < 0.018 |
| Selenium | < 0.049 | < 0.049 |
| Silver | < 0.12 | < 0.12 |

ENSCI October 20, 1992, Report

Appendix A

Terra Technologies Group Report

**1995 Annual Groundwater Assessment Update Report
Former Wastewater Holding Ponds And Waste Ceramic Tile Pile
P & M Tile, Inc. Facility
Lexington, North Carolina
March 14, 1996**



| LEGEND | |
|---------|--------------------------|
| SYMBOLS | |
| | MONITORING WELL LOCATION |
| | BUILDING LOCATION |
| | SCRAP CERAMIC CHIP PILE |

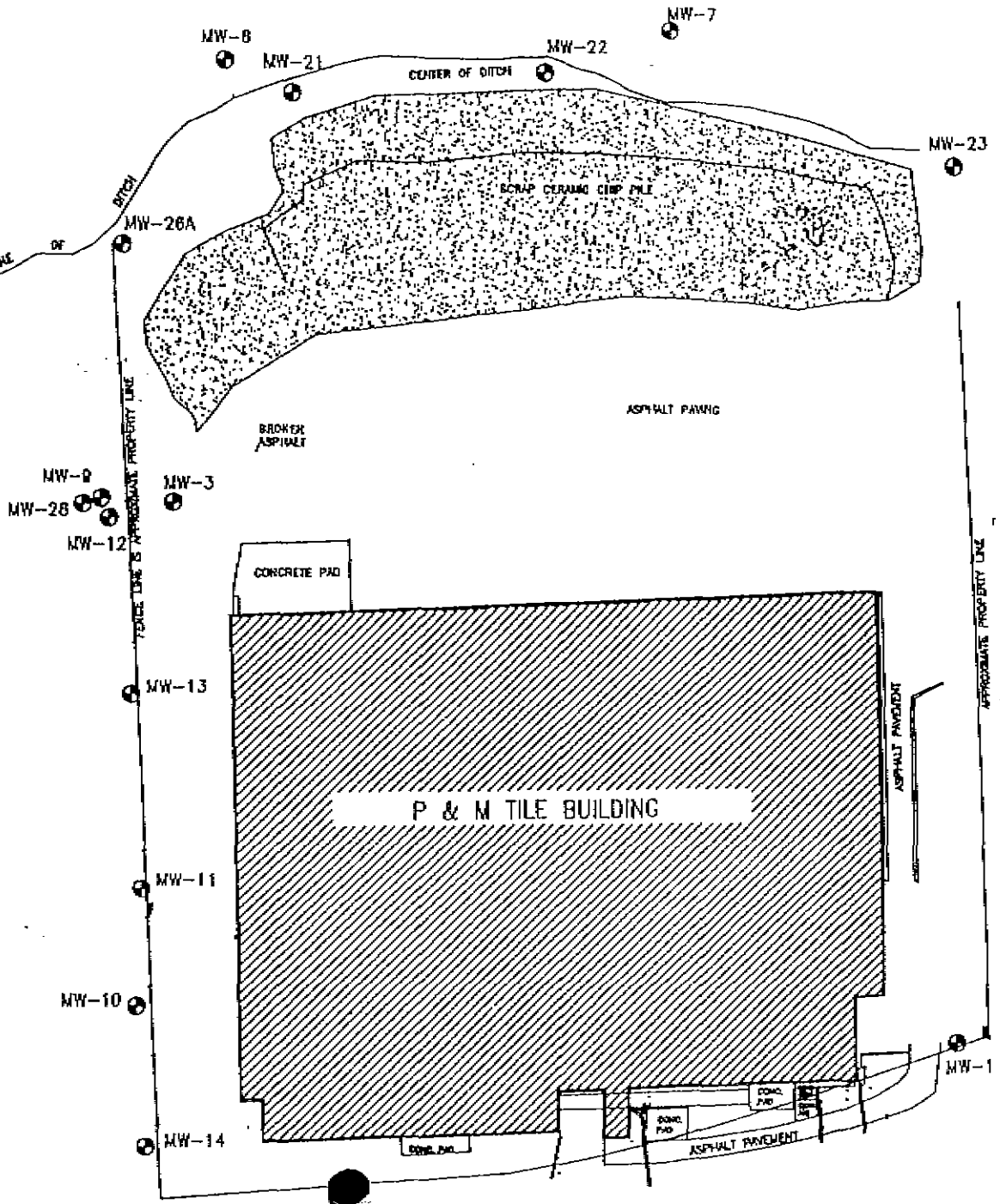


FIGURE 2

| | | | |
|----------------|----------------------------------|---------------|------------------|
| | | SITE MAP | |
| | | DATE: 3/14/96 | SCALE: 1" = 100' |
| PROJECT: P & M | LOCATION: LEXINGTON, N. CAROLINA | | |

Table 4
1995 Year End Mean Values
Exceeding 15A NCAC 2L Standards

Group A Wells (4 testing events)

| Parameter | Standards | MW-7 | MW-21 | MW-22 | MW-23 | MW-26A |
|------------|-----------|------|-------|-------|-------|--------|
| Boron | 0.32 | NA | 7.79 | 5.74 | NA | 47.73 |
| Gross Beta | 1.7* | NA | 2.65 | 1.65 | NA | 19.48 |

Group B Wells (2 testing events)

| Parameter | Standards | MW-9 | MW-10 | MW-12 | MW-13 | MW-25 | MW-28 |
|-----------|-----------|-------|-------|-------|-------|-------|-------|
| Cobalt | 0.025 | BDL | BDL | .164 | .035 | BDL | BDL |
| Nickel | 0.01 | 0.086 | BDL | .123 | BDL | BDL | BDL |

Group C Wells
No Exceedences

Group D Wells
No Testing Performed In 1995

Laboratory Did Not Meet Holding Times For December Samples

Group E Wells (4 testing events)

| Parameter | Standards | MW-1 | MW-21 | MW-22 | MW-26A |
|------------|-----------|--------|-------|-------|--------|
| Boron | 0.32 | .296 | 7.79 | 5.74 | 47.73 |
| Cobalt | 0.005 | .034** | BDL | BDL | BDL |
| Gross Beta | 1.7* | 3.28 | 3.48 | 1.65 | 19.48 |

*- 2L Standard is in pCi/L

** - Mean based on three sampling events in 1995

Table A-1
March 1995 Quarterly Sampling Event
Analytical Results Exceeding 15A NCAC 2L Ground Water Standards
Results Reported In mg/L

| Parameter | Standards | MW-1 | MW-21 | MW-22 | MW-23 | MW-26A |
|------------|-----------|------|-------|-------|-------|--------|
| Boron | 0.32 | 341 | 6.18 | 5.64 | NA | 80.8 |
| NO3-N | 10.0 | NA | BDL | .875 | 11.0 | BDL |
| Gross Beta | 1.7* | 3.7 | 3.2 | 1.4 | NA | 20.4 |

*2L Standard is in pCi/L

NA - No Analysis

Table A-2
June 1995 Quarterly Sampling Event
Analytical Results Exceeding 15A NCAC 2L Ground Water Standards
Results Reported In mg/L

| Parameter | Standards | MW-1 | MW-3 | MW-7 | MW-9 | MW-10 | MW-12 | MW-12D |
|------------|-----------|------|-------|------|------|-------|-------|--------|
| Boron | 0.32 | .202 | NA | NA | NA | NA | NA | NA |
| Cadmium | 0.005 | BDL | BDL | BDL | BDL | BDL | 0.010 | 0.012 |
| Chromium | 0.05 | BDL | 0.066 | BDL | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | .033 | BDL | BDL | BDL | BDL | 0.210 | 0.244 |
| Gross Beta | 1.7* | 3.1 | NA | NA | NA | NA | NA | NA |
| Nickel | .01 | BDL | BDL | BDL | .078 | BDL | 0.162 | 0.194 |
| NO3-N | 10.0 | 1.30 | 1.20 | 5 | 2.80 | 4.10 | 2.90 | 5.30 |
| Vanadium | 0.02 | BDL | BDL | .024 | BDL | BDL | BDL | BDL |

Table A-2 Continued

| Parameter | Standards | MW-13 | MW-21 | MW-22 | MW-23 | MW-26A |
|------------|-----------|-------|-------|-------|-------|--------|
| Boron | 0.32 | NA | 9.72 | 6.20 | NA | 37.0 |
| Cadmium | 0.005 | BDL | BDL | BDL | .010 | BDL |
| Chromium | 0.05 | BDL | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | 0.042 | BDL | BDL | BDL | BDL |
| Gross Beta | 1.7* | NA | 3.3 | BDL | NA | 21.1 |
| Nickel | .01 | BDL | BDL | BDL | BDL | BDL |
| NO3-N | 10.0 | 2.00 | BDL | 0.600 | 6.40 | 0.120 |
| Vanadium | 0.02 | BDL | BDL | BDL | BDL | BDL |

*2L Standard is in pCi/L
NA - No Analysis

Table A-3
September 1995 Quarterly Sampling Event
Analytical Results Exceeding 15A NCAC 2L Ground Water Standards
Results Reported In mg/L

| Parameter | Standards | MW-1 | MW-7 | MW-18 | MW-21 | MW-22 | MW-23 | MW-26A |
|--------------|-----------|--------|-------|-------|-------|-------|-------|--------|
| Boron | 0.32 | 0.31 | NA | NA | 11.2 | 4.89 | NA | 29.3 |
| Cadmium | 0.005 | BDL | BDL | BDL | BDL | BDL | 0.01 | BDL |
| Gross Beta | 1.7* | 3.2 | NA | NA | 4.1 | 1.4 | NA | 21.8 |
| Lead | 0.015 | 0.0046 | BDL | 0.028 | 0.006 | BDL | 0.006 | 0.0034 |
| Soluble Lead | 0.015 | NT | NT | BDL | NT | NT | NT | NT |
| Vanadium | 0.02 | BDL | 0.024 | BDL | BDL | BDL | BDL | BDL |

*2L Standard is in pCi/L

NA - No Analysis

Table A-4
December 1995 Quarterly Sampling Event
Analytical Results Exceeding 15A NCAC 2L Ground Water Standards
Results Reported In mg/L

| Parameter | Standards | MW-1 | MW-9 | MW-12 | MW-21 | MW-22 | MW-25 | MW-26A |
|-------------|-----------|------|------|-------|-------|-------|-------|--------|
| Boron | 0.32 | .332 | NA | NA | 4.07 | 6.24 | NA | 43.8 |
| Cadmium | 0.005 | BDL | .008 | 0.006 | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | .036 | BDL | 0.117 | BDL | BDL | BDL | BDL |
| Gross Alpha | 15p Ci/L | 1.9 | 7.0 | 16.5 | BDL | 3.5 | 1.9 | 5.6 |
| Gross Beta | 1.7* | 3.1 | NA | NA | BDL | 3.8 | NA | 14.6 |
| Sulfate | 250 | BDL | 310 | 294 | BDL | 11.4 | 20.5 | 11.4 |
| Titanium | 0.1 | BDL | BDL | BDL | BDL | BDL | 0.178 | BDL |
| Radium 226 | 5P Ci/L | 1.0 | 1.0 | 1.0 | .8 | 0.9 | 1.0 | 1.7 |
| Radium 228 | 5P Ci/L | BDL | BDL | 1.9 | BDL | BDL | BDL | 2.1 |

Table A-4 Continued

| Parameter | Standards | MW-28 |
|-------------|-----------|-------|
| Boron | 0.32 | NA |
| Cadmium | 0.005 | BDL |
| Cobalt | 0.025 | BDL |
| Gross Alpha | 15p Ci/L | 4.3 |
| Gross Beta | 1.7* | NA |
| Sulfate | 250 | 392 |
| Titanium | 0.1 | BDL |
| Radium 226 | 5P Ci/L | 3.4** |
| Radium 228 | 5P Ci/L | 2.0** |

*2L Standard is in pCi/L

** 2L Standard for radium 226 and radium 228 (combined): 5p Ci/L

NA - No Analysis

Tile Pile Closure
611024
February 11, 1997

Appendix A

Terra Technologies Group Report

**Second Quarter 1996
Groundwater Assessment Report
Porcelanite, Inc.
Lexington, North Carolina
October 28, 1996**

**Table 4
Groundwater Analytical Results**

| Parameter | 15A NCAC 2L STD (mg/L) | Monitoring Well Identification | | | | | | | | | | | |
|--------------|------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| | | MW#1 | MW#2 | MW#7 | MW#8 | MW#9 | MW#10 | MW#11 | MW#12 | MW#13 | MW#14 | MW#15 | |
| Boron | 0.32 | 0.209 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| Barium | 2.0 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Cadmium | 0.005 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | 0.005 | BDL | BDL | BDL |
| Chromium | 0.05 | BDL | BDL | 0.028 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | 0.037 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | 0.099 | 0.032 | BDL | BDL |
| Lead | 0.015 | BDL | 0.003 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Mercury | 0.0011 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Nickel | 0.10 | BDL | BDL | BDL | BDL | 0.037 | BDL | BDL | BDL | 0.070 | BDL | BDL | BDL |
| Silver | 0.018 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Praseodymium | 0.050 | BDL | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| Vanadium | 0.020 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Fluoride | 2.0 | BDL | BDL | BDL | BDL | 0.430 | 2.60 | BDL | 0.380 | 0.10 | 0.100 | BDL | |
| Nitrate | 10.0 | 1.10 | 1.73 | 0.925 | 0.060 | 3.20 | 1.88 | 1.78 | 2.45 | 1.35 | 5.88 | 1.60 | |
| Sulfate | 250.0 | BDL | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | |
| Bromide | 0.50 | BDL | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | |
| Gross Beta | 0.5 pCi/L | 3.1 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | |

Note: Results are reported in mg/L; 15A NCAC 2L standards for each compound are as shown, if no standard has been codified then the method detection limit is considered the standard.

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Tile Pile Closure
 611024
 February 11, 1997

Table 4 (cont.)
Groundwater Analytical Results

| PARAMETER | 15A NCAC 1E STD (mg/L) | Monitoring Well Identification | | | | | | | | | |
|--------------|------------------------------|--------------------------------|-------|-------|-------|-------|--------|--------|-------|-----------------|-------------|
| | | MW#19 | MW#21 | MW#22 | MW#23 | MW#24 | MW#25 | MW#26A | MW#28 | Travel Blank | Field Blank |
| Boron | 0.32 | NR | 5.47 | 4.06 | NR | NR | NR | 52.2 | NR | BDL | BDL |
| Barium | 2.0 | BDL | 0.196 | BDL | BDL | BDL | BDL | 1.11 | BDL | BDL | BDL |
| Cadmium | 0.005 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Chromium | 0.05 | BDL | BDL | BDL | 0.014 | BDL | 0.014 | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Lead | 0.015 | 0.005 | BDL | BDL | BDL | BDL | 0.0045 | BDL | 0.003 | BDL | BDL |
| Mercury | 0.0011 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Nickel | 0.10 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Silver | 0.018 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Praseodymium | 0.050 | NR | BDL | BDL | NR | NR | NR | BDL | NR | BDL | BDL |
| Vanadium | 0.020 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Fluoride | 2.0 | BDL | BDL | BDL | BDL | BDL | BDL | 0.17 | 0.10 | BDL | BDL |
| Nitrate | 10.0 | 1.67 | BDL | 1.18 | 0.100 | 1.63 | 1.33 | 0.140 | 0.760 | 1.67 | 0.160 |
| Sulfate | 250.0 | NR | 12.6 | 6.27 | NR | NR | NR | BDL | NR | BDL | BDL |
| Bromide | 0.50 | NR | BDL | BDL | NR | NR | NR | BDL | NR | BDL | BDL |
| Gross Beta | 0.5 pCi/L | NR | 3.6 | 1.3 | NR | NR | NR | 14.6 | NR | BDL | BDL |

Note: Results are reported in mg/L; 15A NCAC 2L standards for each compound are as shown; if no standard has been codified then the method detection limit is considered the standard.

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Tile Pile Closure
611024
February 11, 1997

Tile Pile Closure
611024
February 11, 1997

Appendix A

Terra Technologies Group Report

**Third Quarter 1996
Groundwater Assessment Report
Porcelanite, Inc.
Lexington, North Carolina
November 4, 1996**

Table 3
Groundwater Analytical Results
September 18, 1996

| PARAMETER | 15A NCAC 2L STD. (mg/L) | Monitoring Well Identification | | | | | | | | | |
|--------------|-------------------------|--------------------------------|--------|-------|--------|--------|--------|-------|--------|--------|-------|
| | | MW#1 | MW#7 | MW#8 | MW#18 | MW#21 | MW#22 | MW#23 | MW#26A | TRIP | TRIP |
| Boron | 0.32 | 0.240 | NR | NR | NR | 6.34 | BDL | NR | 102.6 | BDL | BDL |
| Barium | 2.0 | NR | BDL | 0.131 | BDL | 0.200 | BDL | BDL | 0.973 | BDL | BDL |
| Cadmium | 0.005 | NR | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Chromium | 0.05 | NR | 0.014 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Cobalt | 0.025 | NR | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Lead | 0.015 | NR | 0.0037 | 0.004 | 0.0032 | 0.0047 | 0.0034 | 0.005 | 0.0067 | 0.0041 | BDL |
| Mercury | 0.0011 | NR | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Nickel | 0.10 | NR | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Silver | 0.018 | NR | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Praseodymium | 0.050 | BDL | NR | NR | NR | BDL | BDL | NR | BDL | BDL | BDL |
| Vanadium | 0.020 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |
| Fluoride | 2.0 | NR | 0.190 | 0.140 | BDL | 0.120 | 0.140 | BDL | 1.80 | BDL | BDL |
| Nitrate | 10.0 | NR | 0.450 | 0.070 | 1.80 | 0.130 | 0.350 | 0.070 | 0.050 | BDL | 0.060 |
| Sulfate | 250.0 | 5.07 | NR | NR | NR | 10.8 | BDL | NR | 38.6 | BDL | BDL |
| Bromide | 0.50 | BDL | NR | NR | NR | BDL | BDL | NR | BDL | BDL | BDL |
| Gross Beta | 0.5 pCi/L | 3.7 | NR | NR | NR | 2.3 | 1.1 | NR | 20.5 | BDL | BDL |

Note: Results are reported in mg/L; 15A NCAC 2L standards for each compound are as shown. If no standard has been codified then the method detection limit is considered the standard.

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Tile Pile Closure
611024
February 11, 1997



Title Pile Closure
610024
February 11, 1997

APPENDIX B
DECEMBER 1996 INVESTIGATION

**Table 1 Analytical Results for Tile Pile Material Sampled on
December 10, 1996, Porcelanite, Inc., Lexington, North Carolina**

| Parameter | SB-1-15' (mg/kg) | SB-4-10' (mg/kg) |
|--------------------------|---------------------|---------------------|
| Arsenic | < 1.03 | < 1.10 |
| Barium | 659 | 401 |
| Cadmium | 0.905 | 1.84 |
| Chromium | 4.46 | 4.50 |
| Lead | 1090 | 17,400 |
| Mercury | < 0.206 | < 0.221 |
| Selenium | < 1.03 | < 1.10 |
| Silver | < 1.03 | < 1.10 |
| Cobalt | 14.5 | 9.84 |
| Manganese | 44.5 | 43.5 |
| Nickel | 14.3 | 2.10 |
| Zinc | 4900 | 3080 |
| Titanium | 120 | 77.2 |
| Vanadium | 15.8 | 11.2 |
| Boron | 426 | 90.8 |
| Praseodymium | 10.8 | < 11.0 |
| Bromide | < 10.0 | < 10.0 |
| Phenols | < 0.112 | < 0.120 |
| Sulfate | 69.7 | 33.9 |
| Nitrate | 4.40 | 0.420 |
| Gross alpha ² | 13.3 | 17.5 |
| Gross beta ² | 14.9 | 16.7 |

1 = Less than or below detection limits

2 = Concentration in pCi/g (picocuries/gram)

< = All metals analyses are totals.

Aquaterra Job No. 3105801

611024.Dir

**Table 2 Analytical Results for Native Soils Sampled on December 10, 1996,
Porcelanite, Inc., Lexington, North Carolina**

| Parameter | SB-5-2.5 (mg/kg) | SB-6-2.5 (mg/kg) | HA-1 (mg/kg) | HA-2 (mg/kg) | HA-3 (mg/kg) | HA-4 (mg/kg) | HA-5 (mg/kg) |
|--------------------------|---------------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Arsenic | < 1.16 | < 1.34 | < 1.48 | < 1.12 | < 1.10 | < 1.34 | < 1.05 |
| Barium | 27.4 | 155 | 294 | 67.7 | 176 | 163 | 48.4 |
| Cadmium | 4.60 | 4.18 | 2.32 | 2.71 | < 0.221 | 1.67 | 0.283 |
| Chromium | 20.8 | 29.0 | 31.2 | 55.1 | 9.12 | 122 | 1.08 |
| Lead | 20.1 | 19.7 | 501 | 55.0 | 7.54 | 12.1 | 18.8 |
| Mercury | < 0.232 | < 0.268 | < 0.296 | < 0.224 | < 0.221 | 0.338 | < 0.211 |
| Selenium | < 1.16 | < 1.34 | < 1.48 | < 1.12 | < 1.10 | < 1.34 | < 1.05 |
| Silver | < 1.16 | < 1.34 | < 1.48 | < 1.12 | < 1.10 | < 1.34 | < 1.05 |
| Cobalt | 7.90 | 1.88 | 17.7 | 17.1 | 5.50 | 8.60 | 4.22 |
| Manganese | 273 | 29.2 | 307 | 589 | 15.4 | 56.6 | 353 |
| Nickel | 6.14 | 2.95 | 7.98 | 5.94 | 2.64 | 12.0 | 3.27 |
| Zinc | 45.5 | 33.7 | 1,430 | 104 | 22.5 | 42.7 | 27.3 |
| Titanium | 418 | 19.1 | 312 | 232 | 33.8 | 738 | 67.7 |
| Vanadium | 131 | 736 | 59.3 | 79.5 | 29.7 | 187 | 7.03 |
| Boron | 127 | 104 | 60.8 | 59.4 | < 11.0 | 51.5 | < 10.5 |
| Praseodymium | < 11.6 | < 13.4 | 23.1 | < 11.2 | 12.5 | 18.1 | < 10.5 |
| Bromide | < 10.0 | < 10.0 | NR | < 10.0 | NR | NR | NR |
| Phenols | < 0.122 | < 0.146 | < 0.161 | < 0.122 | < 0.119 | < 0.146 | < 0.115 |
| Sulfate | 173 | 205 | 285 | 190 | 241 | 95.1 | 94.0 |
| Nitrate | 0.953 | 0.893 | 2.16 | 2.48 | 2.87 | 2.47 | 0.713 |
| Gross alpha ² | 7.2 | NR | NR | NR | NR | 7.0 | 12.4 |
| Gross beta ⁴ | 8.5 | NR | NR | NR | NR | 4.1 | 48.5 |

1 = All metals analyses are totals

2 = Concentration in pCi/g (picocuries/gram)

< = Less than or below detection limits

NR = Not requested

Aquaterra Job No. 3105801 611024.Dir

**Table 3 TCLP Analytical Results for Composite Tile Material Sampled
on December 10, 1996, Porcelanite, Inc., Lexington, North Carolina**

| Parameter | Comp-1 Chip Pile |
|-----------|---------------------|
| Arsenic | < 0.010 |
| Barium | 1.87 |
| Cadmium | 0.011 |
| Chromium | 0.025 |
| Lead | 187 |
| Mercury | < 0.0004 |
| Selenium | < 0.100 |
| Silver | < 0.010 |

*< = Less than or below detection limits
Results in mg/L*

Aquaterra Job No. 3105801

611024.Dir

Boring /Well Construction Log

Well Construction Permit Number

N/A

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-----------------------|
| L. D. Number | SB-1 | Purpose | soil/tile samples |
| Project Name | Porcelanite Tile Inc. | Contractor | Engineering Tectonics |
| Project No. | 3105801 | Registration No. | |
| Geologist | Cyrus F. Parker, Jr. | Driller | Ronnie |
| Start Date | 12/10/96 | Complete Date | 12/10/96 |
| | | Equipment | Mobil B-50 |

| Drilling Method | | | |
|-------------------------------|-----------------|--|-------------------------------|
| Comments | | 6.25" Hollow stem augers | |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | FID / PID (ppm) @ Depth (ft.) |
| Borehole Dia. 6.25" | 0-15' | white clay tile chips, dry | N/A |
| Riser Type N/A | 15-30' | white clay tile chips, dry / brown and tan | N/A |
| Diameter N/A | | sandy clay w/ green lenses, moist | N/A |
| Screen Type N/A | | tile ends ~ 30' | N/A |
| Diameter N/A | | | N/A |
| Riser Interval N/A | | boring terminated @ 30' | N/A |
| Screen Interval N/A | | | |
| Slot Size N/A | | | |
| Grout Type N/A | | | |
| Interval N/A | | | |
| Bentonite Type N/A | | | |
| Interval N/A | | | |
| Filter Pack N/A | | | |
| Interval N/A | | | |
| Total Depth 30' | | | |
| R.P. Elevation | | | |
| Datum | | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

N/A

Aquaterra, Inc.

| | | | |
|--------------|------------------------------|------------------|------------------------------|
| I. D. Number | <u>SB-2</u> | Purpose | <u>soil/tile samples</u> |
| Project Name | <u>Porcelanite Tile Inc.</u> | Contractor | <u>Engineering Tectonics</u> |
| Project No. | <u>3105801</u> | Registration No. | |
| Geologist | <u>Cyrus F. Parker, Jr.</u> | Driller | <u>Ronnie</u> |
| Start Date | <u>12/10/96</u> | Complete Date | <u>12/10/96</u> |
| | | Equipment | <u>Mobil B-50</u> |

| | | | |
|--------------------------------------|------------------------|---|------------------|
| Drilling Method | | <i>6.25" Hollow Stem Auger</i> | |
| Comments | | | |
| | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. 6.25" | 0-10' | white clay tile chips, dry | |
| Riser Type N/A | 10-15' | white clay tile chips, moist | |
| Diameter N/A | 15' | brown tan sandy clay moist | |
| Screen Type N/A | | | |
| Diameter N/A | | boring terminated @ 15' | |
| Riser Interval N/A | | | |
| Screen Interval N/A | | | |
| Slot Size N/A | | | |
| Grout Type N/A | | | |
| Interval N/A | | | |
| Bentonite Type N/A | | | |
| Interval N/A | | | |
| Filter Pack N/A | | | |
| Interval N/A | | | |
| Total Depth 15' | | | |
| R.P. Elevation | | | |
| Datum | | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

N/A

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-----------------------|
| A. D. Number | SB-3 | Purpose | soil/tile samples |
| Project Name | Porcelanite Tile Inc. | Contractor | Engineering Tectonics |
| Project No. | 3105801 | Registration No. | |
| Geologist | Cyrus F. Parker, Jr. | Driller | Ronnie |
| Start Date | 12/10/96 | Complete Date | 12/10/96 |
| | | Equipment | Mobil B-50 |

| Well Construction Information | | Depth From - To | Soil / Rock Description / Comments | FID / PID (ppm) @ Depth (ft.) |
|---|-----------------|-----------------|---|-------------------------------|
| Drilling Method 6.25" Hollow Stem Auger | | | | |
| Comments | | | | |
| Borehole Dia. | 6.25" | 0-5' | white clay tiles, dry | |
| Riser Type | N/A | 5-10' | white clay tiles, moist | |
| Diameter | N/A | 10-15' | clay tiles (chips and powder) w/ brown tan sandy | |
| Screen Type | N/A | | clay | |
| Diameter | N/A | 15-20' | wet clay powder w/ brown sandy clay | |
| Riser Interval | N/A | 20-25' | white and tan clayey sand, mica (saprolite) moist | |
| Screen Interval | N/A | | | |
| Slot Size | N/A | | boring terminated @ 25' | |
| Grout Type | N/A | | | |
| Interval | N/A | | | |
| Bentonite Type | N/A | | | |
| Interval | N/A | | | |
| Filter Pack | N/A | | | |
| Interval | N/A | | | |
| Total Depth | 25' | | | |
| R.P. Elevation | | - | | |
| Datum | | - | | |
| Water Level Information | | - | | |
| Date | W.L. Below R.P. | - | | |
| | | - | | |
| | | - | | |
| | | - | | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-----------------------|
| L. D. Number | SB-4 | Purpose | soil/tile samples |
| Project Name | Porcelanite Tile Inc. | Contractor | Engineering Tectonics |
| Project No. | 3105801 | Registration No. | |
| Geologist | Cyrus F. Parker, Jr. | Driller | Ronnie |
| Start Date | 12/10/96 | Complete Date | 12/10/96 |
| | | Equipment | Mobil B-50 |

| | | | |
|--------------------------------------|------------------------|---|------------------|
| Drilling Method | | 6.25" hollow stem auger | |
| Comments | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. 6.25" | 0-5' | white to gray clay tile chips and powder, moist | |
| Riser Type N/A | 5-10' | white clay tile chips, cardboard joint @ 11' | |
| Diameter N/A | 10-18' | white clay tile chips, moist | |
| Screen Type N/A | 18-20' | brown/ tan clayey sand, wet | |
| Diameter N/A | | | |
| Riser Interval N/A | | boring terminated @ 20' | |
| Screen Interval N/A | | | |
| Slot Size N/A | | | |
| Grout Type N/A | | | |
| Interval N/A | | | |
| Bentonite Type N/A | | | |
| Interval N/A | | | |
| Filter Pack N/A | | | |
| Interval N/A | | | |
| Total Depth 20' | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-----------------------|
| I. D. Number | SB-5 | Purpose | soil/tile samples |
| Project Name | Porcelanite Tile Inc. | Contractor | Engineering Tectonics |
| Project No. | 3105801 | Registration No. | |
| Geologist | Cyrus F. Parker, Jr. | Driller | Ronnie |
| Start Date | 12/10/96 | Complete Date | 12/10/96 |
| | | Equipment | Mobil B-50 |

| | | | | |
|--------------------------------------|------------------------|-------------------------|--|-----------------------|
| Drilling Method | | 6.25" hollow stem auger | | |
| Comments | | | | |
| | | | | |
| | | | | SPT |
| Well Construction Information | | Depth From - To | Soil / Rock Description / Comments | blows per foot |
| Borehole Dia. | 6.25" | 0-2.5' | red & gray clay w/ dark green lenses, wet | 1-2-8-13 |
| Riser Type | N/A | 2.5-5' | gray green clay w/ quartz pebbles & brown/red | 9-5-7-9 |
| Diameter | N/A | | sand w/ mica (saprolite) | |
| Screen Type | N/A | 5-10' | rust colored saprolite, high mica and quartz content | 16-26-50/6 |
| Diameter | N/A | 10-15' | rock chips similar to gneiss, high mica and quartz | 50/5 |
| Riser Interval | N/A | | content | |
| Screen Interval | N/A | | | |
| Slot Size | N/A | | Auger Refusal @ 16.5' | |
| Grout Type | N/A | | | |
| Interval | N/A | | | |
| Bentonite Type | N/A | | | |
| Interval | N/A | | | |
| Filter Pack | N/A | | | |
| Interval | N/A | | | |
| Total Depth | 16.5' | | | |
| R.P. Elevation | | | | |
| Datum | | - | | |
| Water Level Information | | - | | |
| Date | W.L. Below R.P. | - | | |
| | | - | | |
| | | - | | |
| | | - | | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|------------------------------|------------------|------------------------------|
| I. D. Number | <u>SB-5</u> | Purpose | <u>soil/tile samples</u> |
| Project Name | <u>Porcelanite Tile Inc.</u> | Contractor | <u>Engineering Tectonics</u> |
| Project No. | <u>3105801</u> | Registration No. | |
| Geologist | <u>Cyrus F. Parker, Jr.</u> | Driller | <u>Ronnie</u> |
| Start Date | <u>12/10/96</u> | Complete Date | <u>12/10/96</u> |
| | | Equipment | <u>Mobil B-50</u> |

| Well Construction Information | | Depth From - To | Soil / Rock Description / Comments | SPT blows per foot |
|--|-----------------|-----------------|---|--------------------|
| Drilling Method <u>6.25" hollow stem auger</u> | | | | |
| Comments | | | | |
| Borehole Dia. | <u>6.25"</u> | <u>0-2.5'</u> | <u>red clay w/ roots, moist</u> | <u>4-3-3-8</u> |
| Riser Type | <u>N/A</u> | <u>2.5-5'</u> | <u>red, tan, gray, & green clays w/ roots & small rocks</u> | <u>4-5-7-9</u> |
| Diameter | <u>N/A</u> | <u>5-10'</u> | <u>red clay w/ tan clay lenses, green micaceous</u> | <u>5-8-11-14</u> |
| Screen Type | <u>N/A</u> | | <u>saprolite w/ rust staining</u> | |
| Diameter | <u>N/A</u> | <u>10-15'</u> | <u>green micaceous saprolite</u> | <u>50/4</u> |
| Riser Interval | <u>N/A</u> | | | |
| Screen Interval | <u>N/A</u> | | <u>Auger Refusal @ 16'</u> | |
| Slot Size | <u>N/A</u> | | | |
| Grout Type | <u>N/A</u> | | | |
| Interval | <u>N/A</u> | | | |
| Bentonite Type | <u>N/A</u> | | | |
| Interval | <u>N/A</u> | | | |
| Filter Pack | <u>N/A</u> | | | |
| Interval | <u>N/A</u> | | | |
| Total Depth | <u>16'</u> | | | |
| R.P. Elevation | | - | | |
| Datum | | - | | |
| Water Level Information | | - | | |
| Date | W.L. Below R.P. | - | | |
| | | - | | |
| | | - | | |
| | | - | | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style I.

Boring / Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-------------|
| B. D. Number | HA-1 | Purpose | soil sample |
| Project Name | Porcelanite Tile Inc. | Contractor | NA |
| Project No. | 3105801 | Registration No. | NA |
| Geologist | Cyrus F. Parker, Jr. | Driller | NA |
| Start Date | 12/11/96 | Complete Date | 12/11/96 |
| | | Equipment | Hand Auger |

| | | | |
|-------------------------------|-----------------|------------------|--|
| Drilling Method | | 3.25" Hand Auger | |
| Comments | | | |
| | | | FID / PID |
| | | | (ppm) |
| Well Construction Information | | Depth From - To | Soil / Rock Description / Comments |
| Borehole Dia. | 3.25" | 0-1' | Red sandy clay moist |
| Riser Type | N/A | | augered down to 1.5' and water immediately entered |
| Diameter | N/A | | the hole |
| Screen Type | N/A | | |
| Diameter | N/A | | boring terminated @ 1.5' |
| Riser Interval | N/A | | |
| Screen Interval | N/A | | |
| Slot Size | N/A | | |
| Grout Type | N/A | | |
| Interval | N/A | | |
| Bentonite Type | N/A | | |
| Interval | N/A | | |
| Filter Pack | N/A | | |
| Interval | N/A | | |
| Total Depth | 1.5' | | |
| R.P. Elevation | | | |
| Datum | | | |
| - | | | |
| Water Level Information | | | |
| - | | | |
| Date | W.L. Below R.P. | - | |
| | | - | |
| | | - | |
| | | - | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|------------------------------|------------------|--------------------|
| I. D. Number | <u>HA-2</u> | Purpose | <u>soil sample</u> |
| Project Name | <u>Porcelanite Tile Inc.</u> | Contractor | <u>NA</u> |
| Project No. | <u>3105801</u> | Registration No. | <u>NA</u> |
| Geologist | <u>Cyrus F. Parker, Jr.</u> | Driller | <u>NA</u> |
| Start Date | <u>12/10/96</u> | Complete Date | <u>12/10/96</u> |
| | | Equipment | <u>Hand Auger</u> |

| | | | |
|--------------------------------------|------------------------|---|------------------|
| Drilling Method | | <u>3.25" Hand Auger</u> | |
| Comments | | | |
| | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. <u>3.25"</u> | <u>0-1'</u> | <u>red silty clay w/ roots</u> | |
| Riser Type <u>N/A</u> | <u>1-4'</u> | <u>red silty clay, moist</u> | |
| Diameter <u>N/A</u> | | | |
| Screen Type <u>N/A</u> | | | |
| Diameter <u>N/A</u> | | | |
| Riser Interval <u>N/A</u> | | | |
| Screen Interval <u>N/A</u> | | | |
| Slot Size <u>N/A</u> | | | |
| Grout Type <u>N/A</u> | | | |
| Interval <u>N/A</u> | | | |
| Bentonite Type <u>N/A</u> | | | |
| Interval <u>N/A</u> | | | |
| Filter Pack <u>N/A</u> | | | |
| Interval <u>N/A</u> | | | |
| Total Depth <u>4'</u> | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | - | |
| Date | W.L. Below R.P. | - | |
| | | - | |
| | | - | |
| | | - | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring / Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|------------------------------|------------------|--------------------|
| I. D. Number | <u>HA-3</u> | Purpose | <u>soil sample</u> |
| Project Name | <u>Porcelanite Tile Inc.</u> | Contractor | <u>NA</u> |
| Project No. | <u>3105801</u> | Registration No. | <u>NA</u> |
| Geologist | <u>Cyrus F. Parker, Jr.</u> | Driller | <u>NA</u> |
| Start Date | <u>12/11/96</u> | Complete Date | <u>12/11/96</u> |
| | | Equipment | <u>Hand Auger</u> |

| Drilling Method | | 3.25" Hand Auger | |
|-------------------------------|-----------------|------------------------------------|---------------|
| Comments | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. 3.25" | 0-2' | Red brown sandy clay | |
| Riser Type N/A | 2-3' | tan sandy & silty clay | |
| Diameter N/A | 3-4' | tan clay w/ gray lenses | |
| Screen Type N/A | 4-5' | gray clay | |
| Diameter N/A | | | |
| Riser Interval N/A | | boring terminated @ 5' | |
| Screen Interval N/A | | | |
| Slot Size N/A | | | |
| Grout Type N/A | | | |
| Interval N/A | | | |
| Bentonite Type N/A | | | |
| Interval N/A | | | |
| Filter Pack N/A | | | |
| Interval N/A | | | |
| Total Depth 5' | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | | |
| | | | |
| | | | |
| | | | |

R.P. = Reference Point

W.L. = Water Level

TBM = Temporary Benchmark

MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

| | | | |
|--------------|-----------------------|------------------|-------------|
| I. D. Number | HA-4 | Purpose | soil sample |
| Project Name | Porcelanite Tile Inc. | Contractor | NA |
| Project No. | 3105801 | Registration No. | NA |
| Geologist | Cyrus F. Parker, Jr. | Driller | NA |
| Start Date | 12/11/96 | Complete Date | 12/11/96 |
| | | Equipment | Hand Auger |

| | | | |
|--------------------------------------|------------------------|---|------------------|
| Drilling Method | | 3.25" Hand Auger | |
| Comments | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. 3.25" | 0-4' | red clay, dry | |
| Riser Type N/A | 4-5' | red & tan clay w/ yellow sandy lenses dry | |
| Diameter N/A | 5-6' | gray clay, dry | |
| Screen Type N/A | 6-7' | tan & gray clay | |
| Diameter N/A | | | |
| Riser Interval N/A | | boring terminated @ 7' | |
| Screen Interval N/A | | | |
| Slot Size N/A | | | |
| Grout Type N/A | | | |
| Interval N/A | | | |
| Bentonite Type N/A | | | |
| Interval N/A | | | |
| Filter Pack N/A | | | |
| Interval N/A | | | |
| Total Depth 7' | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | | |
| Date | W.L. Below R.P. | - | |
| | | - | |
| | | - | |
| | | - | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

Refer to Standard Well Construction Schematic Type II - Style 1.

Boring /Well Construction Log

Well Construction Permit Number

NA

Aquaterra, Inc.

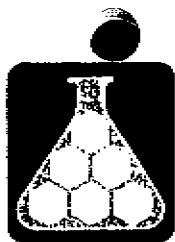
| | | | |
|---------------------|------------------------------|-------------------------|--------------------|
| L. D. Number | <i>HA-5</i> | Purpose | <i>soil sample</i> |
| Project Name | <i>Porcelanite Tile Inc.</i> | Contractor | <i>NA</i> |
| Project No. | <i>3105801</i> | Registration No. | <i>NA</i> |
| Geologist | <i>Cyrus F. Parker, Jr.</i> | Driller | <i>NA</i> |
| Start Date | <i>12/11/96</i> | Complete Date | <i>12/11/96</i> |
| | | Equipment | <i>Hand Auger</i> |

| | | | |
|--------------------------------------|------------------------|---|----------------------|
| Drilling Method | | <i>3.25" Hand Auger</i> | |
| Comments | | | |
| | | | |
| | | | FID / PID |
| | | | (ppm) |
| | | | @ Depth (ft.) |
| Well Construction Information | Depth From - To | Soil / Rock Description / Comments | |
| Borehole Dia. <i>3.25"</i> | <i>0-2"</i> | <i>red clay</i> | |
| Riser Type <i>N/A</i> | <i>2"-7'</i> | <i>red clayey sand, dry</i> | |
| Diameter <i>N/A</i> | | | |
| Screen Type <i>N/A</i> | | <i>boring terminated @ 7'</i> | |
| Diameter <i>N/A</i> | | | |
| Riser Interval <i>N/A</i> | | | |
| Screen Interval <i>N/A</i> | | | |
| Slot Size <i>N/A</i> | | | |
| Grout Type <i>N/A</i> | | | |
| Interval <i>N/A</i> | | | |
| Bentonite Type <i>N/A</i> | | | |
| Interval <i>N/A</i> | | | |
| Filter Pack <i>N/A</i> | | | |
| Interval <i>N/A</i> | | | |
| Total Depth <i>7'</i> | | | |
| R.P. Elevation | - | | |
| Datum | - | | |
| Water Level Information | | - | |
| Date | W.L. Below R.P. | - | |
| | | - | |
| | | - | |
| | | - | |

R.P. = Reference Point W.L. = Water Level TBM = Temporary Benchmark MSL = Mean Sea Level

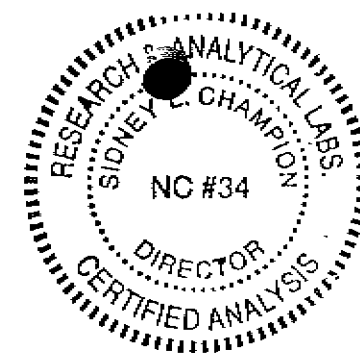
Refer to Standard Well Construction Schematic Type II - Style 1.





RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations



Analytical Results for Selected Parameters & Sampling Locations for Project Identified as Porcelanite Tile, [An Aquaterra Project #3105801, 10-11 December 1996]

| Parameter | SB-1-15 (mg/kg) | SB-4-10 (mg/kg) | SB-5-2.5 (mg/kg) | SB-6-2.5 (mg/kg) | HA-2 (mg/kg) | HA-1 (mg/kg) | HA-3 (mg/kg) | HA-4 (mg/kg) | HA-5 (mg/kg) |
|--------------------|--------------------|--------------------|---------------------|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Arsenic, Tot. | <1.03 | <1.10 | <1.16 | <1.34 | <1.12 | <1.48 | <1.10 | <1.34 | <1.05 |
| Barium, Tot. | 659 | 401 | 27.4 | 155 | 67.7 | 294 | 176 | 163 | 48.4 |
| Cadmium, Tot. | 0.905 | 1.84 | 4.60 | 4.18 | 2.71 | 2.32 | <0.221 | 1.67 | 0.283 |
| Chromium, Tot. | 4.46 | 4.50 | 20.8 | 29.0 | 56.1 | 31.2 | 9.12 | 122 | 1.08 |
| Lead, Tot. | 1090 | 17,400 | 20.1 | 19.7 | 55.0 | 501 | 7.54 | 12.1 | 18.8 |
| Mercury, Tot. | <0.206 | <0.221 | <0.232 | <0.268 | <0.224 | <0.296 | <0.221 | 0.339 | <0.211 |
| Selenium, Tot. | <1.03 | <1.10 | <1.16 | <1.34 | <1.12 | <1.48 | <1.10 | <1.34 | <1.05 |
| Silver, Tot. | <1.03 | <1.10 | <1.16 | <1.34 | <1.12 | <1.48 | <1.10 | <1.34 | <1.05 |
| Cobalt, Tot. | 14.5 | 9.84 | 7.90 | 1.88 | 17.1 | 17.7 | 5.50 | 8.60 | 4.22 |
| Manganese, Tot. | 44.5 | 43.5 | 273 | 29.2 | 589 | 307 | 15.4 | 56.6 | 353 |
| Nickel, Tot. | 14.3 | 2.10 | 6.14 | 2.95 | 5.94 | 7.98 | 2.64 | 12.0 | 3.27 |
| Zinc, Tot. | 4900 | 3080 | 45.5 | 33.7 | 104 | 1430 | 22.5 | 42.7 | 27.3 |
| Titanium, Tot. | 120 | 77.2 | 418 | 19.1 | 232 | 312 | 33.8 | 738 | 67.7 |
| Vanadium, Tot. | 15.8 | 11.2 | 131 | 736 | 79.5 | 59.3 | 29.7 | 197 | 7.03 |
| Boron, Tot. | 426 | 90.9 | 127 | 104 | 59.4 | 60.8 | <11.0 | 51.5 | <10.5 |
| Praseodymium, Tot. | 10.9 | <11.0 | <11.6 | <13.4 | <11.2 | 23.1 | 12.5 | 18.1 | <10.5 |
| Bromide | <10.0 | <10.0 | <10.0 | <10.0 | <10.0 | NR | NR | NR | NR |
| Phenols | <0.112 | <0.120 | <0.122 | <0.146 | <0.122 | <0.161 | <0.119 | <0.146 | <0.115 |
| Sulfate | 59.7 | 33.9 | 173 | 205 | 190 | 265 | 241 | 95.1 | 94.0 |
| Nitrate | 4.40 | 0.420 | 0.953 | 0.893 | 2.48 | 2.16 | 2.87 | 2.47 | 0.713 |
| Gross alpha | 13.3 | 17.5 | 7.2 | NR | NR | NR | NR | 7.0 | 12.4 |
| Gross beta | 14.9 | 16.7 | 8.5 | NR | NR | NR | NR | 4.1 | 46.5 |
| Sample Number | 288731/32 | 288737/38 | 288739/40 | 288741/42 | 288743/44 | 288849 | 288850 | 288851/52 | 288853/54 |
| Sample Date | 12/10/96 | 12/10/96 | 12/10/96 | 12/10/96 | 12/10/96 | 12/11/96 | 12/11/96 | 12/11/96 | 12/11/96 |
| Sample Time | 0830 | 1025 | 1115 | 1155 | 1320 | 1200 | 1235 | 1324 | 1404 |

mg/kg = milligram per kilogram = parts per million

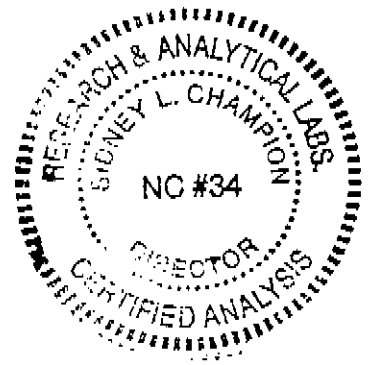
< = less than or below detection limits

NR = Not Requested



RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations



21 January 1997

Aquaterra, Inc.
4901 Waters Edge Drive
Raleigh, North Carolina 27606

Attention: Mr. Bryson Trexler

Project Number: 3105801
Project Name: Porcelanite Tile

| <u>Parameter</u> | <u>Comp-1, Chip Pile (mg/l)</u> |
|------------------|-------------------------------------|
| Arsenic, TCLP | <0.010 |
| Barium, TCLP | 1.87 |
| Cadmium, TCLP | 0.011 |
| Chromium, TCLP | 0.025 |
| Lead, TCLP | 187 |
| Mercury, TCLP | <0.0004 |
| Selenium, TCLP | <0.100 |
| Silver, TCLP | <0.010 |
| Sample Number | 288745 |
| Sample Date | 12/10/96 |
| Sample Time | 1330 |

mg/l = milligrams per liter = parts per million
TCLP = Toxicity Characteristic Leachate Procedure
< = less than or below detection limits

Aquamie, J. 11 +

No 4927

PROJECT NAME: Porcelainite Tile REPORT TO: Bryson Traxler TURNAROUND: NORMAL 5-DAY OTHER (SPECIFY): 48 hour Turnaround For Nitrates

ADDRESS: Lexington, North Carolina AFFILIATION/LOCATION: Aquaterra Raleigh REQUESTED DUE DATE:

JOB NUMBER: 3105801 PHONE: 919-859-9987 P.O. # / BILLING REFERENCE: RAC 10552

SAMPLED BY (PRINT):
CYRUS F. PARKER, Jr.

SAMPLER'S SIGNATURE:
Cyr F. Parker, Jr.

| SAMPLE ID | SAMPLE LOCATION | DATE | TIME | MATRIX | | | NUMBER OF CONTAINERS | | | | | | ANALYSES REQUEST | | | | | | | | | | | | REMARKS | | | | |
|-----------|-----------------|----------|-------|--------|------|-------|----------------------|-------------|--------------------------------|------------------|-----|-------------------------------|------------------|---|----|----|----|----|----|----|----|----|----|----|---------|----|----|--|-----------------------------|
| | | | | WATER | SOIL | OTHER | TOTAL | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | HCL | N ₂ O ₄ | PH ± 2 OR ± 12 | | As | Ba | Cd | Cr | Cu | Fe | Mn | Mo | Ni | Pb | | Se | Zn | | |
| | | | | | | | | | | | | | Y | Z | | | | | | | | | | | | | | | |
| SB-1-15 | Chip Pile | 12-10-76 | 830a | | | X | 4 | 4 | | | | 2887 | 311732 | | | X | X | X | X | X | X | X | X | X | X | X | X | | |
| SB-2-10 | Chip Pile | | 926a | | | X | 4 | 4 | | | | 1733 | 1734 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | |
| SB-3-5 | Chip Pile | | 940a | | | X | 4 | 4 | | | | 735 | 736 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | <i>*Aquaterra cancelled</i> |
| SB-4-10 | Chip Pile | | 1025a | | | X | 4 | 4 | | | | 737 | 738 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | <i>*Aquaterra</i> |
| SB-5-2.5 | Toe Chip Pile | | 1115a | | X | | 4 | 4 | | | | 739 | 740 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | |
| SB-6-2.5 | Toe Chip Pile | | 1155a | | X | | 4 | 4 | | | | 741 | 742 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | |
| HA-2 | Toe Chip Pile | | 120p | | X | | 4 | 4 | | | | 743 | 744 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | |
| Comp-1 | Chip Pile | | 130p | | | X | 4 | 4 | | | | 745 | 746 | | | | | | | | | | | | | | X | | |

ADDITIONAL COMMENTS:
Samples Col'd w/ICC

OK ICC

| RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME | AIRBILL # |
|------------------------------------|---------------------------|-------|----------|-----------|
| <i>Cyrus F. Parker / Aquaterra</i> | <i>KW</i> | 4:11p | 12-10-76 | |

PROJECT NAME: Poecelanite Tile Inc. REPORT TO: Bryson Trexler
 ADDRESS: Lexington, NC AFFILIATION/LOCATION: Quincy, Raleigh
 JOB NUMBER: 3105801 PHONE: 919 859-9987
 TURNAROUND: NORMAL 5 DAY OTHER (SPECIFY): 48 hour Turnaround ON VITRIFIED
 REQUESTED DUE DATE: RNC 10552

SAMPLED BY (PRINT): CYRUS F. PARKER, JR. P.O. # / BILLING REFERENCE: RNC 10552

SAMPLER'S SIGNATURE: Cyrus F. Parker Jr.

| SAMPLE ID | SAMPLE LOCATION | DATE | TIME | MATRIX | | | TOTAL | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | HCl | ZnO ₄ | Ni | Y/N | PH < 2 OR > 12 | ANALYSES REQUEST | REMARKS | |
|-----------|-----------------|----------|-------|--------|------|-------|-------|-------------|--------------------------------|------------------|-----|------------------|----|-----|----------------|------------------|---------|--|
| | | | | WATER | SOIL | OTHER | | | | | | | | | | | | |
| 7888 HA-1 | E of Z6a | 12-11-96 | 1200P | X | | | 4 | 4 | | | | | | | | X | | |
| 850 HA-3 | E of #7 | | 1235P | X | | | 4 | 4 | | | | | | | | X | | |
| 851 HA-4 | Near #478 | | 124P | X | | | 4 | 4 | | | | | | | | X | | |
| 852 HA-5 | E of Building | | 204P | X | | | 4 | 4 | | | | | | | | X | | |

| REQUISITED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME | AIRBILL # |
|-----------------------------|---------------------------|----------|------|-----------|
| <i>[Signature]</i> | <i>[Signature]</i> | 12/11/96 | 428P | |

ADDITIONAL COMMENTS: Samples Collected N/ICE



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

March 14, 2005

Tony Shaw
Environmental/Safety Manager
Porcelanite, Inc.
1327 Lincoln Drive
High Point, North Carolina 27260-9945

Re: Ceramic Tile Pile Closure Certification
EPA ID # NCD 986 181 451

Dear Tony Shaw:

The Hazardous Waste Section received the closure certification from the independent professional engineer and the owner/operator on May 13, 2004 that closure activities for the Ceramic Tile Pile was completed according to the approved closure plan. Additionally, Mr. Ernest Lawrence of the Section conducted a closure inspection on August 30, 2004, and found the facility to be in compliance with the approved closure plan.

Your certification of partial closure for the facility is accepted. A copy of this letter will be forwarded to our Financial Unit. They will address details concerning financial assurance for closure under a separate letter.

If you have any questions, please contact Karim Pathan at (919) 733-4996 extension 228.

Sincerely,

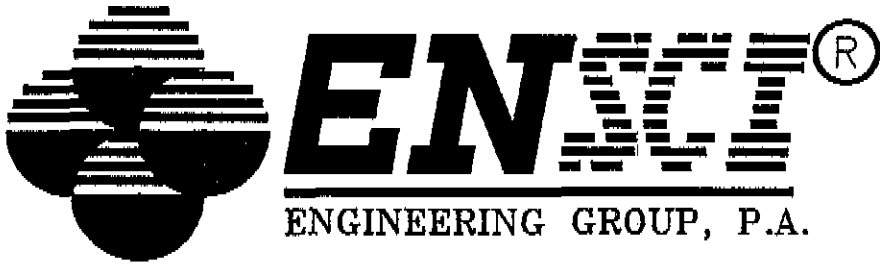
Robert L. Glaser
Unit Supervisor
Facility Management Branch
Hazardous Waste Section

cc: Jon D. Johnston, US EPA, Region 4
Doug Holyfield
Jesse Wells
Jenny Lopp
Ernest Lawrence

Bud McCarty *BMC*
Robert Glaser *RG*
Karim Pathan *KP*

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-733-4996 \ FAX 919-715-3605 \ Internet <http://wastenotnc.org>

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CLOSURE REPORT FOR:

MANNINGTON
CERAMIC TILE
FACILITY



Closure Report For Settling Ponds

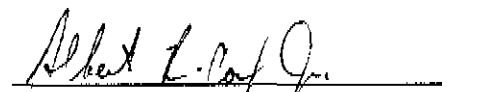
Mannington Ceramic Tile Facility
Lexington, North Carolina

Prepared for

Mannington Ceramic Tile

June 29, 1993


Augustus M. Mergenthaler, P.E.
President
ENSCI Engineering Group, P.A.


Al Cox
President and General Manager
Mannington Ceramic Tile

ENSCI Engineering Group, P.A.
1108 Old Thomasville Road
High Point, North Carolina 27260
(919) 883-7505

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1. Introduction

ENSCI Engineering Group, P.A. was contracted by Mannington Ceramic Tile to close two settling ponds at their Lexington, North Carolina facility (see **Figure 1**). The ponds were closed in place in accordance with ENSCI's May 1992 Revised Closure Plan for Settling Ponds and the provisions to the Closure Plan which were issued to Mannington by the North Carolina Department of Environment, Health & Natural Resources (DEHNR), Division of Solid Waste Management on August 13, 1992 (see Appendix A).

The two settling ponds were located at the northern part of the subject site (see **Figure 2**). They were oriented with the long dimension east-west, and they were bounded on the south side by the main building and on the north by the property line. The ponds consisted of residual sludge from process water, up to 21 feet thick.

2. Closure Methodology

Closure of the two settling ponds included the following activities:

- Stabilization of the settling pond sludge
- Installation of the cover system
- Decontamination of equipment

2.1 Sludge Stabilization

Sludge in the two settling ponds was stabilized between October 1992 and January 1993.

During all stabilization activities, a silt fence was in place on the downslope side of the ponds. Stabilization was performed by mechanically mixing the sludge with Type I portland cement in the ratio calculated during the treatability study (15 percent) such that long-term potential leachate generation is minimized. Sludge was first mixed with the portland cement using trackhoes. The sludge/portland mixture was then spread out within the settling ponds to a thickness of approximately 1 foot and mixed further with a tractor-mounted rototiller.

Prior to and during stabilization, soil samples were collected adjacent to the sludge (14 samples to assess the horizontal extent) and subadjacent to the sludge (6 samples to assess the vertical extent). The samples were analyzed using the methods indicated in the

DEHNR provisions (Appendix A). Based on the results of these samples, the areal and vertical extent of the sludge was determined (see **Figure 3**). All soil indicated to be contaminated was mixed with portland cement (and water, as necessary) to stabilize constituents as defined in the DEHNR provisions. Where possible, an additional 2 feet of "clean" soil on the periphery of contaminated soil was also mixed with portland cement and incorporated into the sludge ponds. Results of soil sample analyses are presented in **Table 1A-D**. Copies of the laboratory reports for these samples are included in Appendix B.

The sludge/portland mixture was tested periodically during stabilization for 16 metals (including the 8 primary RCRA metals) using the TCLP extraction method. Upon completion of stabilization 10 vertically composited samples (5 per pond) were collected and analyzed as specified in the DEHNR provisions. Results of analyses of the 10 vertically composited samples are presented in **Table 2A-C**. Copies of the original laboratory reports are included as Appendix C. An illustration of the extent of waste material is included as **Figure 4**.

2.2 Cover System

After stabilization was completed, the surface of the stabilized material was graded to a slope of 3 percent in preparation for the installation of the cover system. A survey was performed at this point and following placement of each layer of the cap to ensure that the slope remained constant at 3 percent at a minimum. Areas which did not meet this criterion were regraded following each survey event.

The cover system consisted of the following components:

- A layer of fill material
- CLAYMAX (geo-composite layer)
- A layer of fill material
- A flexible membrane liner
- A sand drainage layer
- Geotextile fabric
- Gravel base
- An asphalt roadway

Figure 3 presents a typical cross section of the cover and presents the areal extent of the cover system. The steps and procedures utilized to achieve the construction of the cover system are presented below.

2.2.1 Geo-Composite Layer (CLAYMAX)

Due to the increased elevation of the stabilized sludge caused by a greater sludge volume than previously estimated, and the limited availability of low hydraulic conductivity soil, the proposed system was modified. Instead, as provided for in the DEHNR provisions, CLAYMAX, a geo-composite layer with a hydraulic conductivity of $5 \text{ E-}9$ centimeters per second, was placed on top of the stabilized sludge (See Appendix D for Certifications).

2.2.2 Fill Material

A 6-inch lift of offsite borrow was placed above and below the Geo-Composite layer (CLAYMAX). The soil consisted of clay to clay loam textures. The soil was free of all organic materials, sod, peat, perishable, or other deleterious materials. No gravels or stones were allowed in the soil. The six-inch lift of soil was compacted by a minimum of six passes with sheeps foot and/or smooth roll compaction equipment and to a minimum density of 95 percent maximum dry density in accordance with DEHNR provisions. At no time was the minimum number of passes reduced. In accordance with ASTM D-698, the soil was compacted at no less than 2 percentage points below the optimum moisture content and no greater than 3 percentage points above the optimum moisture content. The results of density testing are summarized in Appendix E.

Upon completion of placement, the upper surface of the soil was compacted by three passes of a smooth drum roller to provide a smooth, flat surface for final grading. Grading was accomplished using a road motor grader. The soil was graded to a 3 percent slope in accordance with DEHNR provisions.

2.2.3 Flexible Membrane Liner

The flexible membrane liner (FML) consisted of a one piece of 30-mil very low density polyethylene (VLDPE) membrane material. The FML was placed in such a manner to provide a smooth, flat finished surface. All edges were anchored in a trench with minimum dimensions of 2 feet deep and 1 foot wide. Trench backfill materials consisted of fill materials mechanically tamped in place. The FML was placed as one piece, therefore there were no field seams. A copy of the Quality Control Certification is provided in Appendix F.

2.2.4 Sand Drainage Layer

A 12-inch layer of compacted sand was placed over the FML to provide drainage. The sand consisted of free-draining granular material with no more than 10 percent by weight passing the U.S. Standard No. 200 sieve. Results of a sieve analysis, presented in Appendix G, indicate that only 1.8 percent passed the #100 sieve. The sand was free of organic matter, sod, peat, perishable, or other deleterious materials. The hydraulic conductivity was calculated using the Hazen method to be between 4.1×10^{-2} to 8.2×10^{-2} centimeters per second. Sieve analysis and hydraulic conductivity calculations are included as Appendix G.

Placement of sand drain material was accomplished by end dumping at the edge of the excavation and pushing the sand over the membrane with a Caterpillar D-3 bulldozer. At no time was there less than 6 inches of material between the bottom of the tracks and the impervious membrane. No turning of equipment was allowed on the sand or fill material until there was a minimum depth of 1 foot of uncompacted sand over the membrane. No compaction equipment was allowed on the sand until there was a minimum of 14 inches of sand over the membrane. The sand layer was placed at a 3 percent slope minimum.

2.2.5 Geotextile

A geotextile fabric was placed over the drainage layer to prevent fines from the above layers from clogging the drainage layer. The geotextile was placed in such a manner to provide a smooth, flat finished surface. All field joints were overlapped a minimum of 1 foot. All edges were secured in an anchor trench with minimum dimensions of 1 foot deep and 6 inches wide. Trench backfill materials consisted of offsite materials mechanically tamped in place.

2.2.6 Gravel Base

A minimum of 6-inch aggregate base coarse was installed on the geotextile layer. Bags of sand were used to hold the geotextile in place prior to backfilling with gravel. Gravel was placed over the geotextile by end dumping and spreading over the fabric with a Caterpillar D-3 bulldozer. Following placement of the gravel, it was graded to a 3 percent slope. See Appendix H for Density Testing.

2.2.7 Asphalt Roadway

Asphalt was placed to a minimum thickness of 6 inches on the encapsulated material to allow for vehicular traffic. The elevations of the finished asphalt surface are presented in Figure 3. As illustrated, the asphalt layer was placed at the same minimum 3% or greater percent slope which was maintained throughout installation of the cover system. See Appendix I for Asphalt Density Testing.

2.2.8 Slopes

Erosion control Class A stone was used on all slopes. The slopes were placed a minimum of two horizontal to one vertical.

2.3 Decontamination of Closure Equipment

High-pressure steam and phosphate-free soap were used for onsite decontamination of equipment used for closure processes. A temporary decontamination pad was constructed on the parking area and lined with an impermeable plastic material to collect decontamination rinseate. This allowed rinseate to be collected without any runoff to unlined areas. The collected rinseate was pumped to drums and a tanker onsite. It was tested for the constituents specified in the DEHNR provisions to determine the appropriate means of disposal. Analytical results, included in Appendix J, indicated that the rinseate could be discharged to the Publicly Owned Treatment Works (POTW). Therefore, the water was discharged to the City of Lexington wastewater treatment system. The plastic liner on the decontamination pad was removed and disposed of at an offsite facility appropriately permitted to receive and dispose of these wastes. Two drums of debris containing Personal Protective Equipment (PPE) and plastic were disposed of at Laidlaw Environmental Services (see Appendix K for manifests).

3. Quality Assurance Testing

As specified in the May 1992 Closure Plan, several quality assurance tests were performed during sludge pond closure. These tests were performed to ensure the chemical quality, density, and hydraulic conductivity of borrow materials.

3.1 Chemical Quality

Borrow materials, which include fill soils were sampled and analyzed via SW-846 Methods 8240 and 8270 and the RCRA primary metals in TCLP extract. Results are presented in Appendix L. No contaminated borrow material was allowed onsite.

3.2 Density

All placement activities were continuously monitored by a qualified person familiar with soil placement and testing techniques and procedures. Onsite testing consisted of in-place density determination by the Nuclear Density Test method in accordance with ASTM D-3017.

Prior to placement activities, moisture/density tests were performed on representative samples of each material to be placed. The results of these tests were the basis for determining acceptable in-place density criteria.

Testing frequency was a minimum of one test per lift. Any in-place materials not meeting the minimum density requirements were recompacted. Upon completion of in-place testing, the hole created for the test were backfilled with commercially produced bentonite clay pellets, hydrated and hand compacted in a maximum of 2-inch lifts.

3.3 Hydraulic Conductivity

Due to the replacement of low hydraulic conductivity soils by the geotextile composite layer, no hydraulic conductivity testing was required. See Appendix D for certification of hydraulic conductivity of the geotextile composite layer.

4. Site Inspection

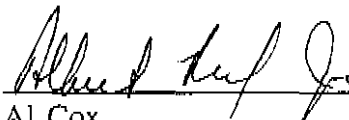
Site inspection by ENSCI Engineering Group, P.A. President Augustus M. Mergenthaler, a North Carolina Professional Engineer was performed at planned intervals during the project. Table 3 illustrates the schedule of these inspections.

5. Certification of Closure

The Hazardous Waste Management Units (sludge ponds) have been closed in accordance with the specifications in the approved Closure Plan and The Provision To Mannington Ceramic Tile's Revised Closure Plan letter from Jerome H. Rhodes, Chief, Hazardous Waste Section dated August 13, 1992.



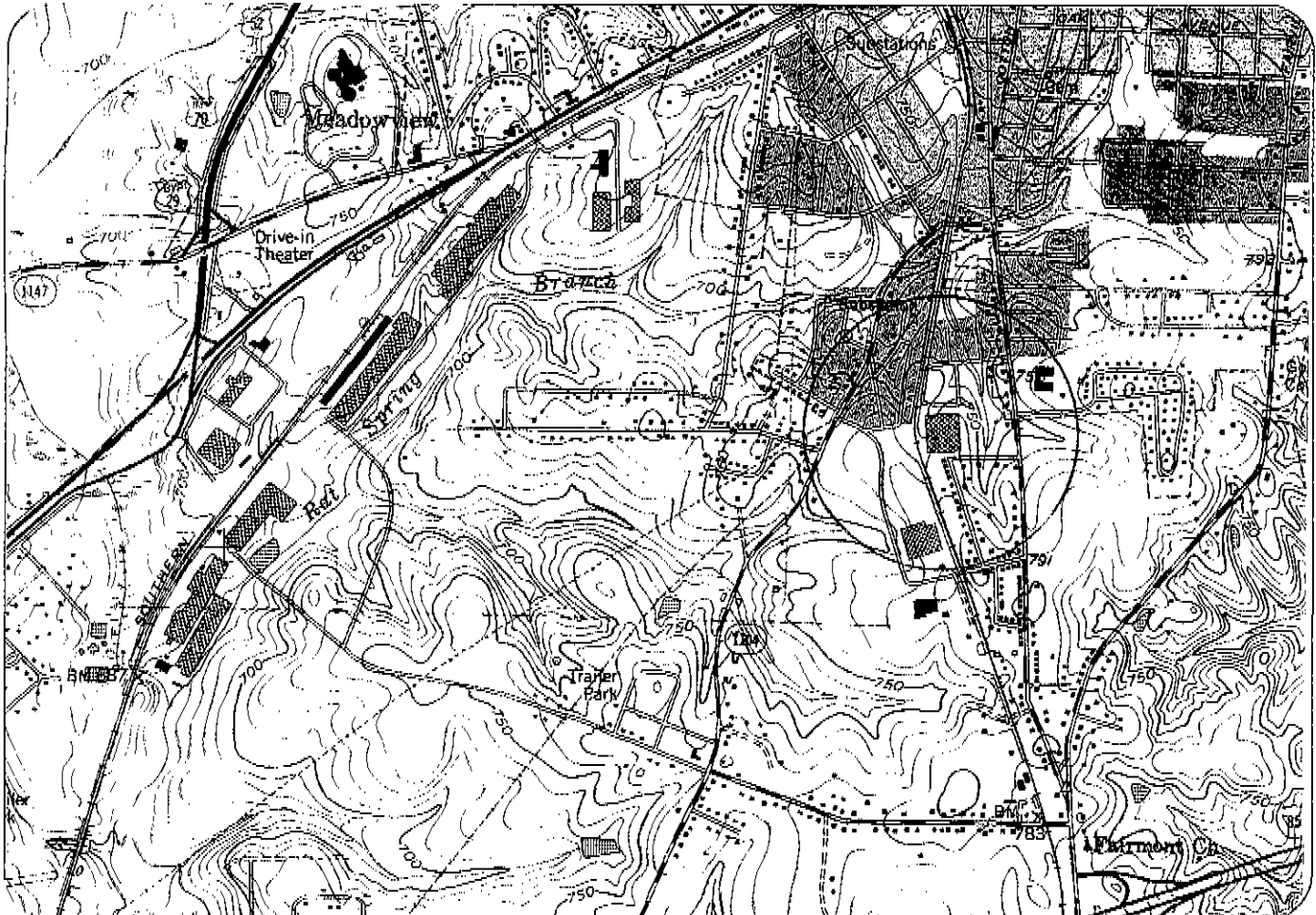
Augustus M. Mergenthaler, P.E.
President
ENSCI Engineering Group, P.A.



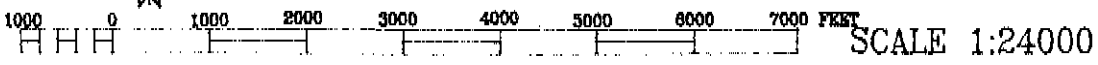
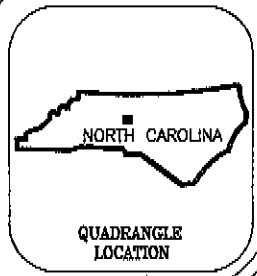
Al Cox
President & General Manager
Mannington Ceramic Tile

TOPOGRAPHICAL MAP

Mannington Ceramic Tile Company
Lexington, North Carolina




USGS LEXINGTON WEST 7.5 MINUTE QUADRANGLE
 DATE OF MAP: 1950 PHOTOREVISION DATE: 1987
 PHOTOREVISION DENOTED IN PURPLE (COLOR MAPS ONLY)



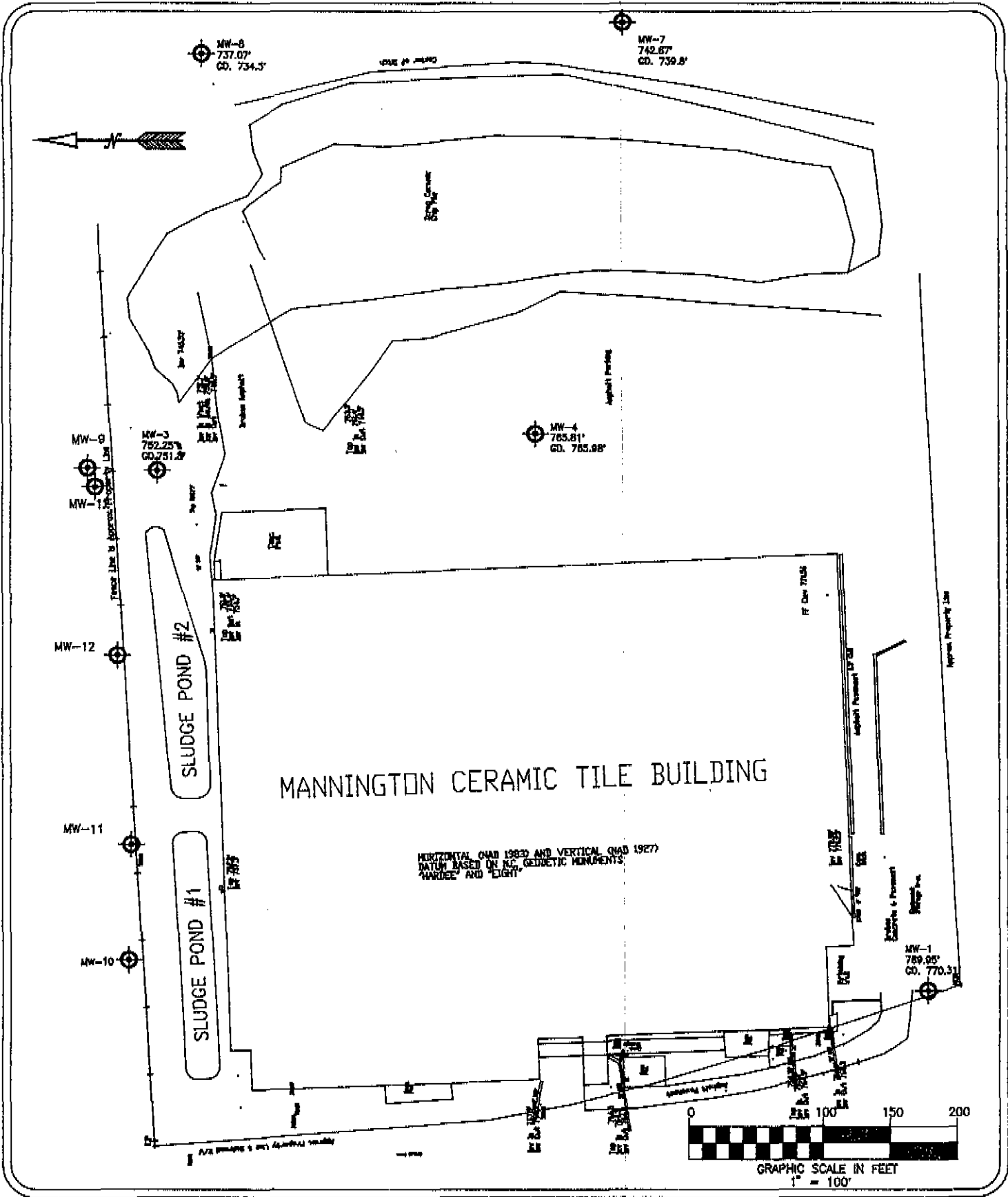
ROAD CLASSIFICATION

| | | | |
|------------------|--|--|------------------|
| HEAVY-DUTY | | | U.S. ROUTE |
| MEDIUM-DUTY | | | STATE ROUTE |
| LIGHT-DUTY | | | INTERSTATE ROUTE |
| FOOT TRAIL | | | |
| WGN & JEEP TRACK | | | |
| UNIMPROVED ROAD | | | |



ENCI[®]
CORPORATION
HIGH POINT, NORTH CAROLINA

| | |
|---------------------------------|-----------------------|
| FOR: MANNINGTON CERAMIC TILE | CITY: LEXINGTON |
| TITLE: TOPOGRAPHIC MAP | STATE: NORTH CAROLINA |
| SCALE: 1"=2000' | FIGURE: 1 |
| DATE: 10/14/92 | JOB #: 592032 |



MANNINGTON CERAMIC TILE COMPANY
 LEXINGTON, N.C.

DRAWN BY: DJ

DRAWG NM: MAN3

CHECKED BY: AM

CB: AMM

FIGURE 2

TITLE:

FACILITY LAYOUT



FIGURE 3



ES :

AP FOR THE STABILIZED WASTE MATERIAL IS
RUCTED AS FOLLOWS :

STE FILL CONSTRUCTED GENERALLY WITH 3% TOP SLOPE.

YMAX (JAMES CLEM CORP.) WITH HYDRAULIC CONDUCTIVITY
 2×10^{-9} cm/sec IS PLACED ABOVE THE WASTE. SOIL
N 6") IS PLACED ABOVE AND BELOW THE CLAYMAX.
SLOPE IS A MINIMUM 3%.

DLINE @ VL(VLDPE), BY GUNDLE LINING SYSTEMS IS
MIL. FLEXIBLE MEMBRANE LINER (FML) CONSTRUCTED
A MINIMUM 3% SLOPE FOLLOWED BY:

ATER THAN OR EQUAL TO ONE (1) FOOT OF
MPACTED SAND FOR DRAINAGE WITH GREATER THAN
EQUAL TO 3% SLOPE AND A MINIMUM "K" OF 1.0×10^{-2}
/sec, FOLLOWED BY:

MIRA GEOTEXTILE FABRIC IS LOCATED ABOVE THE
ND LAYER, FOLLOWED BY:

MINIMUM OF 6" AND MAXIMUM 18" OF AGGREGATE BASE
URSE WAS PLACED IN 6" LIFTS UNDER THE ASPHALT.
A MINIMUM 3% SLOPE, FOLLOWED BY:

(6) INCHES OF ASPHALT WITH AT LEAST 3% SLOPE.



EN

ENGINEERING GROUP, P.A.

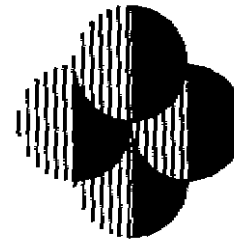


FIGURE 4

MAIL SET
ASPHALT
VER EIP

NOTE: NO KNOWN GRID TIE AVAILABLE WITHIN 2000'.

SURVEY FOR
**MANNINGTON CERAMIC
TILE COMPANY**

N.C. HWY. 8
LEXINGTON
DAVIDSON COUNTY, N.C.
FEBRUARY 9, 1993



SCALE: 1" = 100'

MARK TERRY & Associates

REGISTERED LAND SURVEYOR

10705 N. Main St., Suite 300, Archdale, NC 27283

Phone: (818) 431-2114 FAX: (818) 431-2138

DRAWN BY: GAT

SURVEYED BY: LMT

JOB NO.: 3049-40-77

Tables

TABLE 1A: Results of TCLP Metals for 'X' Confirmatory Soil Samples (mg/l)

| SAMPLE | As | B | Ba | Cd | Co | Cr | Hg | Mn | Ni | Pb | Pr | Se | Ti | Zn |
|--------------------|-----|-----|-----|------|----|-----|-------|-----|-----|------|----|-----|------|-----|
| S1 | | .42 | | | | | | | | | | | | 7.7 |
| S2 | | 6.3 | | | | | | | | | | | | |
| S3 | | 17 | | | | | .0021 | | | | | | .086 | |
| S4 | | 3.2 | | | | | | | | .06 | | | .037 | |
| S5 | | .92 | | | | | | .61 | | | | | .019 | |
| S6 | | 1.5 | | | | | | .45 | | | | | .032 | |
| S7 | | .66 | 1.5 | | | | | 3.7 | | .10 | | | .015 | |
| S8 | | 4.2 | | .01 | | | | | | | | | | |
| S9 | | 2.1 | | | | | | | | | | | | |
| S10 | | .58 | | | | | | | | | | | .01 | |
| S11 | | .42 | | | | | | | | | | | | |
| S12 | | .17 | | | | | | | | | | | .028 | |
| S13 | | .19 | | | | | | | | .088 | | | .012 | |
| S14 | | 1.6 | | .007 | | | .002 | | | | | | | |
| NCAC 2E .0200 | .05 | | 1.0 | .005 | | .05 | .0011 | .05 | .15 | .05 | | .01 | | 5.0 |
| Fed TCLP Limits | 5 | | 100 | 1 | | 5 | 0.2 | | 7 | 5 | | 1 | | |

NA = Not Analyzed.

Table 1B

TCLP Metal Results for 'O' Confirmatory Soil Samples (mg/l)

| SAMPLE | As | B | Ba | Cd | Co | Cr | Hg | Mn | Ni | Pb | Pr | Se | SO ₄ | Ti | Zn |
|--------------------------|-----|-----|------|-----|----|----|------|-----|-----|----|----|----|-----------------|----|----|
| B1 | | .81 | | | | | | | | | | | | | |
| B2 | | 4.3 | | | | | | 3.0 | | | | | | | |
| B3 | | 2.6 | | | | | | | | | | | | | |
| B4 | | 1.0 | | | | | | | | | | | | | |
| B5 | | 5.4 | | | | | | | | | | | | | |
| B6 | | 1.5 | | | | | | | | | | | | | |
| 10 x NCAC 2L .0200 | 0.5 | | 10.0 | .05 | | .5 | .011 | .5 | 1.5 | .5 | | .1 | 2500 | | 50 |
| Fed TCLP Limits | 5 | | 100 | 1 | | 5 | 0.2 | | 7 | 5 | | 1 | | | |

NA = Not Analyzed.

TABLE 1C

Results of 8240/8270 Analyses for Confirmatory Soil Samples (mg/kg)

| SAMPLE | 8240 (Volatiles) | | | | 8270 (Semi-Volatiles) |
|------------------------------|------------------|-------|-----------------------|---------|--------------------------|
| | Acetone | MEK | Methylene Chloride | Benzene | |
| CONFIRMATORY SOIL SAMPLES | | | | | |
| S1 | | | | | |
| S2 | | | | | |
| S3 | | | | | |
| S4 | .200 | | .011 | | |
| S5 | | | | | |
| S6 | | .0069 | | | |
| S7 | | | | | |
| S8 | | .0063 | | | |
| S9 | | | | | |
| S10 | | | | | |
| S11 | | | | | |
| S12 | | | | | |
| S13 | | | | | |
| S14 | | | | | |
| B1 | | | | | |
| B2 | | | | | |
| B3 | | | | | |
| B4 | | | | | |
| B5 | | | | | |
| B6 | | | | | |
| NCAC 2L .0200 Standard | | 0.005 | .001 | | |

* Indicates constituent was detected in the lab blank.

TABLE 1D

Results of Radiological Analyses
on
Confirmatory Soil Samples (PiC/g)

| Sample | Gross Alpha | Gross B | Ra 226 | Ra 228 |
|--------|-------------|---------|--------|--------|
| S1 | 15 | 42 | .81 | 1.7 |
| S2 | 13 | 44 | .72 | .88 |
| S3 | 45 | 91 | 5.9 | 2.6 |
| S4 | 22 | 45 | 1.1 | 1.3 |
| S5 | 27 | 73 | 1.0 | 3.2 |
| S6 | 28 | 52 | 1.4 | 1.3 |
| S7 | 13 | 51 | .81 | .71 |
| S8 | 40 | 56 | 5.9 | 2.8 |
| S9 | 36 | 83 | .89 | 2.8 |
| S10 | 42 | 67 | 2.1 | 3.5 |
| S11 | 42 | 110 | 3.8 | 3.6 |
| S12 | 36 | 75 | 1.1 | 2.1 |
| S13 | 37 | 74 | 1.5 | 2.9 |
| S14 | 20 | 26 | 1.6 | 1.7 |
| B1 | 25 | 100 | .99 | 1.9 |
| B2 | 20 | 75 | 3.7 | .91 |
| B3 | 15 | 63 | .67 | 1.0 |
| B4 | 14 | 51 | .69 | .70 |
| B5 | 9.4 | 14 | 1.1 | .75 |
| B6 | 40 | 72 | 4.7 | 2.4 |

Table 2A

Results of TCLP Metals for Stabilized Sludge (mg/l)

| SAMPLE | As | B | Ba | Cd | Co | Cr | Hg | Mn | Ni | Pb | Pr | Se | V | Ti | Zn |
|---------------------------------------|----|-------|----|-----|----|----|------|----|-----|----|-----|----|-----|-----|----|
| 1 | | 13.11 | | | | | | | | | .02 | | .01 | .02 | |
| 2 | | 19.30 | | | | | | | | | | | | | |
| 3 | | 14.49 | | | | | | | | | | | | | |
| 4 | | 22.65 | | .02 | | | | | | | | | | | |
| 5 | | 1.53 | | | | | .066 | | | | | | | | |
| 6 | | 1.24 | | | | | .254 | | | | | | | | |
| 7 | | 14.68 | | .25 | | | | | | | | | | | |
| 8 | | 17.75 | | .03 | | | | | | | | | | | |
| 9 | | 15.83 | | .07 | | | | | | | | | | | |
| 10 | | 9.82 | | .02 | | | | | | | | | | | |
| 10 X NCAC 21L .0200 Standard | .5 | | 10 | .05 | | .5 | .011 | .5 | 1.5 | .5 | | .1 | | | 50 |

TABLE 2B

Results of 8240/8270 Analyses for Stabilized Sludge (mg/kg)

| SAMPLE | 8240 (Volatiles) | | | | 8270 (Semi-Volatiles) |
|-------------------|------------------|-----|-----------------------|---------|--------------------------|
| | Acetone | MEK | Methylene Chloride | Benzene | |
| STABILIZED SLUDGE | | | | | |
| 1 | *.060 | | | | |
| 2 | *.099 | | | | |
| 3 | *.092 | | | | |
| 4 | *.160 | | | | |
| 5 | *.100 | | | | |
| 6 | *.048 | | | | |
| 7 | *.083 | | | | |
| 8 | *.190 | | | | |
| 9 | *.096 | | | | |
| 10 | *.110 | | | | |

* Indicates constituent was detected in the lab blank.

TABLE 2C

Results of Radiological Analyses

on

Stabilized Sludge (PiC/g)

| Sample | Gross Alpha | Gross B | Ra 226 | Ra 228 |
|--------|-------------|---------|--------|--------|
| 1 | 50 | 30 | 4.59 | .68 |
| 2 | 50 | 40 | 3.50 | .82 |
| 3 | 50 | 30 | 4.43 | .83 |
| 4 | 30 | 60 | 3.23 | .84 |
| 5 | 40 | 30 | 3.56 | .91 |
| 6 | 40 | 30 | 3.70 | .92 |
| 7 | 40 | 30 | 3.30 | 1.02 |
| 8 | 70 | 40 | 3.15 | 1.22 |
| 9 | 60 | 40 | 2.87 | 1.15 |
| 10 | 50 | 30 | 1.78 | 1.19 |

Table 3: Schedule of Inspections

| Project Stage | Month | Date(s) |
|-----------------------|----------------|---------------------|
| Sludge Solidification | September 1992 | 17, 28 |
| | October | 7, 12, 15, 22, 28 |
| | November | 12, 16 |
| | December | 2, 29 |
| | January 1993 | 6 |
| Cap Construction | February | 9, 15, 25 |
| | March | 2, 8, 11 (2 visits) |
| | April | 1, 12 |
| | May | 11, 19 |

Appendix A
DEHNR Provisions for Closure



Send copies to

*Bob Cotton &
ENSCA*

George Hines -

State of North Carolina
Department of Environment, Health, and Natural Resources
Division of Solid Waste Management

James G. Martin, Governor
William W. Cobey, Jr., Secretary

August 13, 1992

William L. Meyer
Director

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Albert R. Cox Jr., President
Mannington Ceramic Tile
P. O. Box 1777
Lexington, NC 27293-1777

Re: Closure Plan Approval
Mannington Ceramic Tile (MCT)
NCD986181451

Dear Mr. Cox:

This office has reviewed the May 1992 revised closure plan for your facility's sludge ponds.

This letter is to inform you that the public comment period for your revised closure plan dated May 1992 has ended and no comments were received. Your closure plan is hereby approved with the incorporation of the enclosed provisions. MCT can proceed with implementation of the plan. This letter and enclosure should be referenced in the professional engineer's closure certification acknowledging it as part of the approved closure plan.

Please be aware that you must still establish financial assurance for closure and post-closure care of the facility to satisfy the requirements of 40 CFR 265.143 and 265.145 referenced in 15A NCAC 13A .0010 or you will remain in violation of the Compliance Order with Administrative Penalty, Docket #90-164, dated June 11, 1990.

If you have any questions regarding the enclosed comments, please contact Rosemarie Sidorowicz at 919/733-2178.

Rosemarie

Mr. Albert R. Cox Jr.
August 13, 1992
Page 2

Sincerely,

Jerome H. Rhodes

Jerome H. Rhodes, Chief
Hazardous Waste Section

JHR/RAS/mb
MCTSPNOD.doc

Enclosure

cc: William F. Hammer
James A. Carter
Robert Glaser
Gray Stevens
R. Douglas Holyfield
Linda Mann
Judy Bullock
Steve Phibbs
A. Karim Pathan
Rosemarie Sidorowicz

PROVISIONS TO
MANNINGTON CERAMIC TILE'S
REVISED CLOSURE PLAN

(This office has added these conditions in accordance with
265.112(d)(4))

1. Any piping that lead to the ponds, if present, must be properly removed. Porous piping containing hazardous constituents must be properly disposed of in accordance with applicable regulations. Non-porous piping must be properly decontaminated.
2. The area underneath any piping must not contain any contaminated or stabilized material that is left outside the cap. This must be shown by confirmatory samples.
3. The stabilized material, as stated in the revised closure plan, must be analyzed as follows:

| <u>Constituents</u> | <u>Analytical Method*</u> |
|---|------------------------------|
| purgeable organics | EPA Method 8240 |
| base/neutral/acid extractable organics | EPA Method 8270 |
| arsenic | 206.2 |
| barium | 200.7 |
| cadmium | 200.7 |
| chromium | 200.7 |
| lead | 200.7 |
| mercury | 245.1 |
| selenium | 270.2 |
| silver | 200.7 |
| cobalt | 219.1 |
| manganese | 200.7 |
| nickel | 249.1 |
| zinc | 200.7 |
| sulfate | EPA Approved Method |
| titanium | 200.7 or EPA Approved Method |
| vanadium | 200.8 |
| boron | 200.7 |
| praseodymium | 200.7 |
| bromine | 9022a (SW-846) |
| gross alpha | 9310 (SW-846) |
| gross beta (as indicated, in millirem/yr) | 9310 (SW-846) |
| radium 226 and 228 | 7500 (Standard Methods...) |

*NOTE: All of the metals must first be extracted by the TCLP procedure, and then have the resulting extract analyzed by the methods as indicated.

*The 200 series methods above are from EPA's Methods for Chemical Analysis of Water and Waste, 1982.

4. All material in the sludge ponds must be stabilized such that no leachate exceeds 10x the current drinking water standards.
5. Prior to implementing closure, the horizontal and vertical boundaries of the material in the ponds to be stabilized, must be identified.
6. Therefore, prior to stabilization MCT must obtain at least three confirmatory samples from beneath the vertical extent of the sludge material in each pond to be stabilized. These sample locations are denoted by a "o" on Figure 2 (attached) and will represent the constituent concentrations remaining "in-place".

The leachate from sample locations denoted by a "o" must not exceed 10x the current drinking water standards.

In addition, MCT must obtain at least fourteen (14) confirmatory samples from outside the horizontal extent of the sludge material in both ponds to be stabilized. These sample locations are denoted by an "x" on Figure 2 (attached).

If contamination+ is found in the "x" samples, this material must be removed or stabilized. No contaminated or stabilized material can be left outside the cap. Therefore, confirmatory soil samples, (x's), for metals must not exceed drinking water standards and for organics, concentrations over the applicable detection limits for the analytical methods stated in item 3 must not be exceeded.

As a result, the area to be stabilized may have to be expanded and additional confirmatory samples obtained.

NOTE: contamination+ for the purpose of the "x" samples means concentrations over the current drinking water standards and for organics, concentrations over the applicable detection limits for the analytical methods stated in item 3.

7. Confirmatory samples (x's and o's) must be analyzed for the constituents listed in item 3 on the previous page of this letter.

In addition, the sampling and analysis of the stabilized waste as proposed on page 6 of the May 1992 closure plan, must also include the constituents listed in item 3 on the previous page of this letter.

8. As part of closure certification, the areal and vertical extent of the stabilized material must be shown in relation to the confirmatory samples obtained. In addition, a diagram indicating the area of the cap must also be provided.
9. The cap over the compacted*, stabilized material shall be constructed as follows:

1. Fill as necessary for grade (greater than or equal to 3%)
2. Greater than or equal to two (2) feet of compacted* soil to be placed in four equal lifts, that has an in place saturated hydraulic conductivity of less than or equal to 1.0×10^{-7} cm/sec or a geo-composite layer (e.g. claymax) and greater than or equal to 3% slope followed by;
3. 30 mil FML (flexible membrane liner) with greater than or equal to 3% slope followed by;
4. Greater than or equal to one (1) foot of compacted* sand for drainage with greater than or equal to 3% slope and a minimum K of $1.0 \text{ E-}2$ cm/sec, followed by;
5. Geotextile fabric to prevent the sand drain from clogging, followed by;
6. As proposed, 6" of aggregate base coarse with at least a 3% slope, followed by;
7. Six (6) inches of asphalt with at least a 3% slope.

NOTE: compacted* for the purpose of this closure means 95% maximum proctor density. This is necessary due to the use of the cap as a road base.

10. If the final grade for the cap exceeds 5%, erosion control such as rip-rap must be used on any unpaved portion.
11. Fill material must only consist of non-hazardous borrow material.
12. Trench backfill materials must consist of non-hazardous excavated materials.
13. The sand drainage layer must slope to an exit drain.
14. Rinsate from the decontamination process should be collected such that there is no run-off to any unlined portion of the soil or parking area.
15. Before routing any decontamination rinsate to the POTW, a waste determination must be completed on the washdown. The rinsate must be sampled and analyzed for the list of constituents previously identified as being required for the confirmatory samples. If hazardous waste, it must be managed as such and not be sent directly to the POTW.

16. If rinsate is found to contain hazardous constituents, the impermeable plastic material used to line the decontamination pad must be properly removed and disposed of.
17. During mixing, it is suggested that steps are taken to avoid contamination of the area outside the ponds (e.g. use of plastic sheeting, silt fence, etc.).
18. The sludge pond closure cost estimate in Attachment D should be revised to include cost estimates for decontamination and proper disposal of materials used during closure. Cost estimates for sampling and analysis should be adjusted to reflect the additional confirmatory sampling.
19. The closure cost estimate will be revised no later than 30 days after a revision of the closure plan has been made that will increase the cost of closure.
20. In addition to the independent, registered, professional engineers signature, the closure certification must also be signed by the owner or operator of the facility.
21. Within 60 days of certification of closure, MCT must submit to the Davidson County Register of Deeds and to this office, a survey plat indicating the location and dimensions of the units with respect to the permanently surveyed benchmarks.
22. The notation in the deed to the facility property, or on some other instrument which is normally examined during a title search that is required by 40 CFR 265.119(b) must be recorded within 60 days of closure certification.
23. No later than 60 days after certification of closure, MCT must submit to the local zoning authority and this office a record of the type, location, and quantity of hazardous wastes disposed of within the sludge ponds.
24. Within 60 days of certification of closure, MCT must submit to this office a certification signed by the owner or operator, that the information required by 40 CFR 265.119(b) was recorded. A copy of the document in which the notations were placed must be provided to this office.
25. If any material besides asphalt will be the top layer for the cap, a revised diagram must be submitted to this office indicating where these components are to be placed prior to installation.
26. MCT must submit a separate plan to this office for post-closure care within 30 days of the date of this approval letter.

27. Page 12 of the closure plan states that MCT will monthly inspect the vegetative cover of the closed sludge ponds. All components of the cap (i.e. asphalt, vegetative cover, rip-rap must be inspected.
28. Page 12 of the closure plan also states that MCT will monthly inspect the run-on/run-off control systems for the closed sludge ponds. MCT must obtain approval from this office prior to closure completion of the location and construction designs of any type of run-on/run-off control systems.
29. MCT must maintain an on-site copy of the most current post-closure care plan and all revisions until certification of closure has been submitted and accepted by this office. One copy of the post-closure care plan and all revisions must be kept in the general manager's office and the plant engineer's office.

[40 CFR 265.118(b)]

30. Any hazardous material including rinsate, must be properly disposed of within ninety (90) days of generation. Closure must be completed within 180 days after the date of this approval letter.

[40 CFR 265.113]

31. A detailed schedule of the date of completion for each closure activity must be submitted to this office within 30 days of the date of this approval letter.

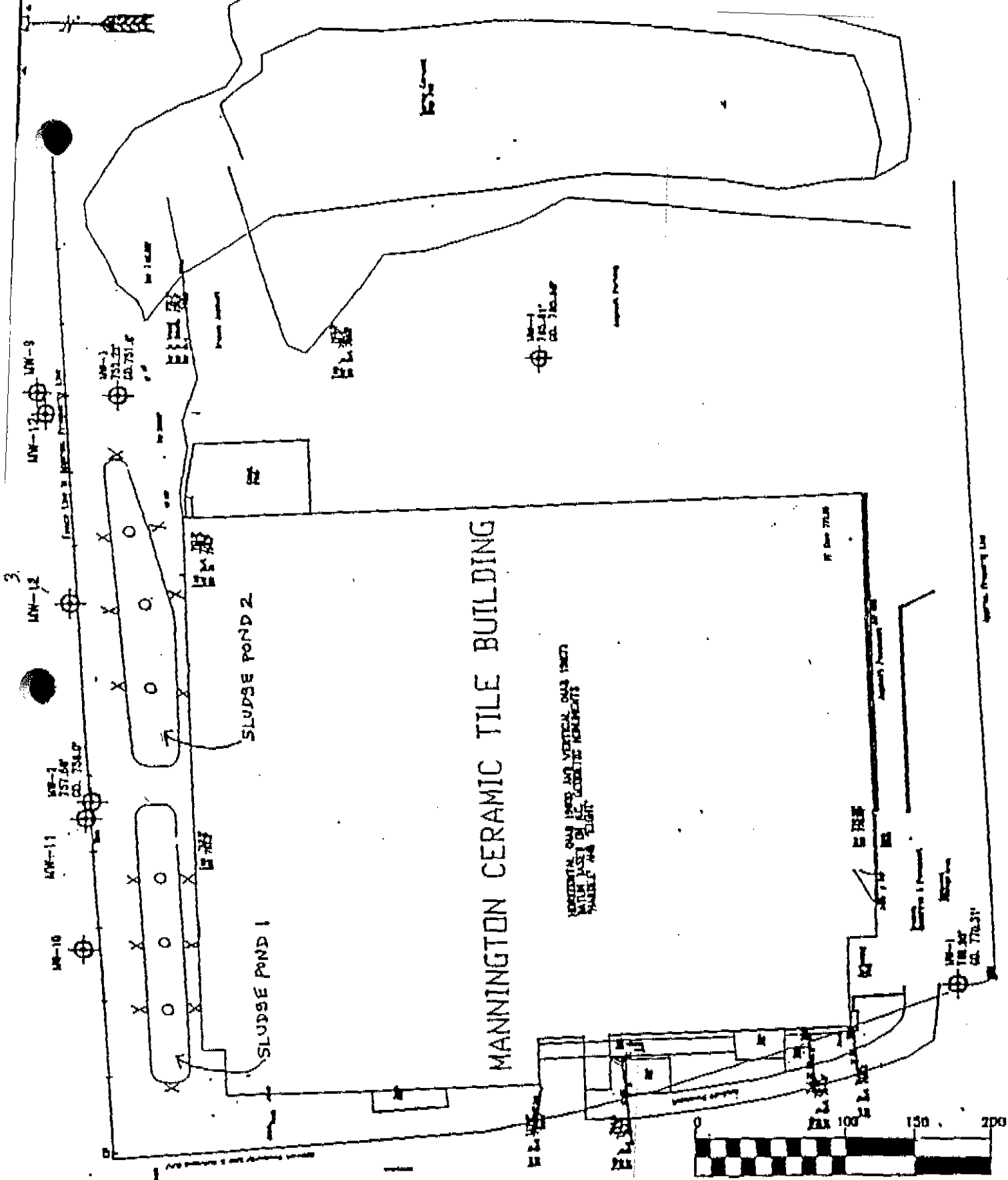
[40 CFR 265.112(b)(6) and (7)]

32. Employees and contract workers managing hazardous waste must have 40 hours of OSHA training and 8 hours of annual update. Personnel training records must be maintained on-site until closure of the facility.

[40 CFR 262.34 and 40 CFR 265.16]

33. Contaminated material must not be stockpiled outside of the waste management unit. Treatment must be done within the boundaries of the waste management unit.

34. Test ten (10) seam locations for seam integrity in the FML.



MANNINGTON CERAMIC TILE COMPANY
LEWISTON, V.C.

FIGURE 2

TITLE:
FACILITY LAYOUT

Appendix B

Analytical Reports for Soil Samples

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A82791-1

March 17, 1993

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile

Table
2

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. CertificationAnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82791-2 | S1 | Nonaqueous | 10/12/92 |
| A82791-3 | S2 | Nonaqueous | 10/12/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

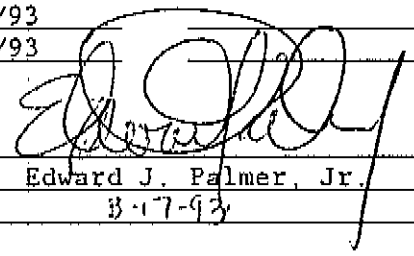
AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-----------------|---|
| | I | II |
| Date Sampled | <u>10/12/92</u> | _____ |
| Receipt/Refrigeration | <u>10/13/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>1/14/93</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>1/15/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/15/93</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/17/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/17/93</u> | _____ |
| Laboratory Manager | (Signature) |  |
| Review & Approval | (Printed Name) | <u>Edward J. Palmer, Jr.</u> |
| | (Date) | <u>3-17-93</u> |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log**AnalytiKEM**

| <u>Sample</u> <u>Designation</u> | <u>TCLP</u> <u>Extraction, (g)</u> | <u>Extraction Fluid</u> | |
|-------------------------------------|---------------------------------------|-------------------------|--------------------|
| | | <u>Type</u> | <u>Volume (ml)</u> |
| A82791-2 | 50 | 1 | 1,000 |
| A82791-3 | 50 | 1 | 1,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82791-2 S1
A82791-3 S2

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82791-2

Client Designation: S1

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 0.05 |
| D005 | Barium | < 1.0 | < 1.0 | 1.0 |
| D006 | Cadmium | < 0.005 | < 0.005 | 0.005 |
| D007 | Chromium | < 0.050 | < 0.050 | 0.05 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.0011 |
| D010 | Selenium | < 0.010 | < 0.010 | 0.01 |
| D011 | Silver | < 0.050 | < 0.050 | 0.05 |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Titanium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.43 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82791-3

Client Designation: S2

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 0.05 |
| D005 | Barium | < 1.0 | < 1.0 | 1.0 |
| D006 | Cadmium | < 0.005 | < 0.005 | 0.005 |
| D007 | Chromium | < 0.050 | < 0.050 | 0.05 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.0011 |
| D010 | Selenium | < 0.010 | < 0.010 | 0.01 |
| D011 | Silver | < 0.050 | < 0.050 | 0.05 |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Titanium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 6.3 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A60651-11

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 108 |
| Barium | 300 | 99 |
| Boron | 300 | 97 |
| Cadmium | 300 | 100 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 96 |
| Lead | 300 | 98 |
| Mercury | 20 | 81 |
| Selenium | 300 | 74 |
| Silver | 300 | 95 |
| Vanadium | 300 | 97 |
| Titanium | 300 | 95 |
| Praseodymium | 300 | 82 |
| Units | (ug) | (%) |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A82824-1

March 17, 1993

Prepared for:

ENSCI
1108 Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82824-1 | S3 | Nonaqueous | 10/20/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

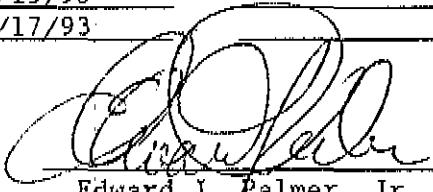
V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-----------------|-------|
| | I | II |
| Date Sampled | <u>10/20/92</u> | _____ |
| Receipt/Refrigeration | <u>10/21/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>1/14/93</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>1/15/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/15/93</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/17/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/17/93</u> | _____ |

Laboratory Manager
Review & Approval

(Signature)
(Printed Name)
(Date)


Edward J. Palmer, Jr.
1/3/93

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid Type Volume (ml)</u> | |
|---------------------------|-----------------------------|--|-------|
| A82824-1 | 50 | 1 | 1,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

AnalytiKEM Designation: A82824-1

Client Designation: S3

| <u>EPA HW Number</u> | <u>Contaminant</u> | <u>Level Found in TCLP Extract (mg/l)</u> | <u>Regulatory Level (mg/l)</u> |
|--------------------------|--------------------|---|------------------------------------|
| D009 | Mercury | 0.0021 | 0.0011 |

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82824-1

Client Designation: S3

| <u>EPA</u> <u>Number</u> | <u>Parameter</u> | <u>Method</u> <u>Blank</u> | <u>Sample</u> <u>Result</u> | <u>Regulatory</u> <u>Level</u> |
|-----------------------------|------------------|-------------------------------|--------------------------------|-----------------------------------|
| D004 | Arsenic | < 0.50 | < 0.54 | 0.05 |
| D005 | Barium | < 1.0 | < 1.0 | 1.0 |
| D006 | Cadmium | < 0.005 | < 0.005 | 0.005 |
| D007 | Chromium | < 0.050 | < 0.050 | 0.05 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.0011 | 0.0021 | 0.0011 |
| D010 | Selenium | < 0.010 | < 0.010 | 0.01 |
| D011 | Silver | < 0.050 | < 0.050 | 0.05 |
| D012 | Cobalt | < 0.050 | < 0.050 | --- |
| D016 | Titanium | < 0.050 | 0.086 | --- |
| D017 | Vanadium | < 0.050 | < 0.050 | --- |
| D018 | Boron | < 0.10 | 17 | --- |
| D019 | Praseodymium | < 0.10 | < 0.10 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A60651-11

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 108 |
| Barium | 300 | 99 |
| Boron | 300 | 97 |
| Cadmium | 300 | 100 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 96 |
| Lead | 300 | 98 |
| Mercury | 20 | 81 |
| Selenium | 300 | 74 |
| Silver | 300 | 95 |
| Vanadium | 300 | 97 |
| Titanium | 300 | 95 |
| Praseodymium | 300 | 82 |
| Units | (ug) | (%) |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651

January 19, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Floriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A60651-1 | B5 | Nonaqueous | 12/28/92 |
| A60651-2 | S7 | Nonaqueous | 12/29/92 |
| A60651-3 | S6 | Nonaqueous | 12/29/92 |
| A60651-4 | S5 | Nonaqueous | 12/29/92 |
| A60651-5 | S8 | Nonaqueous | 12/29/92 |
| A60651-6 | S9 | Nonaqueous | 12/29/92 |
| A60651-7 | S10 | Nonaqueous | 12/29/92 |
| A60651-8 | S4 | Nonaqueous | 12/29/92 |
| A60651-9 | S14 | Nonaqueous | 12/30/92 |
| A60651-10 | S12 | Nonaqueous | 12/30/92 |
| A60651-11 | S13 | Nonaqueous | 12/30/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

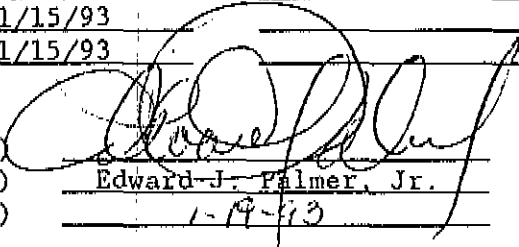
AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|---|-------|
| | I | II |
| Date Sampled | <u>12/28 - 12/30/92</u> | _____ |
| Receipt/Refrigeration | <u>1/04/93</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>1/06/93</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>1/14/93</u> | _____ |
| Mercury | <u>1/14/93</u> | _____ |
| Furnace | <u>1/14/93</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/14/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/15/93</u> | _____ |
| Laboratory Manager | (Signature)  | _____ |
| Review & Approval | (Printed Name) <u>Edward J. Palmer, Jr.</u> | _____ |
| | (Date) <u>1-19-93</u> | _____ |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TCLP Extraction (g)</u> | <u>Extraction Fluid</u> | |
|---------------------------|----------------------------|-------------------------|--------------------|
| | | <u>Type</u> | <u>Volume (ml)</u> |
| A60651-1 | 500 | 1 | 1,000 |
| A60651-2 | 500 | 1 | 1,000 |
| A60651-3 | 500 | 1 | 1,000 |
| A60651-4 | 500 | 1 | 1,000 |
| A60651-5 | 500 | 1 | 1,000 |
| A60651-6 | 500 | 1 | 1,000 |
| A60651-7 | 500 | 1 | 1,000 |
| A60651-8 | 500 | 1 | 1,000 |
| A60651-9 | 500 | 1 | 1,000 |
| A60651-10 | 500 | 1 | 1,000 |
| A60651-11 | 500 | 1 | 1,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

| | |
|-----------|-----|
| A60651-1 | B5 |
| A60651-2 | S7 |
| A60651-3 | S6 |
| A60651-4 | S5 |
| A60651-5 | S8 |
| A60651-6 | S9 |
| A60651-7 | S10 |
| A60651-8 | S4 |
| A60651-9 | S14 |
| A60651-10 | S12 |
| A60651-11 | S13 |

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-1

Client Designation: B5

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 5.4 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.021 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-2

Client Designation: S7

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | 1.5 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.10 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.66 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.015 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-3

Client Designation: S6

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 1.5 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.032 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-4

Client Designation: S5

| <u>EPA Number,</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|--------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.92 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.019 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-5

Client Designation: S8

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | 0.010 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 4.2 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | < 0.010 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-6

Client Designation: S9

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 2.1 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | < 0.010 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A60651-7Client Designation: S10

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.34 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 1.5 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | < 0.010 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-8Client Designation: S4

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.10 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 3.2 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.037 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-9

Client Designation: S14

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | 0.007 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 1.6 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | < 0.010 | --- |

Units (mg/l) (mg/l) (mg/l)

AnalytiKEM Designation: A60651-10

Client Designation: S12

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.17 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.028 | --- |

Units (mg/l) (mg/l) (mg/l)

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-11

Client Designation: S13

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.088 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.19 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.012 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-11 (Duplicate)

Client Designation: S13

| <u>EPA Number,</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|--------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.077 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.18 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.016 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

IX. Quality Control DataTCLP ProcedureMetalsAqueous Matrix Spike Recovery DataSample Spiked A60651-11

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 100 | 108 |
| Barium | 300 | 99 |
| Boron | 300 | 97 |
| Cadmium | 300 | 100 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 96 |
| Lead | 300 | 98 |
| Mercury | 20 | 81 |
| Selenium | 100 | 74 |
| Silver | 300 | 95 |
| Vanadium | 300 | 97 |
| Titanium | 100 | 95 |
| Praseodymium | 100 | 82 |
| Units | (ug) | (%) |

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Holley

| | |
|---|--|
| Laboratory 2324 Vemsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | ANALYTES | | | | | | | | | | PARAMETERS | | | |
|-------------|--------------------|-------------|------|--------|---|-------------------|-------------|-------------------|----------------|------------------|--------------------------------|------|-----|--------------------------------|-------------------------------|------------|--------------------------------|--------------------------------|---|
| | | | | | | Grab or Composite | 40 ml vials | 990 ml Org. Pres. | 500 ml Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCl | As ₂ S ₃ | S ₂ O ₃ | | As ₂ S ₃ | As ₂ S ₃ | |
| 1. | B5 | 12-28 92 | 1430 | Soil | G | | | 2 | | | | | | | | | 1 | 3 | 8240, 8270, TCLP metals, ground, gross β, Re 226-228, Br, SO ₄ Analyses per attached sheet |
| 2 | S7 | 12-29 92 | 1030 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 3 | S6 | 12-29 92 | 1215 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 4 | S5 | 12-29 92 | 1300 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 5 | S8 | 12-29 92 | 1415 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 6 | S9 | 12-29 92 | 1445 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 7 | S10 | 12-29 92 | 1515 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 8 | S4 | 12-29 92 | 1600 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 9 | S14 | 12-30 92 | 1100 | " | G | | | 2 | | | | | | | | | 1 | 3 | |
| 10 | S12 | 12-30 92 | 1130 | " | G | | | 2 | | | | | | | | | 1 | 3 | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---|
| 1 | 1-10 | <i>Steve Stadelman</i> | <i>Grady Lane</i> | 12-30 92 | 1400 | Rush turnaround P.O. # 31894 |
| 2 | 1-10 | <i>Grady Lane</i> | <i>Janet Winters</i> | 12-30 92 | 1600 | |
| 3 | 1-10 | <i>J. Winters</i> | <i>Holley</i> | 1/4/93 | 1000 | |
| 4 | | | | | | <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |

Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman
 Project: 592032 AnalytIKEM Contact: Holley

| | |
|---|--|
| Laboratory 2324 Vemsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 500 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCL | 250 ml | 500 ml | PARAMETERS |
|-------------|--------------------|----------|------|--------|---|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|--------|--------|--|
| | | | | | | | | | | | | | | | | |
| 1 | S13 | 12-30-92 | 1215 | Soil | G | | | 2 | | | | | 1 | 3 | | 8240, 8270 RLP metals, gross d, gross β, Re. 226-228, B, 304. Analyze per attached sheet |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|------|--|
| 1 | 1 | Steve Stadelman | Grady Lane | 12-30-92 | 1400 | Kust turnaround. P.O. # 31894 |
| 2 | 1 | Grady Lane | Janet Winkles | 12-30-92 | 1605 | |
| 3 | 1 | Janet Winkles | Holley | 1/4/93 | 1000 | Steve Stadelman SAMPLER'S SIGNATURE |
| 4 | | | | | | |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651, Supplemental

February 4, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms*AnalytiKEM*

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A60651-1 | B5 | Nonaqueous | 12/28/92 |
| A60651-2 | S7 | Nonaqueous | 12/29/92 |
| A60651-3 | S6 | Nonaqueous | 12/29/92 |
| A60651-4 | S5 | Nonaqueous | 12/29/92 |
| A60651-5 | S8 | Nonaqueous | 12/29/92 |
| A60651-6 | S9 | Nonaqueous | 12/29/92 |
| A60651-7 | S10 | Nonaqueous | 12/29/92 |
| A60651-8 | S4 | Nonaqueous | 12/29/92 |
| A60651-9 | S14 | Nonaqueous | 12/29/92 |
| A60651-10 | S12 | Nonaqueous | 12/29/92 |
| A60651-11 | S13 | Nonaqueous | 12/30/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

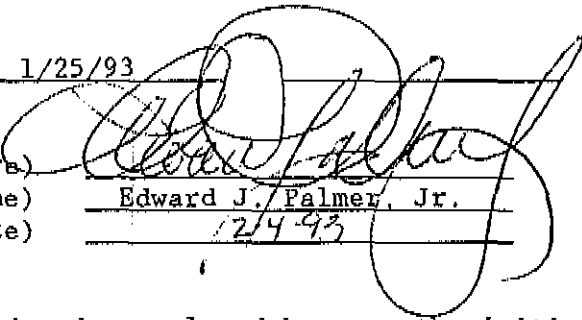
AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|---|-------|
| | I | II |
| Date Sampled | <u>12/28 - 12/30/92</u> | _____ |
| Receipt/Refrigeration | <u>1/04/93</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>1/06/93</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>1/14/93</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/25/93</u> | _____ |
| Laboratory Manager | (Signature)  | _____ |
| Review & Approval | (Printed Name) <u>Edward J. Palmer, Jr.</u> | _____ |
| | (Date) <u>12/4/93</u> | _____ |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid Type</u> | <u>Volume (ml)</u> |
|---------------------------|-----------------------------|------------------------------|--------------------|
| A60651-1 | 50 | 1 | 1,000 |
| A60651-2 | 50 | 1 | 1,000 |
| A60651-3 | 50 | 1 | 1,000 |
| A60651-4 | 50 | 1 | 1,000 |
| A60651-5 | 50 | 1 | 1,000 |
| A60651-6 | 50 | 1 | 1,000 |
| A60651-7 | 50 | 1 | 1,000 |
| A60651-8 | 50 | 1 | 1,000 |
| A60651-9 | 50 | 1 | 1,000 |
| A60651-10 | 50 | 1 | 1,000 |
| A60651-11 | 50 | 1 | 1,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

| | |
|-----------|-----|
| A60651-1 | B5 |
| A60651-2 | S7 |
| A60651-3 | S6 |
| A60651-4 | S5 |
| A60651-5 | S8 |
| A60651-6 | S9 |
| A60651-7 | S10 |
| A60651-8 | S4 |
| A60651-9 | S14 |
| A60651-10 | S12 |
| A60651-11 | S13 |

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-1

Client Designation: B5

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | 0.46 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 3.2 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-2

Client Designation: S7

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | 3.7 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 0.60 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-3

Client Designation: S6

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | 0.45 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 0.43 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-4

Client Designation: S5

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | 0.61 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 2.5 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-5

Client Designation: S8

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 3.6 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-6

Client Designation: S9

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 2.4 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-7

Client Designation: S10

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 0.81 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-8

Client Designation: S4

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 0.44 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-9

Client Designation: S14

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 1.7 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A60651-10

Client Designation: S12

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | 0.70 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-11

Client Designation: S13

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | < 0.20 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-11 (Duplicate)

Client Designation: S13

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| ---- | Manganese | < 0.15 | < 0.15 | --- |
| ---- | Nickel | < 0.40 | < 0.40 | --- |
| ---- | Zinc | < 0.20 | < 0.20 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

IX. Quality Control Data

AnalytiKEM

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A60651-11

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Manganese | 300 | 102 |
| Nickel | 300 | 97 |
| Zinc | 300 | 100 |
| Units | (ug) | (%) |



EFEH & ASSOCIATES

10919 SAGEWIND DRIVE • HOUSTON, TEXAS 77089 • TELEPHONE (713) 996-5031

RECEIVED
FEB 23 1993

February 17, 1993

Mr. Steve Stadelman
ENSCI Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260

Dear Mr. Stadelman:

Following are the results of the soil samples submitted to our laboratory for analyses on January 26, 1993:

P.O. #: 31998

| | | |
|-------------|-------------------------|--------------------------|
| SAMPLE I.D. | S4K 1/23/93 09:00 | S10K 1/23/93 09:00 |
|-------------|-------------------------|--------------------------|

| | | |
|---------|--------|--------|
| LAB NO. | G-2710 | G-2711 |
|---------|--------|--------|

TCLP INORGANIC (Leachate)

| | | |
|------------|------|-------|
| Lead, mg/l | 0.06 | <0.01 |
|------------|------|-------|

METHOD: EPA 1311/6010

Please contact me if you have any questions concerning these results.

Sincerely,

Edwin B. Smith, Jr.
Edwin B. Smith, Jr. PhD

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A82929-1

March 17, 1993

Prepared for:

ENSCI
1108 Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Garmino M. Floriglio

Title: QA/QC Manager

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I. CertificationAnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations**AnalytiKEM**

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82929-1 | S-11 | Nonaqueous | 11/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

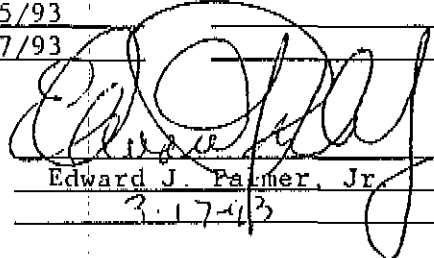
IV. Methodology

AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle**AnalytiKEM**

| | <u>DATE</u> | |
|----------------------------|-----------------|---|
| | I | II |
| Date Sampled | <u>11/16/92</u> | _____ |
| Receipt/Refrigeration | <u>11/17/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>1/14/93</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>1/15/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/15/93</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/17/93</u> | _____ |
| Mercury | <u>1/15/93</u> | _____ |
| Furnace | <u>1/17/93</u> | _____ |
| Laboratory Manager | (Signature) |  |
| Review & Approval | (Printed Name) | <u>Edward J. Palmer, Jr.</u> |
| | (Date) | <u>3-17-93</u> |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid</u> | |
|---------------------------|-----------------------------|-------------------------|--------------------|
| | | <u>Type</u> | <u>Volume (ml)</u> |
| A82929-1 | 50 | 1 | 1,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82929-1 S-11

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82929-1

Client Designation: S-11

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.50 | 0.05 |
| D005 | Barium | < 1.0 | < 1.0 | 1.0 |
| D006 | Cadmium | < 0.005 | < 0.005 | 0.005 |
| D007 | Chromium | < 0.050 | < 0.050 | 0.05 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.0011 |
| D010 | Selenium | < 0.010 | < 0.010 | 0.01 |
| D011 | Silver | < 0.050 | < 0.050 | 0.05 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Titanium | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.42 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

IX. Quality Control Data

TGLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A60651-11

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 108 |
| Barium | 300 | 99 |
| Boron | 300 | 97 |
| Cadmium | 300 | 100 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 96 |
| Lead | 300 | 98 |
| Mercury | 20 | 81 |
| Selenium | 300 | 74 |
| Silver | 300 | 95 |
| Vanadium | 300 | 97 |
| Titanium | 300 | 95 |
| Praseodymium | 300 | 82 |
| Units | (ug) | (%) |

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82791, Supplemental

November 19, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile

Reviewed &
Approved by: Michael H. Mohr, Ph.D. for

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
 Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPPC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82791-1 | B1 | Nonaqueous | 10/12/92 |
| A82791-2 | S1 | Nonaqueous | 10/12/92 |
| A82791-3 | S2 | Nonaqueous | 10/12/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM


All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-----------------|-------|
| | I | II |
| Date Sampled | <u>10/12/92</u> | _____ |
| Receipt/Refrigeration | <u>10/13/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>10/13/92</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>11/16/92</u> | _____ |
| Mercury | <u>11/16/92</u> | _____ |
| Furnace | <u>11/14/92</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>11/17/92</u> | _____ |
| Mercury | <u>11/16/92</u> | _____ |
| Furnace | <u>11/16/92</u> | _____ |

| | | |
|--------------------|----------------|--|
| Laboratory Manager | (Signature) |  |
| Review & Approval | (Printed Name) | <u>Gregory A. Pruna</u> |
| | (Date) | <u>11/19/92</u> |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log**AnalytiKEM**

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid</u> | |
|---------------------------|-----------------------------|-------------------------|--------------------|
| | | <u>Type</u> | <u>Volume (ml)</u> |
| A82791-1 | 100 | 1 | 2,000 |
| A82791-2 | 100 | 1 | 2,000 |
| A82791-3 | 100 | 1 | 2,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82791-1 B1
A82791-2 S1
A82791-3 S2

VIII. Analytical Results**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A82791-1Client Designation: B1

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | 0.54 U | 0.54 U | 5.0 |
| D005 | Barium | 2.4 U | 0.89 J | 100 |
| D006 | Cadmium | 0.11 U | 0.11 U | 1.0 |
| D007 | Chromium | 0.57 U | 0.57 U | 5.0 |
| D008 | Lead | 0.57 U | 0.44 J | 5.0 |
| D009 | Mercury | 0.025 U | 0.025 U | 0.2 |
| D010 | Selenium | 0.33 U | 0.33 U | 1.0 |
| D011 | Silver | 1.0 U | 1.0 U | 5.0 |
| D012 | Cobalt | 0.056 U | 0.056 U | --- |
| D013 | Manganese | 0.019 U | 0.024 | --- |
| D014 | Nickel | 0.046 U | 0.046 U | --- |
| D015 | Zinc | 0.020 U | 0.64 | --- |
| D016 | Titanium | 0.055 U | 0.055 U | --- |
| D017 | Vanadium | 0.054 U | 0.054 U | --- |
| D018 | Boron | 0.028 | 0.81 | --- |
| D019 | Praseodymium | 1.2 U | 1.2 U | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82791-2

Client Designation: S1

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | 0.28 U | 0.28 U | 5.0 |
| D005 | Barium | 4.8 U | 2.2 J | 100 |
| D006 | Cadmium | 0.051 U | 0.051 U | 1.0 |
| D007 | Chromium | 0.30 U | 0.30 U | 5.0 |
| D008 | Lead | 0.30 U | 0.30 U | 5.0 |
| D009 | Mercury | 0.018 U | 0.018 U | 0.2 |
| D010 | Selenium | 0.051 U | 0.051 U | 1.0 |
| D011 | Silver | 0.15 U | 0.15 U | 5.0 |
| ---- | Cobalt | 0.052 U | 0.052 U | --- |
| ---- | Manganese | 0.016 U | 0.045 | --- |
| ---- | Nickel | 0.040 U | 0.040 U | --- |
| ---- | Zinc | 0.017 J | 7.7 | --- |
| ---- | Titanium | 0.051 U | 0.051 U | --- |
| ---- | Vanadium | 0.050 U | 0.050 U | --- |
| ---- | Praseodymium | 0.59 U | 0.59 U | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

VIII. Analytical Results (Cont'd)

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82791-3

Client Designation: S2

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | 0.28 U | 0.28 U | 5.0 |
| D005 | Barium | 4.8 U | 0.89 J | 100 |
| D006 | Cadmium | 0.051 U | 0.012 J | 1.0 |
| D007 | Chromium | 0.30 U | 0.30 U | 5.0 |
| D008 | Lead | 0.30 U | 0.30 U | 5.0 |
| D009 | Mercury | 0.018 U | 0.018 U | 0.2 |
| D010 | Selenium | 0.051 U | 0.051 U | 1.0 |
| D011 | Silver | 0.15 U | 0.15 U | 5.0 |
| ---- | Cobalt | 0.052 U | 0.052 U | --- |
| ---- | Manganese | 0.016 U | 0.015 | --- |
| ---- | Nickel | 0.040 U | 0.040 U | --- |
| ---- | Zinc | 0.017 J | 2.5 | --- |
| ---- | Titanium | 0.051 U | 0.051 U | --- |
| ---- | Vanadium | 0.050 U | 0.050 U | --- |
| ---- | Praseodymium | 0.59 U | 0.59 U | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

IX. Quality Control DataTCLP ProcedureMetalsAqueous Matrix Spike Recovery DataSample Spiked A82832-1-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 106 |
| Barium | 300 | 104 |
| Cadmium | 300 | 99 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 97 |
| Lead | 300 | 100 |
| Manganese | 300 | 92 |
| Mercury | 20 | 113 |
| Nickel | 300 | 101 |
| Selenium | 300 | 99 |
| Silver | 300 | 46 |
| Vanadium | 300 | 101 |
| Zinc | 300 | 100 |
| Titanium | 300 | 99 |
| Praseodymium | 300 | 101 |
| Units | (ppb) | (%) |

53
100
AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A82824

November 5, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:


Name: Carmine M. Floriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82824-1 | S3 | Nonaqueous | 10/20/92 |
| A82824-2 | B2 | Nonaqueous | 10/20/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-------------------------|--------------------------------|
| | I | II |
| Date Sampled | <u>10/20/92</u> | _____ |
| Receipt/Refrigeration | <u>10/21/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>10/22/92</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>10/23/92</u> | _____ |
| Mercury | <u>10/23/92</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>10/23, 24, 26/92</u> | _____ |
| Mercury | <u>10/23/92</u> | _____ |
| Laboratory Manager | (Signature) | <u><i>Gregory A. Prung</i></u> |
| Review & Approval | (Printed Name) | <u>Gregory A. Prung</u> |
| | (Date) | <u>11-9-92</u> |

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

AnalytiKEM

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid Type Volume (ml)</u> | |
|-------------------------------|---------------------------------|--|-------|
| A82824-1 | 100 | 1 | 2,000 |
| A82824-2 | 100 | 1 | 2,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82824-1 S3
A82824-2 B2

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82824-1

Client Designation: S3

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.54 | < 0.54 | 5.0 |
| D005 | Barium | < 2.4 | 2.7 | 100 |
| D006 | Cadmium | < 0.11 | < 0.11 | 1.0 |
| D007 | Chromium | < 0.57 | < 0.57 | 5.0 |
| D008 | Lead | < 0.57 | < 0.57 | 5.0 |
| D009 | Mercury | < 0.019 | < 0.019 | 0.2 |
| D010 | Selenium | < 0.33 | < 0.33 | 1.0 |
| D011 | Silver | < 1.0 | < 1.0 | 5.0 |
| D012 | Cobalt | < 0.056 | 0.074 | --- |
| D013 | Manganese | < 0.019 | 5.3 | --- |
| D014 | Nickel | < 0.46 | < 0.46 | --- |
| D015 | Zinc | < 0.20 | 31 | --- |
| D016 | Titanium | < 0.055 | < 0.055 | --- |
| D017 | Vanadium | < 0.054 | < 0.054 | --- |
| D018 | Boron | < 0.020 | 13 | --- |
| D019 | Praseodymium | < 0.71 | < 0.71 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

VIII. Analytical Results**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A82824-2Client Designation: B2

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.54 | < 0.54 | 5.0 |
| D005 | Barium | < 2.4 | < 2.4 | 100 |
| D006 | Cadmium | < 0.11 | < 0.11 | 1.0 |
| D007 | Chromium | < 0.57 | < 0.57 | 5.0 |
| D008 | Lead | < 0.57 | < 0.57 | 5.0 |
| D009 | Mercury | < 0.019 | < 0.019 | 0.2 |
| D010 | Selenium | < 0.33 | < 0.33 | 1.0 |
| D011 | Silver | < 1.0 | < 1.0 | 5.0 |
| D012 | Cobalt | < 0.056 | < 0.056 | --- |
| D013 | Manganese | < 0.019 | 3.0 | --- |
| D014 | Nickel | < 0.46 | < 0.46 | --- |
| D015 | Zinc | < 0.20 | 0.35 | --- |
| D016 | Titanium | < 0.055 | < 0.055 | --- |
| D017 | Vanadium | < 0.054 | < 0.054 | --- |
| D018 | Boron | < 0.020 | 4.3 | --- |
| D019 | Praseodymium | < 0.71 | < 0.71 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A82791-3

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|---------------------|----------------------------|------------------------|
| Arsenic | 300 | 92 |
| Barium | 300 | 85 |
| Boron | 300 | 98 |
| Cadmium | 300 | 89 |
| Chromium | 300 | 87 |
| Cobalt | 300 | 90 |
| Lead | 300 | 87 |
| Manganese | 300 | 79 |
| Mercury | 20 | 107 |
| Nickel | 300 | 87 |
| Selenium | 300 | 92 |
| Silver | 300 | 50 |
| Vanadium | 300 | 92 |
| Zinc | 300 | 34 |
| Titanium | 300 | 91 |
| Praseodymium ϕ | 300 | 84 |
| Units | (ppb) | (%) |

ϕ Spike performed on sample A82791-2.

Chain-of-Custody Record

828 24

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Stadelman

Project: 592032 AnalytiKEM Contact: Holly

| | |
|--|--|
| Laboratory 2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|--|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 950 ml | 250 ml | ml | ml | ml | ml | PARAMETERS |
|-------------|--------------------|-------------|-------|--------|---|-------------------|------------|---------|------------------|--------------------------------|------|-----|---|
| | | | | | | 40 ml vials | Org. Pres. | Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCl | |
| 1 | S3 | 10-20 92 | 11:45 | soil | G | | 3 | | | | | 2 | Gross α, gross β, radium 226, radium 228, 9240, 8270; metals by TCLP, sulfate & bromine by IC |
| 2 | B2 | 10-20 92 | 10:30 | soil | G | | 3 | | | | | 2 | " " " |
| 3 | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---------------------|
| 1 | 1-2 | Steve Stadelman | Grady Lane | 10-21 92 | 1250 | P.O. # 31682 |
| 2 | 1-2 | Grady Lane | James D. Winters | 10-21 92 | 1450 | |
| 3 | | | | | | |
| 4 | | | | | | SAMPLER'S SIGNATURE |

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: Mannington Tile Soil Laboratory Number: 82824

- 1. Shipped Notes: _____
 Hand Delivered
- 2. COC Present on Receipt Notes: _____
 No COC
- 3. COC Tape on Shipping Container Notes: _____
 No COC Tape on Shipping Container Notes: _____
- 4. Samples Broken/Leaking Notes: _____
 Sample Intact on Receipt
 Other (See Notes)
- 5. Ambient on Receipt Notes: _____
 Chilled on Receipt
- 6. Samples Preserved Correctly Notes: _____
 Improper Preservatives
 N/A (None Recommended)
 Other (See Notes)
- 7. Received Within Holding Time Notes: _____
 Not Received Within Holding Time
 N/A (None Recommended)
 Other (See Notes)
- 8. COC Tapes on Samples Notes: _____
 No COC Tapes on Samples
- 9. Discrepancies Between COC and Sample Labels Notes: _____
 No Discrepancies Noted
 N/A (No COC Received)

Additional Comments: _____

Inspected and Logged in by: Ang Bennett
Date/Time: 10/21/92 6:45 pm

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A83007

December 28, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. CertificationAnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

AnalytiKEM

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations**AnalytiKEM**

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A83007-1 | B3 | Nonaqueous | 12/04/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-----------------------------|-----------------------------|
| | I | II |
| Date Sampled | <u>12/04/92</u> | <u> </u> |
| Receipt/Refrigeration | <u>12/08/92</u> | <u> </u> |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>12/09/92</u> | <u>12/11/92</u> |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u> </u> | <u>12/15, 12/17/92</u> |
| Mercury | <u>12/10/92</u> | <u> </u> |
| Furnace | <u>12/10/92</u> | <u> </u> |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u> </u> | <u>12/14-12/16/92</u> |
| Mercury | <u>12/10/92</u> | <u> </u> |
| Furnace | <u>12/10/92</u> | <u> </u> |

Laboratory Manager (Signature) *Michael Stumacher for*
Review & Approval (Printed Name) Gregory A. Pruna
(Date) 1/3/93

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TGLP Extraction, (g)</u> | <u>Extraction Fluid Type Volume (ml)</u> | |
|---------------------------|-----------------------------|--|-------|
| A83007-1 | 100 | 1 | 2,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A83007-1 B3

VIII. Analytical Results**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A83007-1Client Designation: B3

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 0.05 |
| D005 | Barium | < 2.0 | < 2.0 | 1.0 |
| D006 | Cadmium | < 0.050 | < 0.050 | 1.0 |
| D007 | Chromium | < 0.30 | < 0.30 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.020 | < 0.020 | 0.2 |
| D010 | Selenium | < 0.050 | < 0.050 | 1.0 |
| D011 | Silver | < 0.070 | < 0.070 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Manganese | < 0.015 | 0.032 | --- |
| ---- | Nickel | < 0.080 | < 0.080 | 0.15 |
| ---- | Zinc | < 0.020 | 0.23 * | 5.0 |
| ---- | Titanium | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.020 | 2.6 | --- |
| ---- | Praseodymium | < 0.60 | < 0.60 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

* Analyzed by MSA.

VIII. Analytical Results (Cont'd)**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A83007-1 (Duplicate)Client Designation: B3

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 2.0 | < 2.0 | 100 |
| D006 | Cadmium | < 0.050 | < 0.050 | 1.0 |
| D007 | Chromium | < 0.30 | < 0.30 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.020 | < 0.020 | 0.2 |
| D010 | Selenium | < 0.050 | < 0.050 | 1.0 |
| D011 | Silver | < 0.070 | < 0.070 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Manganese | < 0.015 | 0.027 | --- |
| ---- | Nickel | < 0.080 | < 0.080 | --- |
| ---- | Zinc | < 0.020 | 0.20 * | --- |
| ---- | Titanium | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.020 | 2.7 | --- |
| ---- | Praseodymium | < 0.60 | < 0.60 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

* Analyzed by MSA.

?

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A83007-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 105 |
| Barium | 300 | 119 |
| Cadmium | 300 | 112 |
| Cadmium ϕ | 300 | 104 |
| Chromium | 300 | 111 |
| Chromium ϕ | 300 | 104 |
| Cobalt | 300 | 98 |
| Cobalt ϕ | 300 | 96 |
| Lead | 300 | 122 |
| Lead ϕ | 300 | 97 |
| Manganese | 300 | 107 |
| Mercury | 20 | 102 |
| Nickel | 300 | 109 |
| Selenium | 300 | 108 |
| Silver | 300 | 27 |
| Vanadium | 300 | 95 |
| Zinc | 300 | 115 |
| Zinc ϕ | 300 | 102 |
| Titanium | 300 | 94 |
| Praseodymium | 300 | 101 |
| Units | (ppb) | (%) |

ϕ Spike performed on DI Water.

Chain-of-Custody Record


Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Holly

| | |
|--|--|
| Laboratory 2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|--|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grab or Composite | PARAMETERS | | | | | | | | | | | |
|-------------|--------------------|---------|------|--------|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|-------------|-------------|---|--|--|
| | | | | | | 40 ml vials | 950 ml Dig. Pres. | 250 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCL | 500ml unpr. | 250ml unpr. | | | |
| 1 | B3 | 12-7-92 | 1600 | Soil | G | | | 3 | | | | | | 2 | 1 | Analyses per attached sheet 8240, 8270, metals by ICP, gross, gross, R, 224/228, B, 50 | |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|---------|------|--|
| 1 | 1 | <i>[Signature]</i> | <i>[Signature]</i> | 12-7-92 | 1210 | P.O. # 31833 Rush turnaround on metals. |
| 2 | 1 | <i>[Signature]</i> | <i>[Signature]</i> | 12-7-92 | 1730 | |
| 3 | | | | | |  SAMPLER'S SIGNATURE |
| 4 | | | | | | |

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: 592032

Laboratory Number: 83007

- | | | |
|----|---|--------------|
| 1. | <input type="checkbox"/> Shipped | Notes: _____ |
| | <input checked="" type="checkbox"/> Hand Delivered | |
| 2. | <input checked="" type="checkbox"/> COC Present on Receipt | Notes: _____ |
| | <input type="checkbox"/> No COC | |
| 3. | <input type="checkbox"/> COC Tape on Shipping Container | Notes: _____ |
| | <input checked="" type="checkbox"/> No COC Tape on Shipping Container | Notes: _____ |
| 4. | <input type="checkbox"/> Samples Broken/Leaking | Notes: _____ |
| | <input checked="" type="checkbox"/> Sample Intact on Receipt | |
| | <input type="checkbox"/> Other (See Notes) | |
| 5. | <input type="checkbox"/> Ambient on Receipt | Notes: _____ |
| | <input checked="" type="checkbox"/> Chilled on Receipt | |
| 6. | <input type="checkbox"/> Samples Preserved Correctly | Notes: _____ |
| | <input type="checkbox"/> Improper Preservatives | |
| | <input checked="" type="checkbox"/> N/A (None Recommended) | |
| | <input type="checkbox"/> Other (See Notes) | |
| 7. | <input checked="" type="checkbox"/> Received Within Holding Time | Notes: _____ |
| | <input type="checkbox"/> Not Received Within Holding Time | |
| | <input type="checkbox"/> N/A (None Recommended) | |
| | <input type="checkbox"/> Other (See Notes) | |
| 8. | <input type="checkbox"/> COC Tapes on Samples | Notes: _____ |
| | <input checked="" type="checkbox"/> No COC Tapes on Samples | |
| 9. | <input type="checkbox"/> Discrepancies Between COC and Sample Labels | Notes: _____ |
| | <input checked="" type="checkbox"/> No Discrepancies Noted | |
| | <input type="checkbox"/> N/A (No COC Received) | |

Additional Comments: _____

Inspected and Logged in by: S. Sawyer
Date/Time: 12-8-92 11:20 A.M.

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60646

January 16, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. CertificationAnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms**AnalytiKEM**

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A60646-1 | B4 | Nonaqueous | 12/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.


V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|--|-------|
| | I | II |
| Date Sampled | <u>12/16/92</u> | _____ |
| Receipt/Refrigeration | <u>12/18/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>12/21/92</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>12/23/92 & 1/5/93</u> | _____ |
| Mercury | <u>1/5/93</u> | _____ |
| Furnace | <u>12/26/92</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>1/4 - 1/6/93</u> <u>& 12/28/92</u> | _____ |
| Mercury | <u>12/26/92</u> | _____ |
| Furnace | <u>1/5/93</u> | _____ |

Laboratory Manager
Review & Approval

(Signature)
(Printed Name)
(Date)


Edward J. Palmer, Jr.
1/16/93

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log**AnalytiKEM**

| <u>Sample</u> <u>Designation</u> | <u>TCLP</u> <u>Extraction, (g)</u> | <u>Extraction Fluid</u> | |
|-------------------------------------|---------------------------------------|-------------------------|--------------------|
| | | <u>Type</u> | <u>Volume (ml)</u> |
| A60646-1 | 100 | 1 | 2,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A60646-1 B4

VIII. Analytical Results**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A60646-1Client Designation: B4

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-----------------------|------------------|-------------------------|--------------------------|-----------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 0.05 |
| D005 | Barium | < 1.0 | < 1.0 | 1.0 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 0.05 |
| D009 | Mercury | < 0.0011 | < 0.0011; < 0.0011* | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.025 | < 0.025 | --- |
| ---- | Manganese | < 0.050 | < 0.050 | --- |
| ---- | Nickel | < 0.15 | < 0.15 | 0.15 |
| ---- | Zinc | < 5.0 | < 5.0 | 5.0 |
| ---- | Titanium | < 0.010 | < 0.010 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 1.0 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

* Duplicate analysis.

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

| <u>Parameter</u> | <u>Sample Spiked</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------|------------------------|--------------------|
| Arsenic | A60646-1 | 300 | 108 |
| Barium | A60645-1 | 300 | 110 |
| Boron | A60645-1 | 300 | 116 |
| Boron | DI Water | 300 | 100 |
| Cadmium | A60645-1 | 300 | 97 |
| Chromium | A60645-1 | 300 | 99 |
| Cobalt | A60645-1 | 300 | 85 |
| Lead | A60645-1 | 300 | 93 |
| Manganese | A60644-1 | 300 | 102 |
| Mercury | A60646-1 | 20 | 99 |
| Nickel | A60645-1 | 300 | 96 |
| Selenium | A60646-1 | 300 | 81 |
| Silver | A60645-1 | 300 | 104 |
| Silver | DI Water | 300 | 95 |
| Vanadium | A60645-1 | 300 | 93 |
| Zinc | A60645-1 | 300 | 96 |
| Titanium | A60645-1 | 300 | 93 |
| Praseodymium | A60645-1 | 300 | 104 |
| Units | | (ug) | (%) |

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Holly

Laboratory
 2324 Vemsdale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | ANALYSIS | | | | | | | | | | PARAMETERS | |
|-------------|--------------------|-------------|------|--------|---|-------------------|-------------|-------------------|-------------------|---------|---------------------|-----------------------------------|---------|--------|--------------|------------|-----------------------------|
| | | | | | | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 1/2 - 1/4 mi Step | Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCL | 2.50 ml Tgph | | 1/2 ml Unpres. |
| 1 | B4 | 12-16 92 | 1600 | Soil | G | | | 2 | | | | | | 1 | 3 | | analysis per attached sheet |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | RESULTS DUE BY |
| 5 | | | | | | | | | | | | | | | | | 12-30-92 |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|-----------|---|
| 1 | 1 | <i>Steve Stadelman</i> | <i>Devin Williams</i> | 12-17 92 | 1330 | P.O. # 31868 <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |
| 2 | 1 | <i>Devin Williams</i> | <i>S. Sawyer</i> | 12-17 92 | 1530 | |
| 3 | 1 | <i>S. Sawyer</i> | FEO EX | 12-17 92 | 5:30 P.M. | |
| 4 | 1 | FEO EX | <i>[Signature]</i> | 12/18 | 1000 | |

**ANALYTIKEM
SAMPLE RECEIPT CHECKLIST**

AnalytIKEM

CLIENT NAME ENSCU

ANALYTIKEM NO. 60646

PROJECT NAME _____

COMMENTS

1. 5213684 855 SHIPPED
 AIR BILL #
 HAND-DELIVERED

2. COC PRESENT ON RECEIPT
 NO COC ON RECEIPT
 COC TAPE ON CONTAINERS/COOLERS

NO COC TAPE ON CONTAINERS/COOLERS

3. SAMPLE(S) INTACT ON RECEIPT
 SAMPLE(S) BROKEN/LEAKING
 OTHER (SEE COMMENTS)

4. PROPER TEMPERATURE
 IMPROPER TEMPERATURE

5. PROPERLY PRESERVED
 IMPROPERLY PRESERVED
 NA

6. RECEIVED WITHIN HOLDING TIME
 NOT RECEIVED WITHIN HOLDING TIME
 NA

7. DISCREPANCIES BETWEEN COC AND SAMPLE LABELS

8. NO DISCREPANCIES NOTED

SAMPLES INSPECTED AND LOGGED BY: [Signature]

DATE/TIME: 12/18/92 1000

VIII. Analytical Results**AnalytiKEM**TCLP MetalsAnalytiKEM Designation: A60651-1Client Designation: B5

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | < 1.0 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | < 0.050 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 5.4 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.021 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

AnalytiKEM Designation: A60651-2Client Designation: S7

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.050 | < 0.050 | 5.0 |
| D005 | Barium | < 1.0 | 1.5 | 100 |
| D006 | Cadmium | < 0.005 | < 0.005 | 1.0 |
| D007 | Chromium | < 0.050 | < 0.050 | 5.0 |
| D008 | Lead | < 0.050 | 0.10 | 5.0 |
| D009 | Mercury | < 0.0011 | < 0.0011 | 0.2 |
| D010 | Selenium | < 0.010 | < 0.010 | 1.0 |
| D011 | Silver | < 0.050 | < 0.050 | 5.0 |
| ---- | Cobalt | < 0.050 | < 0.050 | --- |
| ---- | Vanadium | < 0.050 | < 0.050 | --- |
| ---- | Boron | < 0.10 | 0.66 | --- |
| ---- | Praseodymium | < 0.10 | < 0.10 | --- |
| ---- | Titanium | < 0.010 | 0.015 | --- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

TEST REPORT NO. A82918

November 23, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: S92032

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. CertificationAnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission | * |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania ? | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

AnalytiKEM

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| mg/L | Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm). |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| TCLP | Toxic Characteristic Leachate Procedure |
| ZHE | Zero Headspace Extraction |
| TC | Toxic Characteristic |
| ug | Micrograms |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82918-1 | B6-R2 | Nonaqueous | 11/09/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

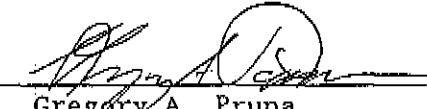
All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

| | <u>DATE</u> | |
|----------------------------|-----------------|-----------|
| | <u>I</u> | <u>II</u> |
| Date Sampled | <u>11/09/92</u> | _____ |
| Receipt/Refrigeration | <u>11/13/92</u> | _____ |
| <u>TCLP Extractions</u> | | |
| TC Extraction | <u>11/16/92</u> | _____ |
| <u>Sample Preparations</u> | | |
| Metals: | | |
| General | <u>11/18/92</u> | _____ |
| Mercury | <u>11/19/92</u> | _____ |
| Furnace | <u>11/18/92</u> | _____ |
| <u>Analyses</u> | | |
| Metals: | | |
| General | <u>11/18/92</u> | _____ |
| Mercury | <u>11/19/92</u> | _____ |
| Furnace | <u>11/18/92</u> | _____ |

Laboratory Manager (Signature) 
Review & Approval (Printed Name) Gregory A. Pruna
(Date) 11/25/92

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

VI. Extraction Log

| <u>Sample Designation</u> | <u>TCLP Extraction, (g)</u> | <u>Extraction Fluid Type Volume (ml)</u> | |
|---------------------------|-----------------------------|--|-------|
| A82918-1 | 100 | 1 | 2,000 |

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82918-1 B6-R2

VIII. Analytical Results

AnalytiKEM

TCLP Metals

AnalytiKEM Designation: A82918-1

Client Designation: B6-R2

| <u>EPA Number</u> | <u>Parameter</u> | <u>Method Blank</u> | <u>Sample Result</u> | <u>Regulatory Level</u> |
|-------------------|------------------|---------------------|----------------------|-------------------------|
| D004 | Arsenic | < 0.28 | < 0.28 | 0.50 |
| D005 | Barium | < 4.8 | < 4.8 | 10 |
| D006 | Cadmium | < 0.051 | < 0.051 | 0.10 |
| D007 | Chromium | < 0.30 | < 0.30 | 0.50 |
| ---- | Cobalt | < 0.052 | < 0.052 | -- |
| D008 | Lead | < 0.30 | < 0.30 | 0.50 |
| ---- | Manganese | < 0.016 | 0.041 | -- |
| D009 | Mercury | < 0.018 | < 0.018 | 0.020 |
| ---- | Nickel | < 0.040 | < 0.040 | -- |
| D010 | Selenium | < 0.051 | < 0.051 | 0.10 |
| D011 | Silver | < 0.15 | < 0.15 | 0.50 |
| ---- | Vanadium | < 0.050 | < 0.050 | -- |
| ---- | Zinc | < 0.020 | 2.2 | -- |
| ---- | Titanium | < 0.051 | < 0.051 | -- |
| ---- | Praseodymium | < 0.59 | < 0.59 | -- |
| Units | | (mg/l) | (mg/l) | (mg/l) |

Note: All results are corrected for spike recoveries.

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A82832-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery MS</u> |
|------------------|----------------------------|------------------------|
| Arsenic | 300 | 106 |
| Barium | 300 | 104 |
| Cadmium | 300 | 99 |
| Chromium | 300 | 100 |
| Cobalt | 300 | 97 |
| Lead | 300 | 100 |
| Manganese | 300 | 92 |
| Mercury | 200 | 113 |
| Nickel | 300 | 101 |
| Selenium | 300 | 99 |
| Silver | 300 | 46 |
| Vanadium | 300 | 101 |
| Zinc | 300 | 100 |
| Titanium | 300 | 99 |
| Praseodymium | 300 | 101 |
| Units | (ppb) | (%) |

Chain-of-Custody Record 82918

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste


Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Jean Neil

Laboratory
 2324 Varnsdale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | PRESERVATION | | | | | | | | | | PARAMETERS | | | |
|-------------|--------------------|---------|------|--------|-------------------|-------------|-------------------|------------|---------------------|-----------------------------------|---------|--------|--|--|------------|--|--|---------------------------|
| | | | | | Grab or Composite | 40 ml vials | 850 ml Org. Pres. | ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCL | | | | | | |
| 1 | B6-R2 | 11-9-92 | 1330 | Soil | G | | | | | | | | | | | | | metals per attached sheet |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|------|--|
| 1 | 1 | <u>Steve Stadelman</u> | <u>Skip Sawyer</u> | 11-12-92 | 1610 | 3-day TAT. P.O. # 31767 |
| 2 | | | | | |  SAMPLER'S SIGNATURE |
| 3 | | | | | | |
| 4 | | | | | | |
| 4 | | | | | | |

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: 31767

Laboratory Number: 82918

- 1. Shipped Notes: _____
 Hand Delivered
- 2. COC Present on Receipt Notes: _____
 No COC
- 3. COC Tape on Shipping Container Notes: _____
 No COC Tape on Shipping Container Notes: _____
- 4. Samples Broken/Leaking Notes: _____
 Sample Intact on Receipt
 Other (See Notes)
- 5. Ambient on Receipt Notes: _____
 Chilled on Receipt
- 6. Samples Preserved Correctly Notes: _____
 Improper Preservatives
 N/A (None Recommended)
 Other (See Notes)
- 7. Received Within Holding Time Notes: _____
 Not Received Within Holding Time
 N/A (None Recommended)
 Other (See Notes)
- 8. COC Tapes on Samples Notes: _____
 No COC Tapes on Samples
- 9. Discrepancies Between COC and Sample Labels Notes: _____
 No Discrepancies Noted
 N/A (No COC Received)

Additional Comments: _____

Inspected and Logged in by: S. Sawyer
Date/Time: 11-13-92 11:20 A.M.

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: 31767

Laboratory Number: 82918

- 1. Shipped Notes: _____
 Hand Delivered
- 2. COC Present on Receipt Notes: _____
 No COC
- 3. COC Tape on Shipping Container Notes: _____
 No COC Tape on Shipping Container Notes: _____
- 4. Samples Broken/Leaking Notes: _____
 Sample Intact on Receipt
 Other (See Notes)
- 5. Ambient on Receipt Notes: _____
 Chilled on Receipt
- 6. Samples Preserved Correctly Notes: _____
 Improper Preservatives
 N/A (None Recommended)
 Other (See Notes)
- 7. Received Within Holding Time Notes: _____
 Not Received Within Holding Time
 N/A (None Recommended)
 Other (See Notes)
- 8. COC Tapes on Samples Notes: _____
 No COC Tapes on Samples
- 9. Discrepancies Between COC and Sample Labels Notes: _____
 No Discrepancies Noted
 N/A (No COC Received)

Additional Comments: _____

Inspected and Logged in by: S. Sawyer
Date/Time: 11-13-92 11:20 A.M.



EFEH & ASSOCIATES

10919 SAGEWIND DRIVE • HOUSTON, TEXAS 77089 • TELEPHONE (713) 996-5031

November 6, 1992

Mr. Steve Stadelman
ENSCI Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260

Dear Mr. Stadelman:

Following are the results of the solid sample submitted to our laboratory for analyses on November 3, 1992:

P.O. #: 31728

SAMPLE I.D.

B6-R2
11/1/92
11:30

LAB NO.

F-9747

TCLP INORGANICS (Leachate)

| | |
|--------------------|--------|
| Arsenic, mg/l | <0.01 |
| Barium, mg/l | 0.08 |
| Boron, mg/l | 1.50 |
| Cadmium, mg/l | <0.005 |
| Chromium, mg/l | <0.01 |
| Cobalt, mg/l | <0.01 |
| Lead, mg/l | 0.02 |
| Manganese, mg/l | 0.07 |
| Mercury, mg/l | <0.002 |
| Nickel, mg/l | <0.01 |
| Praseodymium, mg/l | 0.01 |
| Selenium, mg/l | <0.01 |
| Silver, mg/l | <0.01 |
| Titanium, mg/l | <0.01 |
| Vanadium, mg/l | <0.06 |
| Zinc, mg/l | <0.01 |

METHOD: EPA 1311/6010/7471

Please contact me if you have any questions concerning these results.

Sincerely,

Edwin B. Smith, Jr. PhD.

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651, Revision

February 2, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.

Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated BA60646k as well as the sample. It indicates possible/probable BA60646k contamination. |

III. Sample Designations**AnalytiKEM**

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A60651-1 | B5 | Nonaqueous | 12/28/92 |
| A60651-2 | S7 | Nonaqueous | 12/29/92 |
| A60651-3 | S6 | Nonaqueous | 12/29/92 |
| A60651-4 | S5 | Nonaqueous | 12/29/92 |
| A60651-5 | S8 | Nonaqueous | 12/29/92 |
| A60651-6 | S9 | Nonaqueous | 12/29/92 |
| A60651-7 | S10 | Nonaqueous | 12/29/92 |
| A60651-8 | S4 | Nonaqueous | 12/29/92 |
| A60651-9 | S14 | Nonaqueous | 12/30/92 |
| A60651-10 | S12 | Nonaqueous | 12/30/92 |
| A60651-11 | S13 | Nonaqueous | 12/30/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results**AnalytiKEM**Volatile OrganicsSample Designation

| <u>Parameter</u> | <u>Method Blank 1</u> | <u>A60651-1 B5</u> | <u>A60651-2 S7</u> |
|-----------------------------|---------------------------|------------------------|------------------------|
| Chloromethane | < 10 | < 10 | < 10 |
| Bromomethane | < 10 | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 | < 10 |
| Chloroethane | < 10 | < 10 | < 10 |
| Methylene Chloride | 10 | 6.8 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 | < 100 |
| Carbon Disulfide | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|-------------------------|
| | <u>Method Blank 2</u> | <u>A60651-3 S6</u> | <u>A60651-7 S10</u> |
| Chloromethane | < 10 | < 10 | < 10 |
| Bromomethane | < 10 | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 | < 10 |
| Chloroethane | < 10 | < 10 | < 10 |
| Methylene Chloride | < 5.0 | 6.9 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 | < 100 |
| Carbon Disulfide | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 | < 5.0 |
| Bromodichloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank 3</u> | <u>A60651-4 S5</u> | <u>A60651-6 S9</u> |
| Chloromethane | < 10 | < 10 | < 10 |
| Bromomethane | < 10 | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 | < 10 |
| Chloroethane | < 10 | < 10 | < 10 |
| Methylene Chloride | < 5.0 | < 5.0 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 | < 100 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytikEM**Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|--------------------------|--------------------------|
| | <u>Method Blank 3</u> | <u>A60651-10 S12</u> | <u>A60651-11 S13</u> |
| Chloromethane | < 10 | < 10 | < 10 |
| Bromomethane | < 10 | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 | < 10 |
| Chloroethane | < 10 | < 10 | < 10 |
| Methylene Chloride | < 5.0 | < 5.0 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 | < 100 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank 4</u> | <u>A60651-5 S8</u> | <u>A60651-8 S4</u> |
| Chloromethane | < 10 | < 10 | < 10 |
| Bromomethane | < 10 | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 | < 10 |
| Chloroethane | < 10 | < 10 | < 10 |
| Methylene Chloride | < 5.0 | 6.3 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 | 200 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 | 160 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 | 11 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Volatile OrganicsSample Designation

| <u>Parameter</u> | <u>Method Blank 4</u> | <u>A60651-9 S14</u> |
|-----------------------------|---------------------------|-------------------------|
| Chloromethane | < 10 | < 10 |
| Bromomethane | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 |
| Chloroethane | < 10 | < 10 |
| Methylene Chloride | < 5.0 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-1 B5</u> | <u>A60651-2 S7</u> |
| N-Nitrosodimethylamine | < 330 | < 330 | < 330 |
| Phenol | < 330 | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 | < 330 |
| Isophorone | < 330 | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 | < 330 |
| Naphthalene | < 330 | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-1 B5</u> | <u>A60651-2 S7</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Fluorene | < 330 | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 330 | < 330 |
| Phenanthrene | < 330 | < 330 | < 330 |
| Anthracene | < 330 | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 | < 330 |
| Chrysene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-3 S6</u> | <u>A60651-4 S5</u> |
| N-Nitrosodimethylamine | < 330 | < 330 | < 330 |
| Phenol | < 330 | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 | < 330 |
| Isophorone | < 330 | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 | < 330 |
| Naphthalene | < 330 | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatiles Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-3 S6</u> | <u>A60651-4 S5</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Fluorene | < 330 | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 1,600 | < 1,600 |
| Phenanthrene | < 330 | < 330 | < 330 |
| Anthracene | < 330 | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 | < 330 |
| Chrysene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-5 S8</u> | <u>A60651-6 S9</u> |
| N-Nitrosodimethylamine | < 330 | < 330 | < 330 |
| Phenol | < 330 | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 | < 330 |
| Benzyyl Alcohol | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 | < 330 |
| Isophorone | < 330 | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 | < 330 |
| Naphthalene | < 330 | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-5 S8</u> | <u>A60651-6 S9</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Fluorene | < 330 | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 330 | < 330 |
| Phenanthrene | < 330 | < 330 | < 330 |
| Anthracene | < 330 | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 | < 330 |
| Chrysene | < 330 | < 330 | < 330 |
| Dioctyl Phthalate | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|-------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-7 S10</u> | <u>A60651-8 S4</u> |
| N-Nitrosodimethylamine | < 330 | < 330 | < 330 |
| Phenol | < 330 | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 | < 330 |
| Isophorone | < 330 | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 | < 330 |
| Naphthalene | < 330 | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|-------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60651-7 S10</u> | <u>A60651-8 S4</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Fluorene | < 330 | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 1,600 | < 1,600 |
| Phenanthrene | < 330 | < 330 | < 330 |
| Anthracene | < 330 | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 | < 330 |
| Chrysene | < 330 | < 330 | < 330 |
| Dioctyl Phthalate | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|-------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A60651-9 S14</u> | <u>A60651-10 S12</u> |
| N-Nitrosodimethylamine | < 330 | < 330 | < 330 |
| Phenol | < 330 | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 | < 330 |
| Isophorone | < 330 | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 | < 330 |
| Naphthalene | < 330 | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|-------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A60651-9 S14</u> | <u>A60651-10 S12</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Fluorene | < 330 | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 1,600 | < 1,600 |
| Phenanthrene | < 330 | < 330 | < 330 |
| Anthracene | < 330 | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 | < 330 |
| Chrysene | < 330 | < 330 | < 330 |
| Dioctyl Phthalate | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------------------|---------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A60651-11 S13</u> |
| N-Nitrosodimethylamine | < 330 | < 330 |
| Phenol | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 |
| Isophorone | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 |
| Naphthalene | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A60651-11 S13</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 |
| Fluorene | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 1,600 |
| Phenanthrene | < 330 | < 330 |
| Anthracene | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 |
| Chrysene | < 330 | < 330 |
| Dioctyl Phthalate | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

Parameter

| <u>Sample Designation</u> | <u>Bromide, by IC</u> | <u>Sulfate, by IC</u> |
|---------------------------|-----------------------|-----------------------|
| Method Blank | < 1,000 | < 1,000 |
| A60651-1 B5 | < 1,000 | 110,000 |
| A60651-2 S7 | < 1,000 | 600,000 |
| A60651-3 S6 | < 1,000 | 110,000 |
| A60651-4 S5 | 1,000 | 2,000 |
| A60651-5 S8 | < 1,000 | 110,000 |
| A60651-6 S9 | < 1,000 | 42,000 |
| A60651-7 S10 | < 1,000 | 83,000 |
| A60651-8 S4 | < 1,000 | 120,000 |
| A60651-9 S14 | < 1,000 | 67,000 |
| A60651-10 S12 | < 1,000 | 23,000 |
| A60651-11 S13 | < 1,000 | 11,000 |
| Units | (ug/kg) | (ug/kg) |

VI. Quality Control Data

AnalytiKEM

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A60651-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,1-Dichloroethene | 0.25 | 89 | 93 | 5 | 59-172 | 22 |
| Trichloroethene (TCE) | 0.25 | 106 | 108 | 2 | 62-137 | 24 |
| Chlorobenzene | 0.25 | 102 | 108 | 6 | 60-133 | 21 |
| Toluene | 0.25 | 102 | 106 | 4 | 59-139 | 21 |
| Benzene | 0.25 | 111 | 100 | 10 | 66-142 | 21 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 10 outside control limits

RPD: 0 out of 5 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Volatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---|--|---|
| | <u>1,2-Dichloroethane-d₄</u> <u>(0.25 ug Added)</u> | <u>Toluene-d₈</u> <u>(0.25 ug Added)</u> | <u>4-Bromofluorobenzene</u> <u>(0.25 ug Added)</u> |
| Method Blank 1 | 96 | 100 | 94 |
| Method Blank 2 | 99 | 100 | 105 |
| Method Blank 3 | 97 | 101 | 117 |
| Method Blank 4 | 100 | 102 | 89 |
| A60651-1 Spike | 99 | 98 | 109 |
| A60651-1 Spike Dup. | 103 | 98 | 108 |
| A60651-1 | 99 | 98 | 94 |
| A60651-2 | 96 | 100 | 101 |
| A60651-3 | 97 | 98 | 110 |
| A60651-4 | 97 | 102 | 108 |
| A60651-5 | 101 | 107 | 83 |
| A60651-6 | 97 | 99 | 110 |
| A60651-7 | 101 | 98 | 109 |
| A60651-8 | 111 | 110 | 91 |
| A60651-9 | 102 | 109 | 94 |
| A60651-10 | 99 | 101 | 103 |
| A60651-11 | 100 | 100 | 114 |
| Units | (%) | (%) | (%) |
| Control Limits | 70-121 | 81-117 | 74-121 |

0 out of 51 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)**AnalytiKEM**Semivolatile OrganicsNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A60651-2

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 100 | 59 | 56 | 5 | 28-104 | 27 |
| N-Nitrosodipropylamine | 100 | 58 | 52 | 11 | 41-126 | 38 |
| 1,2,4-Trichlorobenzene | 100 | 68 | 63 | 8 | 38-107 | 23 |
| Acenaphthene | 100 | 94 | 83 | 12 | 31-137 | 19 |
| 2,4-Dinitrotoluene | 100 | 75 | 75 | 0 | 28-89 | 47 |
| Pyrene | 100 | 129 | 123 | 5 | 35-142 | 36 |
| Phenol | 200 | 61 | 57 | 7 | 26-90 | 35 |
| 2-Chlorophenol | 200 | 67 | 70 | 4 | 25-102 | 50 |
| 4-Chloro-3-methylphenol | 200 | 58 | 53 | 9 | 26-103 | 33 |
| 4-Nitrophenol | 200 | 49 | 46 | 6 | 11-114 | 50 |
| Pentachlorophenol | 200 | 95 | 92 | 3 | 17-109 | 47 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 22 outside control limitsRPD: 0 out of 11 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Surrogate Recovery Data

| Sample Designation | <u>Surrogate Recovery</u> | | |
|---------------------|--|--|--|
| | <u>2-Fluorophenol (200 ug Added)</u> | <u>Phenol-d₅ (200 ug Added)</u> | <u>2,4,6-Tribromophenol (200 ug Added)</u> |
| Method Blank | 27 | 31 | 67 |
| A60651-2 Spike | 75 | 64 | 105 |
| A60651-2 Spike Dup. | 71 | 58 | 93 |
| A60651-1 | 28 | 36 | 57 |
| A60651-2 | 77 | 69 | 77 |
| A60651-3 | 28 | 42 | 54 |
| A60651-4 | 29 | 33 | 53 |
| A60651-5 | 27 | 30 | 37 |
| A60651-6 | 28 | 35 | 52 |
| A60651-7 | 32 | 40 | 54 |
| A60651-8 | 26 | 37 | 46 |
| A60651-9 | 26 | 26 | 51 |
| A60651-10 | 25 | 27 | 48 |
| A60651-11 | 32 | 48 | 49 |
| Units | (%) | (%) | (%) |
| Control Limits | 25-121 | 24-113 | 19-122 |

| Sample Designation | <u>Surrogate Recovery</u> | | |
|---------------------|--|--|--|
| | <u>Nitrobenzene-d₅ (100 ug Added)</u> | <u>2-Fluorobiphenyl (100 ug Added)</u> | <u>Terphenyl-d₁₄ (100 ug Added)</u> |
| Method Blank | 34 | 67 | 82 |
| A60651-2 Spike | 71 | 74 | 122 |
| A60651-2 Spike Dup. | 62 | 70 | 120 |
| A60651-1 | 41 | 65 | 79 |
| A60651-2 | 76 | 75 | 122 |
| A60651-3 | 42 | 47 | 96 |
| A60651-4 | 45 | 43 | 103 |
| A60651-5 | 24 | 34 | 43 |
| A60651-6 | 42 | 64 | 74 |
| A60651-7 | 46 | 60 | 76 |
| A60651-8 | 45 | 44 | 87 |
| A60651-9 | 33 | 46 | 90 |
| A60651-10 | 35 | 41 | 86 |
| A60651-11 | 38 | 42 | 79 |
| Units | (%) | (%) | (%) |
| Control Limits | 23-120 | 30-115 | 18-137 |

0 out of 84 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)**AnalytiKEM**General ChemistryNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A60651-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| Sulfate | 100 | 97 | 98 | 1 | 75-125 | 20 |
| Bromide | 75 | 99 | 99 | 0 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limitsRPD: 0 out of 2 outside control limits

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Holley

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 500 ml Unpres. | H ₂ O ₂ | H ₂ SO ₄ | NaOH | HCL | 250 ml Sept. | 750 ml Sept. | PARAMETERS |
|-------------|--------------------|-------------|------|--------|-------------------|-------------|-------------------|----------------|-------------------------------|--------------------------------|------|-----|--------------|--------------|---|
| | | | | | | | | | | | | | | | |
| 1 | B5 | 12-28 92 | 1430 | Soil | G | | 2 | | | | | 1 | 3 | | 8240, 8370, TCLP metals, Gravd, Gross B, Re 226-228, Br, SO ₄ . Analyzed per attached ⁶ Lab |
| 2 | S7 | 12-29 92 | 1030 | " | G | | 2 | | | | | 1 | 3 | | |
| 3 | S6 | 12-29 92 | 1215 | " | G | | 2 | | | | | 1 | 3 | | |
| 4 | S5 | 12-29 92 | 1300 | " | G | | 2 | | | | | 1 | 3 | | |
| 5 | S8 | 12-29 92 | 1415 | " | G | | 2 | | | | | 1 | 3 | | |
| 6 | S9 | 12-29 92 | 1445 | " | G | | 2 | | | | | 1 | 3 | | |
| 7 | S10 | 12-29 92 | 1515 | " | G | | 2 | | | | | 1 | 3 | | |
| 8 | S4 | 12-29 92 | 1600 | " | G | | 2 | | | | | 1 | 3 | | |
| 9 | S14 | 12-30 92 | 1100 | " | G | | 2 | | | | | 1 | 3 | | |
| 10 | S12 | 12-30 92 | 1130 | " | G | | 2 | | | | | 1 | 3 | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---------------------------------|
| 1 | 1-10 | Steve Stadelman | Grady Lane | 12-30 92 | 1400 | Rush turnaround P.O. # 31894 |
| 2 | 1-10 | Grady Lane | Janet Winters | 12-30 92 | 1605 | |
| 3 | 1-10 | J. Winters | Holley | 1/4/93 | 1600 | |
| 4 | | | | | | SAMPLER'S SIGNATURE |

Inventory Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSC Sample Collector: Steve Stadelman

Project: 592032 AnalytiKEM Contact: Holley

Laboratory
 2324 Vernsdale Road
 Rock Hill, South Carolina 29731
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Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grad or Composite | 40 ml vials | 950 ml Org. Pres. | 525 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCl | 250 ml Sept. | 150 ml. unopen | PARAMETERS |
|-------------|--------------------|-------------|------|--------|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|--------------|----------------|---|
| | | | | | | | | | | | | | | | |
| 1 | 513 | 12-30 92 | 1215 | Soil | G | | 2 | | | | | 1 | 3 | | 8240, 8270 RLP metals, gross d, gross B, Ra 226-228; Bq 504. Analyze per attached sheet |
| 2 | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|--|
| 1 | 1 | Steve Stadelman | Grady Lane | 12-30 92 | 1400 | KusL turnaround. |
| 2 | 1 | Grady Lane | Janet Winkles | 12-30 92 | 1605 | P.O. # 31894 |
| 3 | 1 | Janet Winkles | | 1/4/92 | 1000 | |
| 4 | | | | | | Steve Stadelman SAMPLER'S SIGNATURE |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
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1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60646, Revision

February 2, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated BA60646k as well as the sample. It indicates possible/probable BA60646k contamination. |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A60646-1 | B4 | Nonaqueous | 12/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results**AnalytiKEM**Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|-------------------------------|------------------------------|
| | <u>Method</u> <u>Blank</u> | <u>A60646-1</u> <u>B4</u> |
| Chloromethane | < 10 | < 10 |
| Bromomethane | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 |
| Chloroethane | < 10 | < 10 |
| Methylene Chloride | < 5.0 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 |
| Carbon Disulfide | < 5.0 | < 5.0 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 |
| m-Xylene | < 5.0 | < 5.0 |
| o,p-Xylene | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------------------|---------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60646-1 B4</u> |
| N-Nitrosodimethylamine | < 330 | < 330 |
| Phenol | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 |
| Isophorone | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 |
| Naphthalene | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatiles Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|------------------------|
| | <u>Method Blank</u> | <u>A60646-1 B4</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 |
| Fluorene | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 |
| Pentachlorophenol | < 1,600 | < 1,600 |
| Phenanthrene | < 330 | < 330 |
| Anthracene | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 |
| Benzidine | < 3,300 | < 3,300 |
| Pyrene | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 |
| Chrysene | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

Sample Designation

| <u>Parameter</u> | <u>Method</u> <u>Blank</u> | <u>A60646-1</u> <u>B4</u> |
|------------------|-------------------------------|------------------------------|
| Bromide, by IC | < 1,000 | < 1,000 |
| Sulfate, by IC | < 1,000 | 30,000 |
| Units | (ug/kg) | (ug/kg) |

VI. Quality Control Data

AnalytiKEM

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A29123-2

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,1-Dichloroethene | 0.25 | 98 | 94 | 5 | 59-172 | 22 |
| Trichloroethene (TCE) | 0.25 | 97 | 94 | 3 | 62-137 | 24 |
| Benzene | 0.25 | 92 | 94 | 2 | 60-133 | 21 |
| Toluene | 0.25 | 89 | 89 | 0 | 59-139 | 21 |
| Chlorobenzene | 0.25 | 100 | 96 | 3 | 66-142 | 21 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 10 outside control limits

RPD: 0 out of 5 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Volatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample</u> <u>Designation</u> | <u>Surrogate Recovery</u> | | |
|-------------------------------------|---|--|---|
| | <u>1,2-Dichloroethane-d₄</u> <u>(0.25 ug Added)</u> | <u>Toluene-d₈</u> <u>(0.25 ug Added)</u> | <u>4-Bromofluorobenzene</u> <u>(0.25 ug Added)</u> |
| Method Blank | 114 | 97 | 98 |
| A29123-2 Spike | 99 | 98 | 109 |
| A29123-2 Spike Dup. | 103 | 98 | 108 |
| A60646-1 | 113 | 94 | 94 |
| Units | (%) | (%) | (%) |
| Control Limits | 70-121 | 81-117 | 74-121 |

0 out of 12 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)**AnalytikEM**Semivolatile OrganicsNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A9434-2

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 100 | 55 | 62 | 12 | 28-104 | 27 |
| N-Nitrosodipropylamine | 100 | 68 | 67 | 1 | 41-126 | 38 |
| 1,2,4-Trichlorobenzene | 100 | 52 | 62 | 18 | 38-107 | 23 |
| Acenaphthene | 100 | 87 | 89 | 2 | 31-137 | 19 |
| 2,4-Dinitrotoluene | 100 | 81 | 77 | 13 | 28-89 | 47 |
| Pyrene | 100 | 103 | 121 | 16 | 35-142 | 36 |
| Phenol | 200 | 59 | 59 | 0 | 26-90 | 35 |
| 2-Chlorophenol | 200 | 53 | 54 | 2 | 25-102 | 50 |
| 4-Chloro-3-methylphenol | 200 | 57 | 56 | 2 | 26-103 | 33 |
| 4-Nitrophenol | 200 | 75 | 65 | 14 | 11-114 | 50 |
| Pentachlorophenol | 200 | 58 | 58 | 0 | 17-109 | 47 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 22 outside control limitsRPD: 0 out of 11 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Semivolatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|--------------------------------------|--|--|
| | <u>2-Fluorophenol (200 ug Added)</u> | <u>Phenol-d₅ (200 ug Added)</u> | <u>2,4,6-Tribromophenol (200 ug Added)</u> |
| Method Blank | 88 | 52 | 73 |
| A9434-2 Spike | 76 | 79 | 90 |
| A9434-2 Spike Dup. | 82 | 82 | 82 |
| A60646-1 | 112 | 112 | 57 |
| Units | (%) | (%) | (%) |
| Control Limits | 25-121 | 24-113 | 19-122 |

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|--|--|--|
| | <u>Nitrobenzene-d₅ (100 ug Added)</u> | <u>2-Fluorobiphenyl (100 ug Added)</u> | <u>Terphenyl-d₁₄ (100 ug Added)</u> |
| Method Blank | 114 | 43 | 86 |
| A9434-2 Spike | 85 | 86 | 84 |
| A9434-2 Spike Dup. | 100 | 93 | 125 |
| A60646-1 | 83 | 75 | 103 |
| Units | (%) | (%) | (%) |
| Control Limits | 23-120 | 30-115 | 18-137 |

0 out of 24 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A60646-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| Sulfate, by IC | 100 | 91 | 95 | 4 | 75-125 | 20 |
| Bromide, by IC | 75 | 95 | 94 | 1 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

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Chain-of-Custody

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Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

Client AnalytiKEM

Project: 60646

AnalytiKEM Contact Michelle Levin

| SAMPLE DESIGNATION | DATE | MATRIX | | | | | | | | | | | PARAMETERS | | |
|--------------------|----------|--------|-------------|----------------------|-------------------|---------------|------------------------|--------------------------------------|--------------------------------------|------------|--|--|------------|--|--|
| | | | 40 ml vials | 950 ml Org. Pres. | 500 ml Unpres. | ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml H ₂ SO ₄ | ml NaOH | | | | | |
| 60646-1 | 12/16/92 | solid | | | 1 | | | | | | | | | | Radium 226, Radium 228, Gross Alpha Bet |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |

I. Field Measurements:
Data Sheets: Y N
Filtered: Y Not Required

II. Field Conditions/Comments: _____

III. Special Instructions:
(Detection Limits, Data Package, etc.) _____

| | | | |
|--------------------|---------------|---------------------------------------|---------------|
| Relinquished By: | Time/Date: | Received By: | Time/Date: |
| <u>[Signature]</u> | 1700 12/23/92 | Ambargo Express <u>[Signature]</u> | 12-24-92 1200 |

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A82824

November 5, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units. |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l ³ | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination. |

III. Sample Designations

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82824-1 | S3 | Nonaqueous | 10/20/92 |
| A82824-2 | B2 | Nonaqueous | 10/20/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results**AnalytiKEM**Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|-------------------------------|------------------------------|------------------------------|
| | <u>Method</u> <u>Blank</u> | <u>A82824-1</u> <u>S3</u> | <u>A82824-2</u> <u>B2</u> |
| Chloromethane | < 1,000 | < 1,000 | < 1,000 |
| Bromomethane | < 1,000 | < 1,000 | < 1,000 |
| Vinyl Chloride | < 1,000 | < 1,000 | < 1,000 |
| Chloroethane | < 1,000 | < 1,000 | < 1,000 |
| Methylene Chloride | < 500 | < 500 | < 500 |
| 2-Propanone (Acetone) | <10,000 | < 10,000 | < 10,000 |
| Carbon Disulfide | < 500 | < 500 | < 500 |
| 1,1-Dichloroethene | < 500 | < 500 | < 500 |
| 1,1-Dichloroethane | < 500 | < 500 | < 500 |
| trans-1,2-Dichloroethene | < 500 | < 500 | < 500 |
| Chloroform | < 500 | < 500 | < 500 |
| 1,2-Dichloroethane | < 500 | < 500 | < 500 |
| 2-Butanone (MEK) | <10,000 | < 10,000 | < 10,000 |
| 1,1,1-Trichloroethane | < 500 | < 500 | < 500 |
| Carbon Tetrachloride | < 500 | < 500 | < 500 |
| Vinyl Acetate | < 5,000 | < 5,000 | < 5,000 |
| Bromodichloromethane | < 500 | < 500 | < 500 |
| 1,2-Dichloropropane | < 500 | < 500 | < 500 |
| trans-1,3-Dichloropropene | < 500 | < 500 | < 500 |
| Trichloroethene | < 500 | < 500 | < 500 |
| Dibromochloromethane | < 500 | < 500 | < 500 |
| 1,1,2-Trichloroethane | < 500 | < 500 | < 500 |
| Benzene | < 500 | < 500 | < 500 |
| cis-1,3-Dichloropropene | < 500 | < 500 | < 500 |
| 2-Chloroethyl Vinyl Ether | < 1,000 | < 1,000 | < 1,000 |
| Bromoform | < 500 | < 500 | < 500 |
| 4-Methyl-2-Pentanone (MIBK) | < 5,000 | < 5,000 | < 5,000 |
| 2-Hexanone | < 5,000 | < 5,000 | < 5,000 |
| Tetrachloroethene | < 500 | < 500 | < 500 |
| 1,1,2,2-Tetrachloroethane | < 500 | < 500 | < 500 |
| Toluene | < 500 | < 500 | < 500 |
| Chlorobenzene | < 500 | < 500 | < 500 |
| Ethylbenzene | < 500 | < 500 | < 500 |
| Styrene | < 500 | < 500 | < 500 |
| m,p-Xylene | < 500 | < 500 | < 500 |
| o-Xylene | < 500 | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|------------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A82824-1 S3</u> | <u>A82824-2 B2</u> |
| N-Nitrosodimethylamine | < 500 | < 500 | < 500 |
| Phenol | < 500 | < 500 | < 500 |
| Bis(2-chloroethyl) Ether | < 500 | < 500 | < 500 |
| 2-Chlorophenol | < 500 | < 500 | < 500 |
| 1,3-Dichlorobenzene | < 500 | < 500 | < 500 |
| 1,4-Dichlorobenzene | < 500 | < 500 | < 500 |
| Benzyl Alcohol | < 500 | < 500 | < 500 |
| 1,2-Dichlorobenzene | < 500 | < 500 | < 500 |
| 2-Methylphenol | < 500 | < 500 | < 500 |
| Bis(2-chloroisopropyl) Ether | < 500 | < 500 | < 500 |
| 4-Methylphenol | < 500 | < 500 | < 500 |
| N-Nitrosodipropylamine | < 500 | < 500 | < 500 |
| Hexachloroethane | < 500 | < 500 | < 500 |
| Nitrobenzene | < 500 | < 500 | < 500 |
| Isophorone | < 500 | < 500 | < 500 |
| 2-Nitrophenol | < 500 | < 500 | < 500 |
| 2,4-Dimethylphenol | < 500 | < 500 | < 500 |
| Benzoic Acid | < 2,500 | < 2,500 | < 2,500 |
| Bis(2-chloroethoxy)methane | < 500 | < 500 | < 500 |
| 2,4-Dichlorophenol | < 500 | < 500 | < 500 |
| 1,2,4-Trichlorobenzene | < 500 | < 500 | < 500 |
| Naphthalene | < 500 | < 500 | < 500 |
| 4-Chloroaniline | < 500 | < 500 | < 500 |
| Hexachlorobutadiene | < 500 | < 500 | < 500 |
| 4-Chloro-3-methylphenol | < 500 | < 500 | < 500 |
| 2-Methylnaphthalene | < 500 | < 500 | < 500 |
| Hexachlorocyclopentadiene | < 500 | < 500 | < 500 |
| 2,4,6-Trichlorophenol | < 500 | < 500 | < 500 |
| 2,4,5-Trichlorophenol | < 2,500 | < 2,500 | < 2,500 |
| 2-Chloronaphthalene | < 500 | < 500 | < 500 |
| 2-Nitroaniline | < 2,500 | < 2,500 | < 2,500 |
| Dimethyl Phthalate | < 500 | < 500 | < 500 |
| Acenaphthylene | < 500 | < 500 | < 500 |
| 3-Nitroaniline | < 2,500 | < 2,500 | < 2,500 |
| Acenaphthene | < 500 | < 500 | < 500 |
| 2,4-Dinitrophenol | < 2,500 | < 2,500 | < 2,500 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A82824-1 S3</u> | <u>A82824-2 B2</u> |
| 4-Nitrophenol | < 2,500 | < 2,500 | < 2,500 |
| Dibenzofuran | < 500 | < 500 | < 500 |
| 2,4-Dinitrotoluene | < 500 | < 500 | < 500 |
| 2,6-Dinitrotoluene | < 500 | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 | < 500 |
| 4-Chlorophenyl Phenyl Ether | < 500 | < 500 | < 500 |
| Fluorene | < 500 | < 500 | < 500 |
| 4-Nitroaniline | < 2,500 | < 2,500 | < 2,500 |
| 4,6-Dinitro-2-methylphenol | < 2,500 | < 2,500 | < 2,500 |
| N-Nitrosodiphenylamine | < 500 | < 500 | < 500 |
| 4-Bromophenyl Phenyl Ether | < 500 | < 500 | < 500 |
| Hexachlorobenzene | < 500 | < 500 | < 500 |
| Pentachlorophenol | < 500 | < 500 | < 500 |
| Phenanthrene | < 500 | < 500 | < 500 |
| Anthracene | < 500 | < 500 | < 500 |
| Dibutyl Phthalate | < 500 | < 500 | < 500 |
| Fluoranthene | < 500 | < 500 | < 500 |
| Benzidine | < 2,500 | < 2,500 | < 2,500 |
| Pyrene | < 500 | < 500 | < 500 |
| Butylbenzyl Phthalate | < 500 | < 500 | < 500 |
| 3,3'-Dichlorobenzidine | < 1,000 | < 1,000 | < 1,000 |
| Benzo(a)anthracene | < 500 | < 500 | < 500 |
| Bis(2-ethylhexyl) Phthalate | < 500 | < 500 | < 500 |
| Chrysene | < 500 | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 | < 500 |
| Benzo(b)fluoranthene | < 500 | < 500 | < 500 |
| Benzo(k)fluoranthene | < 500 | < 500 | < 500 |
| Benzo(a)pyrene | < 500 | < 500 | < 500 |
| Indeno(1,2,3-cd)pyrene | < 500 | < 500 | < 500 |
| Dibenzo(a,h)anthracene | < 500 | < 500 | < 500 |
| Benzo(g,h,i)perylene | < 500 | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

Sample Designation

| <u>Parameter</u> | <u>Method</u> <u>Blank</u> | <u>A82824-1</u> <u>S3</u> | <u>A82824-2</u> <u>B2</u> |
|------------------|-------------------------------|------------------------------|------------------------------|
| Sulfate, by IC | < 1,000 | 100,000 | 21,000 |
| Bromide, by IC | < 1,000 | < 1,000 | < 1,000 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) |

VI. Quality Control Data**AnalytiKEM**Volatile OrganicsNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A82824-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> |
| 1,1-Dichloroethene | 0.25 | 98 | 85 | 14 | D-234 |
| Trichloroethene (TCE) | 0.25 | 103 | 106 | 3 | 71-157 |
| Chlorobenzene | 0.25 | 106 | 111 | 5 | 37-160 |
| Toluene | 0.25 | 108 | 115 | 6 | 47-150 |
| Benzene | 0.25 | 110 | 118 | 7 | 37-151 |
| Units | (ug) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 10 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Volatile Organics

Nonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|--|---|--|
| | <u>1,2-Dichloroethane-d₄</u> <u>(50 ppb Added)</u> | <u>Toluene-d₈</u> <u>(50 ppb Added)</u> | <u>4-Bromofluorobenzene</u> <u>(50 ppb Added)</u> |
| Method Blank | 102 | 104 | 113 |
| A82824-1 Spike | 94 | 99 | 102 |
| A82824-1 Spike Dup. | 99 | 104 | 108 |
| A82824-1 | 90 | 91 | 105 |
| A82824-2 | 92 | 94 | 102 |
| Units | (%) | (%) | (%) |
| Control Limits | 62-152 | 57-159 | 62-148 |

0 out of 15 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82824-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 50 | 71 | 71 | 0 | 18-120 | 43 |
| N-Nitrosodipropylamine | 50 | 104 | 103 | 1 | 10-156 | 31 |
| 1,2,4-Trichlorobenzene | 50 | 73 | 73 | 0 | 24-161 | 17 |
| Acenaphthene | 50 | 84 | 82 | 2 | 10-151 | 16 |
| 2,4-Dinitrotoluene | 50 | 64 | 61 | 5 | 10-197 | 33 |
| Pyrene | 50 | 106 | 106 | 0 | 10-167 | 31 |
| Phenol | 100 | 67 | 66 | 1 | 10-141 | 41 |
| 2-Chlorophenol | 100 | 58 | 57 | 2 | 33-101 | 19 |
| 4-Chloro-3-methylphenol | 100 | 63 | 53 | 17 | 26-117 | 25 |
| 4-Nitrophenol | 100 | 34 | 18 | 61 | 10-221 | 36 |
| 4-Nitrophenol ϕ | 100 | 95 | -- | -- | 10-221 | 36 |
| Pentachlorophenol | 100 | 61 | 59 | 3 | 10-179 | 16 |
| Units | (ppb) | (%) | (%) | (%) | (%) | (%) |

ϕ Spike performed on DI Water.

Recovery: 0 out of 23 outside control limits

RPD: 1 out of 11 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Surrogate Recovery Data

Surrogate Recovery

| <u>Sample Designation</u> | <u>2-Fluorophenol (200 ppb Added)</u> | <u>Phenol-d₅ (200 ppb Added)</u> | <u>2,4,6-Tribromophenol (200 ppb Added)</u> |
|---------------------------|---------------------------------------|---|---|
| Method Blank | 68 | 76 | 91 |
| A82824-1 Spike | 68 | 72 | 78 |
| A82824-1 Spike Dup. | 68 | 72 | 47 |
| A82824-1 | 79 | 88 | 61 |
| A82824-2 | 89 | 102 | 63 |
| Units | (%) | (%) | (%) |
| Control Limits | 27-106 | 30-88 | 42-89 |

Surrogate Recovery

| <u>Sample Designation</u> | <u>Nitrobenzene-d₅ (100 ppb Added)</u> | <u>2-Fluorobiphenyl (100 ppb Added)</u> | <u>Terphenyl-d₁₄ (100 ppb Added)</u> |
|---------------------------|---|---|---|
| Method Blank | 72 | 81 | 130 |
| A82824-1 Spike | 75 | 83 | 100 |
| A82824-1 Spike Dup. | 71 | 79 | 100 |
| A82824-1 | 95 | 72 | 96 |
| A82824-2 | 101 | 76 | 102 |
| Units | (%) | (%) | (%) |
| Control Limits | 34-107 | 10-157 | 10-175 |

0 out of 30 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A28611-65

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| Sulfate | 100 | 98 | 97 | 1 | 75-125 | 20 |
| Bromide | 75 | 98 | 100 | 2 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

Chain-of-Custody Record

828 24


Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Stadelman

Project: 592032 AnalytiKEM Contact: Holly

| | |
|---|--|
| Laboratory 2324 Vemsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grad or Composite | 40 ml vials | 950 ml Org. Pres. | 23 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCL | 30 ml H ₂ O | 250 mg charcoal | PARAMETERS |
|-------------|--------------------|-------------|-------|--------|---|-------------------|-------------|-------------------|---------------|---------------------|-----------------------------------|---------|--------|------------------------|-----------------|---|
| | | | | | | | | | | | | | | | | |
| 1 | S3 | 10-20 92 | 11:45 | soil | G | | | 3 | | | | | 2 | 1 | | Gross α, gross β, radium 226, radium 228, 8240, 8270, metals by TEL, sulfide & bromine by EL. |
| 2 | B2 | 10-20 92 | 10:30 | soil | G | | | 3 | | | | | 2 | 1 | | " " " |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|--|
| 1 | 1-2 | Steve Stadelman | Grady Lane | 10-21 92 | 1250 | P.O. # 31682 |
| 2 | 1-2 | Grady Lane | James Denton | 10-21 92 | 1450 | |
| 3 | | | | | |  SAMPLER'S SIGNATURE |
| 4 | | | | | | |

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: Mannington Tile Sol Laboratory Number: 82824

- 1. Shipped Notes: _____
 Hand Delivered
- 2. COC Present on Receipt Notes: _____
 No COC
- 3. COC Tape on Shipping Container Notes: _____
 No COC Tape on Shipping Container Notes: _____
- 4. Samples Broken/Leaking Notes: _____
 Sample Intact on Receipt
 Other (See Notes)
- 5. Ambient on Receipt Notes: _____
 Chilled on Receipt
- 6. Samples Preserved Correctly Notes: _____
 Improper Preservatives
 N/A (None Recommended)
 Other (See Notes)
- 7. Received Within Holding Time Notes: _____
 Not Received Within Holding Time
 N/A (None Recommended)
 Other (See Notes)
- 8. COC Tapes on Samples Notes: _____
 No COC Tapes on Samples
- 9. Discrepancies Between COC and Sample Labels Notes: _____
 No Discrepancies Noted
 N/A (No COC Received)

Additional Comments: _____

Inspected and Logged in by: [Signature]
Date/Time: 10/21/92 6:45 pm

524-16210

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82791

October 22, 1992

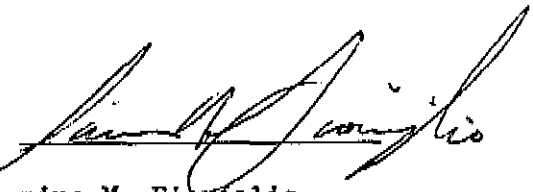
Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile

Reviewed &
Approved by:



Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, Tx | |
|-----------------|---------|---------------|--------|--------------------------|--------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana * | |
| New Jersey | 04012 | | | | |
| New York | 10815 | | | | |
| N. Carolina | 258 | | | | |
| N. Dakota | R-038 | | | | |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| TON | Threshold Odor Number |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination. |

III. Sample Designations**AnalytiKEM**

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82791-1 | B1 | Nonaqueous | 10/12/92 |
| A82791-2 | S1 | Nonaqueous | 10/12/92 |
| A82791-3 | S2 | Nonaqueous | 10/12/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytikEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results

AnalytiKEM

Volatile Organics

| <u>Parameter</u> | <u>Method</u> | | <u>Sample Designation</u> | | |
|-----------------------------|---------------|---|---------------------------|------------------------------|------------------------------|
| | | | <u>Blank</u> | <u>A82791-1</u> <u>Bl</u> | <u>A82791-2</u> <u>S1</u> |
| Chloromethane | 1,000 | U | 1,000 U | 1,000 U | 1,000 U |
| Bromomethane | 1,000 | U | 1,000 U | 1,000 U | 1,000 U |
| Vinyl Chloride | 1,000 | U | 1,000 U | 1,000 U | 1,000 U |
| Chloroethane | 1,000 | U | 1,000 U | 1,000 U | 1,000 U |
| Methylene Chloride | 500 | U | 190 J | 200 J | 220 J |
| 2-Propanone (Acetone) | 10,000 | U | 10,000 U | 10,000 U | 10,000 U |
| Carbon Disulfide | 500 | U | 500 U | 500 U | 500 U |
| 1,1-Dichloroethene | 500 | U | 500 U | 500 U | 500 U |
| 1,1-Dichloroethane | 500 | U | 500 U | 500 U | 500 U |
| trans-1,2-Dichloroethene | 500 | U | 500 U | 500 U | 500 U |
| Chloroform | 500 | U | 500 U | 500 U | 500 U |
| 1,2-Dichloroethane | 500 | U | 500 U | 500 U | 500 U |
| 2-Butanone (MEK) | 10,000 | U | 10,000 U | 10,000 U | 10,000 U |
| 1,1,1-Trichloroethane | 500 | U | 500 U | 500 U | 500 U |
| Carbon Tetrachloride | 500 | U | 500 U | 500 U | 500 U |
| Vinyl Acetate | 5,000 | U | 5,000 U | 5,000 U | 5,000 U |
| Bromodichloromethane | 500 | U | 500 U | 500 U | 500 U |
| 1,2-Dichloropropane | 500 | U | 500 U | 500 U | 500 U |
| trans-1,3-Dichloropropene | 500 | U | 500 U | 500 U | 500 U |
| Trichloroethene | 500 | U | 500 U | 500 U | 500 U |
| Dibromochloromethane | 500 | U | 500 U | 500 U | 500 U |
| 1,1,2-Trichloroethane | 500 | U | 500 U | 500 U | 500 U |
| Benzene | 500 | U | 500 U | 500 U | 500 U |
| cis-1,3-Dichloropropene | 500 | U | 500 U | 500 U | 500 U |
| 2-Chloroethyl Vinyl Ether | 1,000 | U | 1,000 U | 1,000 U | 1,000 U |
| Bromoform | 4.7 | J | 500 U | 500 U | 500 U |
| 4-Methyl-2-Pentanone (MIBK) | 5,000 | U | 5,000 U | 5,000 U | 5,000 U |
| 2-Hexanone | 5,000 | U | 5,000 U | 5,000 U | 5,000 U |
| Tetrachloroethene | 500 | U | 500 U | 500 U | 500 U |
| 1,1,2,2-Tetrachloroethane | 500 | U | 500 U | 500 U | 500 U |
| Toluene | 500 | U | 500 U | 500 U | 500 U |
| Chlorobenzene | 500 | U | 500 U | 500 U | 500 U |
| Ethylbenzene | 500 | U | 500 U | 500 U | 500 U |
| Styrene | 500 | U | 500 U | 500 U | 500 U |
| m,p-Xylene | 500 | U | 500 U | 500 U | 500 U |
| o-Xylene | 500 | U | 500 U | 500 U | 500 U |
| Units | (ug/kg) | | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | | | |
|------------------------------|---------------------------|------------------------|------------------------|------------------------|
| | <u>Method Blank</u> | <u>A82791-1 B1</u> | <u>A82791-2 S1</u> | <u>A82791-3 S2</u> |
| N-Nitrosodimethylamine | 500 U | 500 U | 500 U | 500 U |
| Phenol | 500 U | 500 U | 500 U | 500 U |
| Bis(2-chloroethyl) Ether | 500 U | 500 U | 500 U | 500 U |
| 2-Chlorophenol | 500 U | 500 U | 500 U | 500 U |
| 1,3-Dichlorobenzene | 500 U | 500 U | 500 U | 500 U |
| 1,4-Dichlorobenzene | 500 U | 500 U | 500 U | 500 U |
| Benzyl Alcohol | 500 U | 500 U | 500 U | 500 U |
| 1,2-Dichlorobenzene | 500 U | 500 U | 500 U | 500 U |
| 2-Methylphenol | 500 U | 500 U | 500 U | 500 U |
| Bis(2-chloroisopropyl) Ether | 500 U | 500 U | 500 U | 500 U |
| 4-Methylphenol | 500 U | 500 U | 500 U | 500 U |
| N-Nitrosodipropylamine | 500 U | 500 U | 500 U | 500 U |
| Hexachloroethane | 500 U | 500 U | 500 U | 500 U |
| Nitrobenzene | 500 U | 500 U | 500 U | 500 U |
| Isophorone | 500 U | 500 U | 500 U | 500 U |
| 2-Nitrophenol | 500 U | 500 U | 500 U | 500 U |
| 2,4-Dimethylphenol | 500 U | 500 U | 500 U | 500 U |
| Benzoic Acid | 2,500 U | 220 J | 92 J | 2,500 U |
| Bis(2-chloroethoxy)methane | 500 U | 500 U | 500 U | 500 U |
| 2,4-Dichlorophenol | 500 U | 500 U | 500 U | 500 U |
| 1,2,4-Trichlorobenzene | 500 U | 500 U | 500 U | 500 U |
| Naphthalene | 500 U | 500 U | 500 U | 500 U |
| 4-Chloroaniline | 500 U | 500 U | 500 U | 500 U |
| Hexachlorobutadiene | 500 U | 500 U | 500 U | 500 U |
| 4-Chloro-3-methylphenol | 500 U | 500 U | 500 U | 500 U |
| 2-Methylnaphthalene | 500 U | 500 U | 500 U | 500 U |
| Hexachlorocyclopentadiene | 500 U | 500 U | 500 U | 500 U |
| 2,4,6-Trichlorophenol | 500 U | 500 U | 500 U | 500 U |
| 2,4,5-Trichlorophenol | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| 2-Chloronaphthalene | 500 U | 500 U | 500 U | 500 U |
| 2-Nitroaniline | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| Dimethyl Phthalate | 500 U | 500 U | 500 U | 500 U |
| Acenaphthylene | 500 U | 500 U | 500 U | 500 U |
| 3-Nitroaniline | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| Acenaphthene | 500 U | 500 U | 500 U | 500 U |
| 2,4-Dinitrophenol | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| Units | (ug/kg) | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Method</u> | <u>Sample Designation</u> | | |
|-----------------------------|---------------|---------------------------|-----------------|-----------------|
| | | <u>A82791-1</u> | <u>A82791-2</u> | <u>A82791-3</u> |
| | <u>Blank</u> | <u>B1</u> | <u>S1</u> | <u>S2</u> |
| 4-Nitrophenol | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| Dibenzofuran | 500 U | 500 U | 500 U | 500 U |
| 2,4-Dinitrotoluene | 500 U | 500 U | 500 U | 500 U |
| 2,6-Dinitrotoluene | 500 U | 500 U | 500 U | 500 U |
| Diethyl Phthalate | 500 U | 500 U | 500 U | 500 U |
| 4-Chlorophenyl Phenyl Ether | 500 U | 500 U | 500 U | 500 U |
| Fluorene | 500 U | 500 U | 500 U | 500 U |
| 4-Nitroaniline | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| 4,6-Dinitro-2-methylphenol | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| N-Nitrosodiphenylamine | 500 U | 500 U | 500 U | 500 U |
| 4-Bromophenyl Phenyl Ether | 500 U | 500 U | 500 U | 500 U |
| Hexachlorobenzene | 500 U | 500 U | 500 U | 500 U |
| Pentachlorophenol | 500 U | 500 U | 500 U | 500 U |
| Phenanthrene | 500 U | 500 U | 500 U | 500 U |
| Anthracene | 500 U | 500 U | 500 U | 500 U |
| Dibutyl Phthalate | 240 J | 180 J | 210 J | 180 J |
| Fluoranthene | 500 U | 500 U | 500 U | 500 U |
| Benzidine | 2,500 U | 2,500 U | 2,500 U | 2,500 U |
| Pyrene | 500 U | 500 U | 500 U | 500 U |
| Butylbenzyl Phthalate | 500 U | 500 U | 500 U | 500 U |
| 3,3'-Dichlorobenzidine | 1,000 U | 1,000 U | 1,000 U | 1,000 U |
| Benzo(a)anthracene | 500 U | 500 U | 500 U | 500 U |
| Bis(2-ethylhexyl) Phthalate | 77 J | 74 J | 83 J | 70 J |
| Chrysene | 500 U | 500 U | 500 U | 500 U |
| Diethyl Phthalate | 500 U | 500 U | 500 U | 500 U |
| Benzo(b)fluoranthene | 500 U | 500 U | 500 U | 500 U |
| Benzo(k)fluoranthene | 500 U | 500 U | 500 U | 500 U |
| Benzo(a)pyrene | 500 U | 500 U | 500 U | 500 U |
| Indeno(1,2,3-cd)pyrene | 500 U | 500 U | 500 U | 500 U |
| Dibenzo(a,h)anthracene | 500 U | 500 U | 500 U | 500 U |
| Benzo(g,h,i)perylene | 500 U | 500 U | 500 U | 500 U |
| Units | (ug/kg) | (ug/kg) | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

| <u>Parameter</u> | <u>Method</u> | <u>Sample Designation</u> | | |
|------------------|---------------|---------------------------|-----------------|-----------------|
| | | <u>A82791-1</u> | <u>A82791-2</u> | <u>A82791-3</u> |
| | <u>Blank</u> | <u>B1</u> | <u>S1</u> | <u>S2</u> |
| Bromide, by IC | 1,000 U | 1,000 U | 1,000 U | 1,000 U |
| Sulfate, by IC | 1,000 U | 27,000 | 24,000 | 150,000 |
| Units | (ug/kg) | (ug/kg) | (ug/kg) | (ug/kg) |

Note: The Bromide and Sulfate analyses were performed at our Cherry Hill, NJ facility.

Note: The radioactivity analyses were subcontracted to Teledyne Isotopes. Please see the attached copy of their report.

VI. Quality Control Data

AnalytiKEM

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82714-6

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> |
| 1,1-Dichloroethene | 0.25 | 90 | 91 | 1 | D-234 |
| Trichloroethene (TCE) | 0.25 | 97 | 100 | 3 | 71-157 |
| Benzene | 0.25 | 94 | 96 | 2 | 37-151 |
| Toluene | 0.25 | 96 | 95 | 1 | 47-150 |
| Chlorobenzene | 0.25 | 97 | 96 | 1 | 37-160 |
| Units | (ug) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 10 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Volatile Organics

Nonaqueous Surrogate Recovery Data

| Sample Designation | <u>Surrogate Recovery</u> | | |
|-----------------------|--|---|--|
| | <u>1,2-Dichloroethane-d₄</u> <u>(50 ppb Added)</u> | <u>Toluene-d₈</u> <u>(50 ppb Added)</u> | <u>4-Bromofluorobenzene</u> <u>(50 ppb Added)</u> |
| Method Blank | 73 | 71 | 80 |
| A82714-6 Spike | 96 | 94 | 98 |
| A82714-6 Spike Dup. | 92 | 93 | 98 |
| A82791-1 | 96 | 93 | 97 |
| A82791-2 | 98 | 94 | 99 |
| A82791-3 | 97 | 91 | 98 |
| Units | (%) | (%) | (%) |
| Control Limits | 70-121 | 81-117 | 74-121 |

0 out of 18 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82682-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|------------------------|-----------------|------------|------------|-----------------------|-----------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 50 | 74 | 66 | 11 | 18-120 | 43 |
| N-Nitrosodipropylamine | 50 | 44 | 65 | 38 | 10-156 | 31 |
| 1,2,4-Trichlorobenzene | 50 | 82 | 72 | 13 | 24-161 | 17 |
| Acenaphthene | 50 | 97 | 90 | 7 | 10-151 | 16 |
| 2,4-Dinitrotoluene | 50 | 70 | 71 | 1 | 10-197 | 33 |
| Pyrene | 50 | 109 | 104 | 5 | 10-167 | 31 |
| Phenol | 100 | 71 | 66 | 7 | 10-141 | 41 |
| 2-Chlorophenol | 100 | 72 | 65 | 10 | 33-101 | 19 |
| 4-Chloro-3-methylphenol | 100 | 74 | 64 | 14 | 26-117 | 25 |
| 4-Nitrophenol | 100 | 60 | 58 | 5 | 10-221 | 36 |
| Pentachlorophenol | 100 | 82 | 83 | 1 | 10-179 | 16 |
| Units | (ppb) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 22 outside control limits

RPD: 1 out of 11 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---------------------------------------|---|---|
| | <u>2-Fluorophenol (200 ppb Added)</u> | <u>Phenol-d₃ (200 ppb Added)</u> | <u>2,4,6-Tribromophenol (200 ppb Added)</u> |
| Method Blank | 50 | 51 | 53 |
| A82682-1 Spike | 61 | 68 | 67 |
| A82682-1 Spike Dup. | 59 | 67 | 46 |
| A82791-1 | 53 | 53 | 60 |
| A82791-2 | 41 | 42 | 51 |
| A82791-3 | 39 | 39 | 52 |
| Units | (%) | (%) | (%) |
| Control Limits | 27-106 | 30-88 | 42-89 |

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---|---|---|
| | <u>Nitrobenzene-d₅ (100 ppb Added)</u> | <u>2-Fluorobiphenyl (100 ppb Added)</u> | <u>Terphenyl-d₁₄ (100 ppb Added)</u> |
| Method Blank | 38 | 44 | 68 |
| A82682-1 Spike | 75 | 89 | 100 |
| A82682-1 Spike Dup. | 69 | 84 | 96 |
| A82791-1 | 46 | 52 | 93 |
| A82791-2 | 34 | 39 | 84 |
| A82791-3 | 32 | 39 | 82 |
| Units | (%) | (%) | (%) |
| Control Limits | 34-107 | 10-157 | 10-175 |

1 out of 36 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A60624-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| Bromide | 75 | 97 | 97 | 0 | 75-125 | 20 |
| Sulfate | 100 | 93 | 92 | 1 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

3-day turnaround

Chain-of-Custody Record

p.o. 31652

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Stadelman
 Project: Mannington Tile AnalytiKEM Contact: Jean Neit

| | |
|--|--|
| Laboratory 2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|--|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | ANALYSIS METHODS | | | | | | | | | | PARAMETERS | |
|-------------|--------------------|----------|-------|--------|-------------------|-------------|-------------------|-----------------|------------------|--------------------------------|------|-----|--------|--------|------------|---|
| | | | | | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 2.50 ml Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCL | 500 ml | 750 ml | | |
| 1 | B1 | 10-12-92 | 16:25 | Soil | | | 1 | | | | | | | | | 8240 |
| 2 | B1 | | 16:28 | } | | 2 | | | | | | | | | | 8270 |
| 3 | B1 | | 16:35 | | | | | | | 1 | | | | | | metals by TCLP |
| 4 | B1 | | 16:40 | | | | | | | | 1 | | | | | sulfate and bromide by IC scan |
| 5 | B1 | | 16:40 | | | | | | | | 1 | | | | | gross alpha, gross beta, radium 226 + 228 |
| 6 | S1 | | 17:25 | | | | 1 | | | | | | | | | 8240 |
| 7 | S1 | | 17:30 | | | 2 | | | | | | | | | | 8270 |
| 8 | S1 | | 17:36 | | | | | | | 1 | | | | | | metals by TCLP |
| 9 | S1 | | 17:42 | | | | | | | | 1 | | | | | sulfate & bromide by IC scan |
| 10 | S1 | | 17:42 | | | | | | | | 1 | | | | | gross alpha, gross beta, radium 226 + 228 |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|---------|---|
| 1 | 1-10 | <i>Steve Stadelman</i> | <i>Dennis Miller</i> | 10-13-92 | 1:55 PM | |
| 2 | | <i>Dennis Miller</i> | <i>Janet Winters</i> | 10-13-92 | 4:35 PM | |
| 3 | | | | | | |
| 4 | | | | | | <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |

3-day turnaround

Chain-of-Custody Record

P.O. 31652

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCO Sample Collector: Stadelman
 Project: Mannington Tile AnalytiKEM Contact: Jean N.

| | |
|---|--|
| Laboratory 2324 Vensdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | PRESERVATION | | | | | | | | | | | PARAMETERS | |
|-------------|--------------------|----------|-------|--------|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|--------|--------|--|------------|--|
| | | | | | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 250 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCl | 500 ml | 800 ml | | | |
| 1 | 52 | 10-12-92 | 16:54 | | | | | 1 | | | | | | | | | 8240 |
| 2 | 52 | | 17:00 | | | 2 | | | | | | | | | | | 8270 |
| 3 | 52 | | 17:03 | | | | | | | | | | 1 | | | | metals by TCLP |
| 4 | 52 | | 17:08 | | | | | | | | | | 1 | | | | sulfate & bromine by IC-Scan |
| 5 | 52 | | 17:08 | | | | | | | | | | 1 | | | | gross alpha, gross beta, radon 226 & 228 |
| 6 | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|---------|---------|
| 1 | 1-5 | <i>Steve Stadelman</i> | <i>Janet Winters</i> | 10-13-92 | 1:55 PM | |
| 2 | | <i>Janet Winters</i> | <i>Janet Winters</i> | 10-13-92 | 4:30 PM | |
| 3 | | | | | | |
| 4 | | | | | | |

Steve Stadelman
SAMPLER'S SIGNATURE

SAMPLE RECEIPT CHECKLIST

Client: 82791

Project Number: Mannington Tile Laboratory Number: 82791

- 1. Shipped Notes: _____
- Hand Delivered Notes: _____
- 2. COC Present on Receipt Notes: _____
- No COC Notes: _____
- 3. COC Tape on Shipping Notes: _____
- Container Notes: _____
- No COC Tape on Shipping Notes: _____
- Container Notes: _____
- 4. Samples Broken/Leaking Notes: _____
- Sample Intact on Receipt Notes: _____
- Other (See Notes) Notes: _____
- 5. Ambient on Receipt Notes: _____
- Chilled on Receipt Notes: _____
- 6. Samples Preserved Notes: _____
- Correctly Notes: _____
- Improper Preservatives Notes: _____
- N/A (None Recommended) Notes: _____
- Other (See Notes) Notes: _____
- 7. Received Within Holding Notes: _____
- Time Notes: _____
- Not Received Within Notes: _____
- Holding Time Notes: _____
- N/A (None Recommended) Notes: _____
- Other (See Notes) Notes: _____
- 8. COC Tapes on Samples Notes: _____
- No COC Tapes on Samples Notes: _____
- 9. Discrepancies Between COC Notes: _____
- and Sample Labels Notes: _____
- No Discrepancies Noted Notes: _____
- N/A (No COC Received) Notes: _____

Additional Comments: _____

Inspected and Logged in by: Gruis Longueton
Date/Time: 10/13 5:30 P

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60646, Supplemental

January 24, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses were subcontracted to Teledyne Isotopes. Please see the attached copy of their report.


Reviewed &
Approved by:

Name: Carmin M. Floriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

20 JANUARY 1993

 **TELEDYNE ISOTOPES**
50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/19/93

| WORK ORDER NUMBER | CUSTOMER P.O. NUMBER | DATE RECEIVED | DELIVERY DATE | PAGE |
|-------------------|----------------------|---------------|---------------|------|
| 3-5557 | | 12/24/92 | 01/27/93 | 1 |

ATTN: Q A DEPT
ANALYTICAL INC
28 SPRINGDALE ROAD
CHERRY HILL NJ 08003

S O L I D S

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/W * | MID-COUNT | | VOLUME - UNITS ASH-WEIGHT-% * | LAB. |
|------------------------------|------------------------------|------------|--------------------|-------------------|---------|--------------------------|----------------------|-----------|------|----------------------------------|------|
| | | | START DATE TIME | STOP DATE TIME | | | | DATE | TIME | | |
| 99486 | 60646-1 | | 12/16 | | GR-A | 1.4 +-0.5 E 01 | | 01/06 | | | 3 |
| | | | | | GR-B | 5.1 +-0.4 E 01 | | 01/06 | | | 3 |
| | | | | | RA-226 | 6.9 +-0.7 E-01 | | 01/08 | | | 4 |
| | | | | | RA-228 | 7.0 +-1.3 E-01 | | 01/08 | | | 4 |

LAST PAGE OF REPORT

APPROVED BY *J. Guenther* 01/19/93

SEND 1 COPIES TO AN1335 ATTN: Q A DEPT

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AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60646, Supplemental

January 24, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses were subcontracted to Teledyne Isotopes. Please see the attached copy of their report.

Reviewed &
Approved by:

Name: Carmin M. Floriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

20 JANUARY 1993

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/19/93

| | | | | | |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|
| ATTN: Q A DEPT ANALYTIKFM INC 28 SPRINGDALE ROAD CHERRY HILL NJ | WORK ORDER NUMBER 3-5557 | CUSTOMER P.O. NUMBER 08003 | DATE RECEIVED 12/24/92 | DELIVERY DATE 01/27/93 | PAGE 1 |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|

S O L I D S

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | DATE | TIME | | |
| 99486 | 60646-1 | | 12/16 | | GR-A 1.4 +-0.5 E 01 | | 01/06 | | 3 | |
| | | | | | GR-B 5.1 +-0.4 E 01 | | 01/06 | | 3 | |
| | | | | | RA-226 6.9 +-0.7 E-01 | | 01/08 | | 4 | |
| | | | | | RA-228 7.0 +-1.3 E-01 | | 01/08 | | 4 | |

LAST PAGE OF REPORT

J. Guenther
APPROVED BY J. GUENTHER 01/19/93

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TEST REPORT NO. A82824, Supplemental

November 18, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile

The Radioactivity analyses were subcontracted to Teledyne Isotopes, Laboratories. Please see attached copy of their report.

Reviewed &
Approved by: Michael Thomas, Ph.D.
Name: Carmine M. Floriglio
Title: QA/QC Manager

REPORT OF ANALYSIS

11 NOVEMBER 1992

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPFS

REPORT OF ANALYSIS

RUN DATE 11/10/92

| | | | | | | |
|--|-------|--------|--|----------|----------|--------|
| PATTI DE ANDINO ANALYTIKEM INC 2324 VERNSDALE ROAD ROCK HILL SC | 29731 | 3-4534 | | 10/23/92 | 11/25/92 | PAGE 1 |
|--|-------|--------|--|----------|----------|--------|

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MTD-COUNT | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|--------------------------|----------------------|-----------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | TIME | TIME | | |
| 93817 | 82824-0 NO 1 | | 10/20 | GR-A | 4.5 +-1.0 E 01 | | 11/02 | | 3 | |
| | | | | GR-B | 9.1 +-0.5 E 01 | | 11/02 | | 3 | |
| | | | | RA-226 | 5.9 +-0.9 E 00 | | 11/05 | | 4 | |
| | | | | RA-228 | 2.6 +-0.3 E 00 | | 11/05 | | 4 | |
| 93818 | 82824-0 NO 2 | | 10/20 | GR-A | 2.0 +-0.7 E 01 | | 11/02 | | 3 | |
| | | | | GR-B | 7.5 +-0.5 E 01 | | 11/02 | | 3 | |
| | | | | RA-226 | 3.7 +-0.6 E 00 | | 11/05 | | 4 | |
| | | | | RA-228 | 9.1 +-1.5 E-01 | | 11/05 | | 4 | |

LAST PAGE OF REPORT

APPROVED BY J. GUENTHER 11/10/92



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TEST REPORT NO. A82824, Supplemental

November 18, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile

The Radioactivity analyses were subcontracted to Teledyne Isotopes, Laboratories. Please see attached copy of their report.

Reviewed &


Approved by: Michael Thomas, Ph.D.

Name: Carmine M. Fioriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

11 NOVEMBER 1992

 **TELEDYNE ISOTOPES**
50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPFS

REPORT OF ANALYSIS

RUN DATE 11/10/92

WORK ORDER NUMBER 3-4534 CUSTOMER P.O. NUMBER DATE RECEIVED 10/23/92 DELIVERY DATE 11/25/92 PAGE 1
 PATTI DE ANDINO ANALYTIKES INC 2324 VERNSDALE ROAD ROCK HILL SC 29731

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLINE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/X * | KTD-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 93817 | 82824-0 NO 1 | | 10/20 | | GR-A | 4.5 +-1.0 E 01 | | 11/02 | | 3 | |
| | | | | | GR-B | 9.1 +-0.5 E 01 | | 11/02 | 3 | | |
| | | | | | RA-226 | 5.9 +-0.9 E 00 | | 11/05 | 4 | | |
| | | | | | RA-228 | 2.6 +-0.3 E 00 | | 11/05 | 4 | | |
| 93818 | 82824-0 NO 2 | | 10/20 | | GR-A | 2.0 +-0.7 E 01 | | 11/02 | | 3 | |
| | | | | | GR-B | 7.5 +-0.5 E 01 | | 11/02 | 3 | | |
| | | | | | RA-226 | 3.7 +-0.6 E 00 | | 11/05 | 4 | | |
| | | | | | RA-228 | 9.1 +-1.5 E-01 | | 11/05 | 4 | | |

J. Guenther

LAST PAGE OF REPORT

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TEST REPORT NO. A82929, Supplemental

December 16, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Note: The Radioactivity analyses were subcontracted to Teledyne Isotopes.
Please the attached copy of their report.

Reviewed &
Approved by:

Name: Carmine M. Floriglio

Title: QA/QC Manager

I. Sample Designations

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82929-1 | S-11 | Nonaqueous | 11/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

REPORT OF ANALYSIS

2 DECEMBER 1992

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235

Westwood, N.J. 07675-1235

Phone: 201/664-7070

FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 12/01/92

| | | | | | |
|--|-------------------|----------------------|---------------|---------------|--------|
| | WORK ORDER NUMBER | CUSTOMER P.O. NUMBER | DATE RECEIVED | DELIVERY DATE | PAGE 1 |
| PATTI DE ANDINO ANALYTIKEM INC 2324 VERNSDALE ROAD ROCK HILL SC | 3-4954 | | 11/18/92 | 12/21/92 | |
| | 29731 | | | | |

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 96143 | 82929-1 | | 11/16 | | GR-A | 4.2 +-1.0 E 01 | | 11/23 | | | 3 |
| | | | | | GR-B | 1.1 +-0.1 E 02 | | 11/23 | | | 3 |
| | | | | | RA-226 | 3.8 +-0.4 E 00 | | 11/24 | | | 4 |
| | | | | | RA-228 | 3.6 +-0.4 E 00 | | 11/24 | | | 4 |

LAST PAGE OF REPORT

U. Guenther
APPROVED BY U. GUENTHER 12/01/92

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TEST REPORT NO. A82929, Supplemental

December 16, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Note: The Radioactivity analyses were subcontracted to Teledyne Isotopes.
Please the attached copy of their report.

Reviewed &
Approved by:

Name: Carmin M. Fioriglio

Title: QA/QC Manager

I. Sample Designations

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82929-1 | S-11 | Nonaqueous | 11/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

REPORT OF ANALYSIS

2 DECEMBER 1992

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235

Westwood, N.J. 07675-1235

Phone: 201/664-7070

FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 12/01/92

| | | | | | |
|--|-----------------------------|----------------------|---------------------------|---------------------------|--------|
| PATTI DE ANDINO ANALYTIKEM INC 2324 VERNSDALE ROAD ROCK HILL SC | WORK ORDER NUMBER 3-4954 | CUSTOMER P.O. NUMBER | DATE RECEIVED 11/18/92 | DELIVERY DATE 12/21/92 | PAGE 1 |
|--|-----------------------------|----------------------|---------------------------|---------------------------|--------|

SOIL

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | | ACTIVITY {PCI/GM DRY} | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | TIME | | | DATE | TIME | | |
| 96143 | 82929-1 | | 11/16 | | | GR-A 4.2 +-1.0 E 01 | | 11/23 | | | 3 |
| | | | | | | GR-B 1.1 +-0.1 E 02 | | 11/23 | | | 3 |
| | | | | | | RA-226 3.8 +-0.4 E 00 | | 11/24 | | | 4 |
| | | | | | | RA-228 3.6 +-0.4 E 00 | | 11/24 | | | 4 |

LAST PAGE OF REPORT

D. Guenther
APPROVED BY D. GUENTHER 12/01/92

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AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A83007

December 28, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:

Name: Carmine M. Floriglio

Title: QA/QC Manager

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| III. Sample Designations | 3 |
| IV. Methodology | 4 |
| V. Analytical Results | 5 - 8 |
| VI. Quality Control Data | 9 - 13 |

I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination. |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A83007-1 | B3 | Nonaqueous | 12/04/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results**AnalytiKEM**Volatile OrganicsSample Designation

| <u>Parameter</u> | <u>Method</u> | |
|-----------------------------|---------------|------------------------|
| | <u>Blank</u> | <u>A83007-1 B3</u> |
| Chloromethane | < 10 | < 10 |
| Bromomethane | < 10 | < 10 |
| Vinyl Chloride | < 10 | < 10 |
| Chloroethane | < 10 | < 10 |
| Methylene Chloride | < 5.0 | < 5.0 |
| 2-Propanone (Acetone) | < 100 | < 100 |
| Carbon Disulfide | < 5.0 | 6.3 |
| 1,1-Dichloroethene | < 5.0 | < 5.0 |
| 1,1-Dichloroethane | < 5.0 | < 5.0 |
| trans-1,2-Dichloroethene | < 5.0 | < 5.0 |
| Chloroform | < 5.0 | < 5.0 |
| 1,2-Dichloroethane | < 5.0 | < 5.0 |
| 2-Butanone (MEK) | < 100 | < 100 |
| 1,1,1-Trichloroethane | < 5.0 | < 5.0 |
| Carbon Tetrachloride | < 5.0 | < 5.0 |
| Vinyl Acetate | < 50 | < 50 |
| Bromodichloromethane | < 5.0 | < 5.0 |
| 1,2-Dichloropropane | < 5.0 | < 5.0 |
| trans-1,3-Dichloropropene | < 5.0 | < 5.0 |
| Trichloroethene | < 5.0 | < 5.0 |
| Dibromochloromethane | < 5.0 | < 5.0 |
| 1,1,2-Trichloroethane | < 5.0 | < 5.0 |
| Benzene | < 5.0 | < 5.0 |
| cis-1,3-Dichloropropene | < 5.0 | < 5.0 |
| 2-Chloroethyl Vinyl Ether | < 10 | < 10 |
| Bromoform | < 5.0 | < 5.0 |
| 4-Methyl-2-Pentanone (MIBK) | < 50 | < 50 |
| 2-Hexanone | < 50 | < 50 |
| Tetrachloroethene | < 5.0 | < 5.0 |
| 1,1,2,2-Tetrachloroethane | < 5.0 | < 5.0 |
| Toluene | < 5.0 | < 5.0 |
| Chlorobenzene | < 5.0 | < 5.0 |
| Ethylbenzene | < 5.0 | < 5.0 |
| Styrene | < 5.0 | < 5.0 |
| m,p-Xylene | < 5.0 | < 5.0 |
| o-Xylene | < 5.0 | < 5.0 |
| Units | (ug/l) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------------------|-------------------------------|------------------------------|
| | <u>Method</u> <u>Blank</u> | <u>A83007-1</u> <u>B3</u> |
| N-Nitrosodimethylamine | < 330 | < 330 |
| Phenol | < 330 | < 330 |
| Bis(2-chloroethyl) Ether | < 330 | < 330 |
| 2-Chlorophenol | < 330 | < 330 |
| 1,3-Dichlorobenzene | < 330 | < 330 |
| 1,4-Dichlorobenzene | < 330 | < 330 |
| Benzyl Alcohol | < 330 | < 330 |
| 1,2-Dichlorobenzene | < 330 | < 330 |
| 2-Methylphenol | < 330 | < 330 |
| Bis(2-chloroisopropyl) Ether | < 330 | < 330 |
| 4-Methylphenol | < 330 | < 330 |
| N-Nitrosodipropylamine | < 330 | < 330 |
| Hexachloroethane | < 330 | < 330 |
| Nitrobenzene | < 330 | < 330 |
| Isophorone | < 330 | < 330 |
| 2-Nitrophenol | < 330 | < 330 |
| 2,4-Dimethylphenol | < 330 | < 330 |
| Benzoic Acid | < 1,600 | < 1,600 |
| Bis(2-chloroethoxy)methane | < 330 | < 330 |
| 2,4-Dichlorophenol | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | < 330 | < 330 |
| Naphthalene | < 330 | < 330 |
| 4-Chloroaniline | < 330 | < 330 |
| Hexachlorobutadiene | < 330 | < 330 |
| 4-Chloro-3-methylphenol | < 330 | < 330 |
| 2-Methylnaphthalene | < 330 | < 330 |
| Hexachlorocyclopentadiene | < 330 | < 330 |
| 2,4,6-Trichlorophenol | < 330 | < 330 |
| 2,4,5-Trichlorophenol | < 1,600 | < 1,600 |
| 2-Chloronaphthalene | < 330 | < 330 |
| 2-Nitroaniline | < 1,600 | < 1,600 |
| Dimethyl Phthalate | < 330 | < 330 |
| Acenaphthylene | < 330 | < 330 |
| 3-Nitroaniline | < 1,600 | < 1,600 |
| Acenaphthene | < 330 | < 330 |
| 2,4-Dinitrophenol | < 1,600 | < 1,600 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|------------------------|
| | <u>Method Blank</u> | <u>A83007-1 B3</u> |
| 4-Nitrophenol | < 1,600 | < 1,600 |
| Dibenzofuran | < 330 | < 330 |
| 2,4-Dinitrotoluene | < 330 | < 330 |
| 2,6-Dinitrotoluene | < 330 | < 330 |
| Diethyl Phthalate | < 330 | < 330 |
| 4-Chlorophenyl Phenyl Ether | < 330 | < 330 |
| Fluorene | < 330 | < 330 |
| 4-Nitroaniline | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | < 1,600 | < 1,600 |
| N-Nitrosodiphenylamine | < 330 | < 330 |
| 4-Bromophenyl Phenyl Ether | < 330 | < 330 |
| Hexachlorobenzene | < 330 | < 330 |
| Pentachlorophenol | < 330 | < 330 |
| Phenanthrene | < 330 | < 330 |
| Anthracene | < 330 | < 330 |
| Dibutyl Phthalate | < 330 | < 330 |
| Fluoranthene | < 330 | < 330 |
| Benzidine | < 1,600 | < 1,600 |
| Pyrene | < 330 | < 330 |
| Butylbenzyl Phthalate | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | < 660 | < 660 |
| Benzo(a)anthracene | < 330 | < 330 |
| Bis(2-ethylhexyl) Phthalate | < 330 | < 330 |
| Chrysene | < 330 | < 330 |
| Dioctyl Phthalate | < 330 | < 330 |
| Benzo(b)fluoranthene | < 330 | < 330 |
| Benzo(k)fluoranthene | < 330 | < 330 |
| Benzo(a)pyrene | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | < 330 | < 330 |
| Dibenzo(a,h)anthracene | < 330 | < 330 |
| Benzo(g,h,i)perylene | < 330 | < 330 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------|-------------------------------|------------------------------|
| | <u>Method</u> <u>Blank</u> | <u>A83007-1</u> <u>B3</u> |
| Bromide, by IC | < 1,000 | < 1,000 |
| Sulfate, by IC | < 1,000 | 61,000 |
| Units | (ug/kg) | (ug/kg) |

VI. Quality Control Data (Cont'd)**AnalytiKEM**Volatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---|--|---|
| | <u>1,2-Dichloroethane-d₂</u> <u>(100 ppb Added)</u> | <u>Toluene-d₈</u> <u>(100 ppb Added)</u> | <u>4-Bromofluorobenzene</u> <u>(100 ppb Added)</u> |
| Method Blank | 103 | 110 | 100 |
| A83020-5 Spike | 114 | 106 | 102 |
| A83020-5 Spike Dup. | 117 | 108 | 104 |
| A83007-1 | 104 | 106 | 101 |
| Units | (%) | (%) | (%) |
| Control Limits | 70-121 | 81-117 | 74-121 |

0 out of 12 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A83027-2

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|--------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 50 | 67 | 62 | 8 | 18-120 | 43 |
| N-Nitrosodipropylamine | 50 | 88 | 79 | 11 | 10-156 | 31 |
| 1,2,4-Trichlorobenzene | 50 | 81 | 76 | 6 | 24-161 | 17 |
| Acenaphthene | 50 | 86 | 78 | 10 | 10-151 | 16 |
| 2,4-Dinitrotoluene | 50 | 79 | 72 | 9 | 10-197 | 33 |
| Pyrene | 50 | 79 | 74 | 6 | 10-167 | 31 |
| Phenol | 100 | 70 | 68 | 3 | 10-141 | 41 |
| 2-Chlorophenol | 100 | 64 | 62 | 3 | 33-101 | 19 |
| 4-Chloro-3-methylphenol | 100 | 82 | 72 | 13 | 26-117 | 25 |
| 4-Nitrophenol | 100 | 52 | 40 | 12 | 10-221 | 36 |
| Pentachlorophenol | 100 | 53 | 34 | 44 | 10-179 | 16 |
| Pentachlorophenol ϕ | 100 | 90 | -- | -- | 10-179 | 16 |
| Units | (ppb) | (%) | (%) | (%) | (%) | (%) |

ϕ Spike performed on DI Water.

Recovery: 0 out of 23 outside control limits

RPD: 1 out of 11 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Surrogate Recovery Data

Surrogate Recovery

| <u>Sample Designation</u> | <u>2-Fluorophenol (200 ppb Added)</u> | <u>Phenol-d₅ (200 ppb Added)</u> | <u>2,4,6-Tribromophenol (200 ppb Added)</u> |
|---------------------------|---------------------------------------|---|---|
| Method Blank | 56 | 72 | 46 |
| A83027-2 Spike | 67 | 75 | 74 |
| A83027-2 Spike Dup. | 64 | 69 | 70 |
| A83007-1 | 67 | 68 | 64 |
| Units | (%) | (%) | (%) |
| Control Limits | 27-106 | 30-88 | 42-89 |

Surrogate Recovery

| <u>Sample Designation</u> | <u>Nitrobenzene-d₅ (100 ppb Added)</u> | <u>2-Fluorobiphenyl (100 ppb Added)</u> | <u>Terphenyl-d₁₄ (100 ppb Added)</u> |
|---------------------------|---|---|---|
| Method Blank | 70 | 82 | 102 |
| A83027-2 Spike | 74 | 70 | 72 |
| A83027-2 Spike Dup. | 73 | 69 | 69 |
| A83007-1 | 64 | 75 | 92 |
| Units | (%) | (%) | (%) |
| Control Limits | 34-107 | 10-157 | 10-175 |

0 out of 24 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A83007-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| Sulfate, by IC | 100 | 97 | 99 | 2 | 75-125 | 20 |
| Bromide, by IC | 75 | 99 | 99 | 0 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

S240 8220

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82929

November 28, 1992

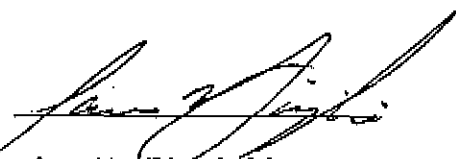
Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Reviewed &
Approved by:



Name: Carmine M. Fioriglio

Title: QA/QC Manager

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| FQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination. |

III. Sample Designations

AnalytiKEM

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82929-1 | S-11 | Nonaqueous | 11/16/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results

AnalytiKEM

Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|----------------------|
| | <u>Method Blank</u> | <u>A82929-1 S-11</u> |
| Chloromethane | < 1,000 | < 1,000 |
| Bromomethane | < 1,000 | < 1,000 |
| Vinyl Chloride | < 1,000 | < 1,000 |
| Chloroethane | < 1,000 | < 1,000 |
| Methylene Chloride | < 500 | < 500 |
| 2-Propanone (Acetone) | < 10,000 | < 10,000 |
| Carbon Disulfide | < 500 | < 500 |
| 1,1-Dichloroethene | < 500 | < 500 |
| 1,1-Dichloroethane | < 500 | < 500 |
| trans-1,2-Dichloroethene | < 500 | < 500 |
| Chloroform | < 500 | < 500 |
| 1,2-Dichloroethane | < 500 | < 500 |
| 2-Butanone (MEK) | < 10,000 | < 10,000 |
| 1,1,1-Trichloroethane | < 500 | < 500 |
| Carbon Tetrachloride | < 500 | < 500 |
| Vinyl Acetate | < 5,000 | < 5,000 |
| Bromodichloromethane | < 500 | < 500 |
| 1,2-Dichloropropane | < 500 | < 500 |
| trans-1,3-Dichloropropene | < 500 | < 500 |
| Trichloroethene | < 500 | < 500 |
| Dibromochloromethane | < 500 | < 500 |
| 1,1,2-Trichloroethane | < 500 | < 500 |
| Benzene | < 500 | < 500 |
| cis-1,3-Dichloropropene | < 500 | < 500 |
| 2-Chloroethyl Vinyl Ether | < 1,000 | < 1,000 |
| Bromoform | < 500 | < 500 |
| 4-Methyl-2-Pentanone (MIBK) | < 5,000 | < 5,000 |
| 2-Hexanone | < 5,000 | < 5,000 |
| Tetrachloroethene | < 500 | < 500 |
| 1,1,2,2-Tetrachloroethane | < 500 | < 500 |
| Toluene | < 500 | < 500 |
| Chlorobenzene | < 500 | < 500 |
| Ethylbenzene | < 500 | < 500 |
| Styrene | < 500 | < 500 |
| m,p-Xylene | < 500 | < 500 |
| o-Xylene | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------------------|---------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A82929-1 S-11</u> |
| N-Nitrosodimethylamine | < 500 | < 500 |
| Phenol | < 500 | < 500 |
| Bis(2-chloroethyl) Ether | < 500 | < 500 |
| 2-Chlorophenol | < 500 | < 500 |
| 1,3-Dichlorobenzene | < 500 | < 500 |
| 1,4-Dichlorobenzene | < 500 | < 500 |
| Benzyl Alcohol | < 500 | < 500 |
| 1,2-Dichlorobenzene | < 500 | < 500 |
| 2-Methylphenol | < 500 | < 500 |
| Bis(2-chloroisopropyl) Ether | < 500 | < 500 |
| 4-Methylphenol | < 500 | < 500 |
| N-Nitrosodipropylamine | < 500 | < 500 |
| Hexachloroethane | < 500 | < 500 |
| Nitrobenzene | < 500 | < 500 |
| Isophorone | < 500 | < 500 |
| 2-Nitrophenol | < 500 | < 500 |
| 2,4-Dimethylphenol | < 500 | < 500 |
| Benzoic Acid | < 2,500 | < 2,500 |
| Bis(2-chloroethoxy)methane | < 500 | < 500 |
| 2,4-Dichlorophenol | < 500 | < 500 |
| 1,2,4-Trichlorobenzene | < 500 | < 500 |
| Naphthalene | < 500 | < 500 |
| 4-Chloroaniline | < 500 | < 500 |
| Hexachlorobutadiene | < 500 | < 500 |
| 4-Chloro-3-methylphenol | < 500 | < 500 |
| 2-Methylnaphthalene | < 500 | < 500 |
| Hexachlorocyclopentadiene | < 500 | < 500 |
| 2,4,6-Trichlorophenol | < 500 | < 500 |
| 2,4,5-Trichlorophenol | < 2,500 | < 2,500 |
| 2-Chloronaphthalene | < 500 | < 500 |
| 2-Nitroaniline | < 2,500 | < 2,500 |
| Dimethyl Phthalate | < 500 | < 500 |
| Acenaphthylene | < 500 | < 500 |
| 3-Nitroaniline | < 2,500 | < 2,500 |
| Acenaphthene | < 500 | < 500 |
| 2,4-Dinitrophenol | < 2,500 | < 2,500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|--------------------------|
| | <u>Method Blank</u> | <u>A82929-1 S-11</u> |
| 4-Nitrophenol | < 2,500 | < 2,500 |
| Dibenzofuran | < 500 | < 500 |
| 2,4-Dinitrotoluene | < 500 | < 500 |
| 2,6-Dinitrotoluene | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 |
| 4-Chlorophenyl Phenyl Ether | < 500 | < 500 |
| Fluorene | < 500 | < 500 |
| 4-Nitroaniline | < 2,500 | < 2,500 |
| 4,6-Dinitro-2-methylphenol | < 2,500 | < 2,500 |
| N-Nitrosodiphenylamine | < 500 | < 500 |
| 4-Bromophenyl Phenyl Ether | < 500 | < 500 |
| Hexachlorobenzene | < 500 | < 500 |
| Pentachlorophenol | < 500 | < 500 |
| Phenanthrene | < 500 | < 500 |
| Anthracene | < 500 | < 500 |
| Dibutyl Phthalate | < 500 | < 500 |
| Fluoranthene | < 500 | < 500 |
| Benzidine | < 2,500 | < 2,500 |
| Pyrene | < 500 | < 500 |
| Butylbenzyl Phthalate | < 500 | < 500 |
| 3,3'-Dichlorobenzidine | < 1,000 | < 1,000 |
| Benzo(a)anthracene | < 500 | < 500 |
| Bis(2-ethylhexyl) Phthalate | < 500 | < 500 |
| Chrysene | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 |
| Benzo(b)fluoranthene | < 500 | < 500 |
| Benzo(k)fluoranthene | < 500 | < 500 |
| Benzo(a)pyrene | < 500 | < 500 |
| Indeno(1,2,3-cd)pyrene | < 500 | < 500 |
| Dibenzo(a,h)anthracene | < 500 | < 500 |
| Benzo(g,h,i)perylene | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)**AnalytiKEM**General Chemistry

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------|-------------------------------|--------------------------------|
| | <u>Method</u> <u>Blank</u> | <u>A82929-1</u> <u>S-11</u> |
| Fluoride | < 500 | < 500 |
| Chloride | < 500 | 49,000 |
| Nitrite | < 500 | < 500 |
| Bromide | < 1,000 | < 1,000 |
| Nitrate | < 500 | < 500 |
| Phosphate | < 1,000 | < 1,000 |
| Sulfate | < 1,000 | 14,000 |
| Units | (ug/kg) | (ug/kg) |

Note: The IC Scan analysis was performed at our Cherry Hill, NJ facility.

VI. Quality Control Data

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82927-6

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|--|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | |
| 1,1-Dichloroethene | 0.25 | 96 | 97 | 1 | D-234 | |
| Trichloroethene (TCE) | 0.25 | 98 | 99 | 1 | 71-157 | |
| Benzene | 0.25 | 94 | 97 | 3 | 37-160 | |
| Toluene | 0.25 | 96 | 98 | 2 | 47-150 | |
| Chlorobenzene | 0.25 | 91 | 92 | 1 | 37-151 | |
| Units | (ppb) | (%) | (%) | (%) | (%) | |

Recovery: 0 out of 10 outside control limits

VI. Quality Control Data (Cont'd)

AnalyTIKEM

Volatile Organics

Nonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|--|---|--|
| | <u>1,2-Dichloroethane-d₄</u> <u>(50 ppb Added)</u> | <u>Toluene-d₈</u> <u>(50 ppb Added)</u> | <u>4-Bromofluorobenzene</u> <u>(50 ppb Added)</u> |
| Method Blank | 87 | 93 | 91 |
| A82927-6 Spike | 93 | 87 | 81 |
| A82927-6 Spike Dup. | 94 | 88 | 82 |
| A82929-1 | 89 | 97 | 97 |
| Units | (%) | (%) | (%) |
| Control Limits | 62-152 | 57-159 | 62-148 |

0 out of 12 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82899-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 50 | 53 | 65 | 20 | 18-120 | 43 |
| N-Nitrosodipropylamine | 50 | 74 | 85 | 14 | 10-156 | 31 |
| 1,2,4-Trichlorobenzene | 50 | 51 | 60 | 16 | 24-161 | 17 |
| Acenaphthene | 50 | 67 | 75 | 11 | 10-151 | 16 |
| 2,4-Dinitrotoluene | 50 | 54 | 61 | 12 | 10-197 | 33 |
| Pyrene | 50 | 74 | 80 | 8 | 10-167 | 31 |
| Phenol | 100 | 56 | 65 | 15 | 10-141 | 41 |
| 2-Chlorophenol | 100 | 48 | 57 | 17 | 33-101 | 19 |
| 4-Chloro-3-methylphenol | 100 | 59 | 64 | 8 | 26-117 | 25 |
| 4-Nitrophenol | 100 | 40 | 34 | 16 | 10-221 | 36 |
| Pentachlorophenol | 100 | 44 | 49 | 11 | 10-179 | 16 |
| Units | (ppb) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 22 outside control limits

RPD: 0 out of 11 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Semivolatile OrganicsNonaqueous Surrogate Recovery DataSurrogate Recovery

| <u>Sample Designation</u> | <u>2-Fluorophenol (200 ppb Added)</u> | <u>Phenol-d₅ (200 ppb Added)</u> | <u>2,4,6-Tribromophenol (200 ppb Added)</u> |
|---------------------------|---|---|---|
| Method Blank | 86 | 87 | 90 |
| A82899-1 Spike | 52 | 58 | 59 |
| A82899-1 Spike Dup. | 64 | 69 | 63 |
| A82929-1 | 80 | 80 | 74 |
| Units | (%) | (%) | (%) |
| Control Limits | 27-106 | 30-88 | 42-89 |

Surrogate Recovery

| <u>Sample Designation</u> | <u>Nitrobenzene-d₅ (100 ppb Added)</u> | <u>2-Fluorobiphenyl (100 ppb Added)</u> | <u>Terphenyl-d₁₄ (100 ppb Added)</u> |
|---------------------------|---|---|---|
| Method Blank | 87 | 88 | 101 |
| A82899-1 Spike | 62 | 57 | 71 |
| A82899-1 Spike Dup. | 69 | 64 | 79 |
| A82929-1 | 78 | 74 | 101 |
| Units | (%) | (%) | (%) |
| Control Limits | 34-107 | 10-157 | 10-175 |

0 out of 24 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A28551-3

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| Fluoride | 10 | 122 | 116 | 5 | 75-125 | 20 |
| Chloride | 15 | 93 | 93 | 0 | 75-125 | 20 |
| Nitrite | 10 | 99 | 99 | 0 | 75-125 | 20 |
| Bromide | 75 | 98 | 98 | 0 | 75-125 | 20 |
| Nitrate | 20 | 94 | 94 | 0 | 75-125 | 20 |
| Phosphate | 50 | 108 | 107 | 1 | 75-125 | 20 |
| Sulfate | 100 | 117 | 112 | 4 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 14 outside control limits

RPD: 0 out of 7 outside control limits

SAMPLE RECEIPT CHECKLIST

Client: ENSCI

Project Number: 592032

Laboratory Number: 82929

- | | | |
|----|---|--------------|
| 1. | <input type="checkbox"/> Shipped | Notes: _____ |
| | <input checked="" type="checkbox"/> Hand Delivered | |
| 2. | <input checked="" type="checkbox"/> COC Present on Receipt | Notes: _____ |
| | <input type="checkbox"/> No COC | |
| 3. | <input type="checkbox"/> COC Tape on Shipping Container | Notes: _____ |
| | <input checked="" type="checkbox"/> No COC Tape on Shipping Container | Notes: _____ |
| 4. | <input type="checkbox"/> Samples Broken/Leaking | Notes: _____ |
| | <input checked="" type="checkbox"/> Sample Intact on Receipt | |
| | <input type="checkbox"/> Other (See Notes) | |
| 5. | <input type="checkbox"/> Ambient on Receipt | Notes: _____ |
| | <input checked="" type="checkbox"/> Chilled on Receipt | |
| 6. | <input type="checkbox"/> Samples Preserved Correctly | Notes: _____ |
| | <input type="checkbox"/> Improper Preservatives | |
| | <input checked="" type="checkbox"/> N/A (None Recommended) | |
| | <input type="checkbox"/> Other (See Notes) | |
| 7. | <input checked="" type="checkbox"/> Received Within Holding Time | Notes: _____ |
| | <input type="checkbox"/> Not Received Within Holding Time | |
| | <input type="checkbox"/> N/A (None Recommended) | |
| | <input type="checkbox"/> Other (See Notes) | |
| 8. | <input type="checkbox"/> COC Tapes on Samples | Notes: _____ |
| | <input checked="" type="checkbox"/> No COC Tapes on Samples | |
| 9. | <input type="checkbox"/> Discrepancies Between COC and Sample Labels | Notes: _____ |
| | <input checked="" type="checkbox"/> No Discrepancies Noted | |
| | <input type="checkbox"/> N/A (No COC Received) | |

Additional Comments: _____

Inspected and Logged in by: S. Sawyer
Date/Time: 11-17-92 1360

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A82832

November 4, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stackman

Project: Mannington

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

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Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

| Cherry Hill, NJ | | Rock Hill, SC | | Houston Analytical, TX | |
|-----------------|---------|---------------|--------|--------------------------|-----------|
| State | Cert # | State | Cert # | State | Cert # |
| Arkansas | * | S. Carolina | 46067 | N. Dakota | R-006 |
| Connecticut | PH-0715 | N. Carolina | 316 | Oklahoma | 8403 |
| Florida | 880985G | New Jersey | 79795 | Texas Water Commission * | |
| Massachusetts | NJ117 | | | Louisiana | 92-07 |
| New Jersey | 04012 | | | S. Carolina | 82011 |
| New York | 10815 | | | N. Carolina | 367 |
| N. Carolina | 258 | | | Wisconsin | 998010530 |
| N. Dakota | R-038 | | | New Jersey | 82869 |
| Pennsylvania | 68366 | | | | |
| S. Carolina | 94004 | | | | |
| Tennessee | 02908 | | | | |
| Vermont | * | | | | |
| Oklahoma | 9107 | | | | |

* No certification numbers are issued for these states.

II. Definition of Terms

| <u>Term</u> | <u>Definition</u> |
|-------------|--|
| D | Detected; result must be greater than zero. |
| DI | Deionized Water |
| J | Compound was detected at levels below the practical quantitation limit. The level reported is approximate. |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate. |
| NA | Analysis not applicable to the sample matrix. |
| ND | Not Detected |
| NR | Not Requested |
| NTU | Nephelometric Turbidity Units |
| RPD | Relative Percent Difference |
| RSD | Relative Standard Deviation |
| U | Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound. |
| ppb | Parts-per-billion; may be converted to ppm by dividing by 1,000. |
| ppm | Parts-per-million; may be converted to ppb by multiplying by 1,000. |
| ug/l | Micrograms of constituent per liter of sample; equivalent to parts-per-billion. |
| ug/kg | Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion. |
| ug/kg dw | Micrograms of constituent per kilogram of sample reported on a dry weight basis. |
| CCC | Calibration Check Compound; used to verify the precision of a GC/MS calibration curve. |
| SPCC | System Performance Check Compound; used to verify the correct operation of a GC/MS instrument. |
| PQL | Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated. |
| B | Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination. |

III. Sample Designations**AnalytiKEM**

| <u>AnalytiKEM Designation</u> | <u>Client Designation</u> | <u>Matrix</u> | <u>Date Sampled</u> |
|-----------------------------------|-------------------------------|---------------|-------------------------|
| A82832-1 | B-6 | Nonaqueous | 10/23/92 |

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

General Chemistry

Method 9056, Anion Chromatography Method, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

V. Analytical Results

AnalytiKEM

Volatile Organics

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|---------------------|
| | <u>Method Blank</u> | <u>A82832-1 B-6</u> |
| Chloromethane | < 1,000 | < 1,000 |
| Bromomethane | < 1,000 | < 1,000 |
| Vinyl Chloride | < 1,000 | < 1,000 |
| Chloroethane | < 1,000 | < 1,000 |
| Methylene Chloride | < 500 | 660 |
| 2-Propanone (Acetone) | <10,000 | < 10,000 |
| Carbon Disulfide | < 500 | < 500 |
| 1,1-Dichloroethene | < 500 | < 500 |
| 1,1-Dichloroethane | < 500 | < 500 |
| trans-1,2-Dichloroethene | < 500 | < 500 |
| Chloroform | < 500 | < 500 |
| 1,2-Dichloroethane | < 500 | < 500 |
| 2-Butanone (MEK) | <10,000 | < 10,000 |
| 1,1,1-Trichloroethane | < 500 | < 500 |
| Carbon Tetrachloride | < 500 | < 500 |
| Vinyl Acetate | < 5,000 | < 5,000 |
| Bromodichloromethane | < 500 | < 500 |
| 1,2-Dichloropropane | < 500 | < 500 |
| trans-1,3-Dichloropropene | < 500 | < 500 |
| Trichloroethene | < 500 | < 500 |
| Dibromochloromethane | < 500 | < 500 |
| 1,1,2-Trichloroethane | < 500 | < 500 |
| Benzene | < 500 | < 500 |
| cis-1,3-Dichloropropene | < 500 | < 500 |
| 2-Chloroethyl Vinyl Ether | < 1,000 | < 1,000 |
| Bromoform | < 500 | < 500 |
| 4-Methyl-2-Pentanone (MIBK) | < 5,000 | < 5,000 |
| 2-Hexanone | < 5,000 | < 5,000 |
| Tetrachloroethene | < 500 | < 500 |
| 1,1,2,2-Tetrachloroethane | < 500 | < 500 |
| Toluene | < 500 | < 500 |
| Chlorobenzene | < 500 | < 500 |
| Ethylbenzene | < 500 | < 500 |
| Styrene | < 500 | < 500 |
| m-Xylene | < 500 | < 500 |
| o,p-Xylene | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|------------------------------|---------------------------|---------------------|
| | <u>Method Blank</u> | <u>A82832-1 B-6</u> |
| N-Nitrosodimethylamine | < 500 | < 500 |
| Phenol | < 500 | < 500 |
| Bis(2-chloroethyl) Ether | < 500 | < 500 |
| 2-Chlorophenol | < 500 | < 500 |
| 1,3-Dichlorobenzene | < 500 | < 500 |
| 1,4-Dichlorobenzene | < 500 | < 500 |
| Benzyl Alcohol | < 500 | < 500 |
| 1,2-Dichlorobenzene | < 500 | < 500 |
| 2-Methylphenol | < 500 | < 500 |
| Bis(2-chloroisopropyl) Ether | < 500 | < 500 |
| 4-Methylphenol | < 500 | < 500 |
| N-Nitrosodipropylamine | < 500 | < 500 |
| Hexachloroethane | < 500 | < 500 |
| Nitrobenzene | < 500 | < 500 |
| Isophorone | < 500 | < 500 |
| 2-Nitrophenol | < 500 | < 500 |
| 2,4-Dimethylphenol | < 500 | < 500 |
| Benzoic Acid | < 2,500 | < 2,500 |
| Bis(2-chloroethoxy)methane | < 500 | < 500 |
| 2,4-Dichlorophenol | < 500 | < 500 |
| 1,2,4-Trichlorobenzene | < 500 | < 500 |
| Naphthalene | < 500 | < 500 |
| 4-Chloroaniline | < 500 | < 500 |
| Hexachlorobutadiene | < 500 | < 500 |
| 4-Chloro-3-methylphenol | < 500 | < 500 |
| 2-Methylnaphthalene | < 500 | < 500 |
| Hexachlorocyclopentadiene | < 500 | < 500 |
| 2,4,6-Trichlorophenol | < 500 | < 500 |
| 2,4,5-Trichlorophenol | < 2,500 | < 2,500 |
| 2-Chloronaphthalene | < 500 | < 500 |
| 2-Nitroaniline | < 2,500 | < 2,500 |
| Dimethyl Phthalate | < 500 | < 500 |
| Acenaphthylene | < 500 | < 500 |
| 3-Nitroaniline | < 2,500 | < 2,500 |
| Acenaphthene | < 500 | < 500 |
| 2,4-Dinitrophenol | < 2,500 | < 2,500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

| <u>Parameter</u> | <u>Sample Designation</u> | |
|-----------------------------|---------------------------|---------------------|
| | <u>Method Blank</u> | <u>A82832-1 B-6</u> |
| 4-Nitrophenol | < 2,500 | < 2,500 |
| Dibenzofuran | < 500 | < 500 |
| 2,4-Dinitrotoluene | < 500 | < 500 |
| 2,6-Dinitrotoluene | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 |
| 4-Chlorophenyl Phenyl Ether | < 500 | < 500 |
| Fluorene | < 500 | < 500 |
| 4-Nitroaniline | < 2,500 | < 2,500 |
| 4,6-Dinitro-2-methylphenol | < 2,500 | < 2,500 |
| N-Nitrosodiphenylamine | < 500 | < 500 |
| 4-Bromophenyl Phenyl Ether | < 500 | < 500 |
| Hexachlorobenzene | < 500 | < 500 |
| Pentachlorophenol | < 500 | < 500 |
| Phenanthrene | < 500 | < 500 |
| Anthracene | < 500 | < 500 |
| Dibutyl Phthalate | < 500 | < 500 |
| Fluoranthene | < 500 | < 500 |
| Benzidine | < 2,500 | < 2,500 |
| Pyrene | < 500 | < 500 |
| Butylbenzyl Phthalate | < 500 | < 500 |
| 3,3'-Dichlorobenzidine | < 1,000 | < 1,000 |
| Benzo(a)anthracene | < 500 | < 500 |
| Bis(2-ethylhexyl) Phthalate | < 500 | < 500 |
| Chrysene | < 500 | < 500 |
| Diethyl Phthalate | < 500 | < 500 |
| Benzo(b)fluoranthene | < 500 | < 500 |
| Benzo(k)fluoranthene | < 500 | < 500 |
| Benzo(a)pyrene | < 500 | < 500 |
| Indeno(1,2,3-cd)pyrene | < 500 | < 500 |
| Dibenzo(a,h)anthracene | < 500 | < 500 |
| Benzo(g,h,i)perylene | < 500 | < 500 |
| Units | (ug/kg) | (ug/kg) |

V. Analytical Results (Cont'd)

AnalytiKEM

General Chemistry

Sample Designation

| <u>Parameter</u> | <u>Method</u> <u>Blank</u> | <u>A82832-1</u> <u>B-6</u> |
|------------------|-------------------------------|-------------------------------|
| Sulfate, by IC | < 1,000 | 120,000 |
| Bromide, by IC | < 1,000 | < 1,000 |
| Units | (ug/kg) | (ug/kg) |

Note: The IC scan was performed at our Cherry Hill, NJ facility.

VI. Quality Control Data**AnalytiKEM**Volatile OrganicsNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A74241-REC

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> |
|-----------------------|----------------------------|-----------------|------------|------------|-----------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> |
| 1,1-Dichloroethene | 0.25 | 84 | 101 | 18 | D-234 |
| Trichloroethene (TCE) | 0.25 | 98 | 100 | 2 | 71-157 |
| Chlorobenzene | 0.25 | 97 | 102 | 5 | 37-160 |
| Toluene | 0.25 | 98 | 102 | 4 | 47-150 |
| Benzene | 0.25 | 99 | 102 | 3 | 37-151 |
| Units | (ug) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 10 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Volatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|--|---|--|
| | <u>1,2-Dichloroethane-d₄</u> <u>(50 ppb Added)</u> | <u>Toluene-d₈</u> <u>(50 ppb Added)</u> | <u>4-Bromofluorobenzene</u> <u>(50 ppb Added)</u> |
| Method Blank | 102 | 104 | 113 |
| A74241-REC Spike | 87 | 87 | 91 |
| A74241-REC Spike Dup. | 86 | 89 | 94 |
| A82832-1 | 94 | 97 | 108 |
| Units | (%) | (%) | (%) |
| Control Limits | 62-152 | 57-159 | 62-148 |

0 out of 12 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)**AnalytikEM**Semivolatile OrganicsNonaqueous Matrix Spike/Matrix Spike Duplicate Recovery DataSample Spiked A82824-1

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | <u>RPD</u> | <u>Control Limits</u> | |
|-------------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | | <u>Recovery</u> | <u>Max. RPD</u> |
| 1,4-Dichlorobenzene | 50 | 71 | 71 | 0 | 18-120 | 43 |
| N-Nitrosodipropylamine | 50 | 104 | 103 | 1 | 10-156 | 31 |
| 1,2,4-Trichlorobenzene | 50 | 73 | 73 | 0 | 24-161 | 17 |
| Acenaphthene | 50 | 84 | 82 | 2 | 10-151 | 16 |
| 2,4-Dinitrotoluene | 50 | 64 | 61 | 5 | 10-197 | 33 |
| Pyrene | 50 | 106 | 106 | 0 | 10-167 | 31 |
| Phenol | 100 | 67 | 66 | 1 | 10-141 | 41 |
| 2-Chlorophenol | 100 | 58 | 57 | 2 | 33-101 | 19 |
| 4-Chloro-3-methylphenol | 100 | 63 | 53 | 17 | 26-117 | 25 |
| 4-Nitrophenol | 100 | 34 | 18 | 61 | 10-221 | 36 |
| 4-Nitrophenol ϕ | 100 | 95 | -- | -- | 10-221 | 36 |
| Pentachlorophenol | 100 | 61 | 59 | 3 | 10-179 | 16 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

 ϕ Spike performed on DI Water.Recovery: 0 out of 23 outside control limitsRPD: 1 out of 11 outside control limits

VI. Quality Control Data (Cont'd)**AnalytiKEM**Semivolatile OrganicsNonaqueous Surrogate Recovery Data

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---|---|---|
| | <u>2-Fluorophenol (200 ppb Added)</u> | <u>Phenol-d₅ (200 ppb Added)</u> | <u>2,4,6-Tribromophenol (200 ppb Added)</u> |
| Method Blank | 75 | 75 | 79 |
| A82824-1 Spike | 68 | 72 | 78 |
| A82824-1 Spike Dup. | 68 | 72 | 47 |
| A82832-1 | 63 | 65 | 53 |
| Units | (%) | (%) | (%) |
| Control Limits | 27-106 | 30-88 | 42-89 |

| <u>Sample Designation</u> | <u>Surrogate Recovery</u> | | |
|---------------------------|---|---|---|
| | <u>Nitrobenzene-d₅ (100 ppb Added)</u> | <u>2-Fluorobiphenyl (100 ppb Added)</u> | <u>Terphenyl-d₁₄ (100 ppb Added)</u> |
| Method Blank | 74 | 80 | 103 |
| A82824-1 Spike | 75 | 83 | 100 |
| A82824-1 Spike Dup. | 71 | 79 | 100 |
| A82832-1 | 62 | 68 | 82 |
| Units | (%) | (%) | (%) |
| Control Limits | 34-107 | 10-157 | 10-175 |

0 out of 24 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A28611-361

| <u>Parameter</u> | <u>Amount of Spike</u> | <u>Recovery</u> | | | <u>Control Limits</u> | |
|------------------|----------------------------|-----------------|------------|------------|-----------------------|---------------------|
| | | <u>MS</u> | <u>MSD</u> | <u>RPD</u> | <u>Recovery</u> | <u>Max. RPD</u> |
| Sulfate | 100 | 99 | 97 | 2 | 75-125 | 20 |
| Bromide | 75 | 101 | 99 | 3 | 75-125 | 20 |
| Units | (ug) | (%) | (%) | (%) | (%) | (%) |

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

Chain-of-Custody Record

82832

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCT Sample Collector: Boggs

Project: Mannington AnalytiKEM Contact: Sean

| | |
|---|--|
| Laboratory 2324 Vemsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | ANALYTES | | | | | | | | | | | PARAMETERS | | |
|-------------|--------------------|-------|------|--------|-------------------|-------------|-------------------|-------------------|-------------------------|---------------------------------------|-------------|------------|------------|------------|------------|------------|--|-----------------------------|
| | | | | | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 4-200 ml 4-Dropes | 100 ml HNO ₃ | 100 ml H ₂ SO ₄ | 100 ml NaOH | 100 ml HCL | 500 UAS/PS | 250 UAS/PS | 250 UAS/PS | | | |
| 1 | B-6 | 10/23 | 0950 | Solid | G | | | 3 | | | | | | | 2 | 1 | | Analyses Per Attached Sheet |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------|---------|------------------------|
| | | | | | | |
| 1 | 1 | Chris Boggs | Scott Long | 10/23 | 5:15 PM | PO# 31682 3 Day TAT |
| 2 | 1 | Scott Long | C. Hudson | 10/23 | 2:30 PM | |
| 3 | | | | | | |
| 4 | | | | | | SAMPLER'S SIGNATURE |

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A82832, Supplemental

November 18, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil

The Gross Alpha, Gross Beta and Radium 226,228 analyses were subcontracted to Teledyne Isotopes, Laboratories. Please see attached copy of their report.

Reviewed &
Approved by:

Michael Thomas, Ph.D.
Name: Carmine M. Fioriglio

Title: QA/QC Manager

SAMPLE RECEIPT CHECKLIST

Client: EPSCI

Project Number: Marrington Hill

Laboratory Number: 82832

- 1. Shipped Notes: _____
 Hand Delivered
- 2. COC Present on Receipt Notes: _____
 No COC
- 3. COC Tape on Shipping Notes: _____
 Container
 No COC Tap on Shipping Notes: _____
 Container
- 4. Samples Broken/Leaking Notes: _____
 Sample Intact on Receipt
 Other (See Notes)
- 5. Ambient on Receipt Notes: _____
 Chilled on Receipt
- 6. Samples Preserved Notes: _____
 Correctly
 Improper Preservatives
 N/A (None Recommended)
 Other (See Notes)
- 7. Received Within Holding Time Notes: _____
 Not Received Within
Holding Time
 N/A (None Recommended)
 Other (See Notes)
- 8. COC Tapes on Samples Notes: _____
 No COC Tapes on Samples
- 9. Discrepancies Between COC Notes: _____
and Sample Labels
 No Discrepancies Noted
 N/A (No COC Received)

Additional Comments: _____

Inspected and Logged in by: C. H. ...
Date/Time: 10/25/92 10:22:00

REPORT OF ANALYSIS

13 NOVEMBER 1992

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 11/12/92

| | | | | | |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|--------|
| PATTI DE ANDINO ANALYTIKEM INC 2324 VERNSDALE ROAD ROCK HILL SC | WORK ORDER NUMBER 3-4562 | CUSTOMER P.O. NUMBER 29731 | DATE RECEIVED 10/27/92 | DELIVERY DATE 11/29/92 | PAGE 1 |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|--------|

S O L I D S

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/P * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 94012 | 82832-1 | | 10/23 | 0950 | GR-A | 4.0 +-1.0 E 01 | | 11/09 | | | 3 |
| - | | | | | GR-B | 7.2 +-0.4 E 01 | | 11/09 | | | 3 |
| | | | | | RA-226 | 4.7 +-0.7 E 00 | | 11/05 | | | 4 |
| | | | | | RA-228 | 2.4 +-0.2 E 00 | | 11/05 | | | 4 |

LAST PAGE OF REPORT

J. Guenther
APPROVED BY J. GUENTHER 11/12/92

SEND 1 COPIES TO AM133T PATTI DE ANDINO

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GEILII GAMMA SPEC LAB. 5 - TRITTIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

REPORT OF ANALYSIS

4 NOVEMBER 1992

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 11/04/92

| | | | | | |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|
| PATTI DE ANDINO ANALYTIKEM INC 2324 VERNSDALE ROAD ROCK HILL SC | WORK ORDER NUMBER 3-4379 | CUSTOMER P.O. NUMBER 29731 | DATE RECEIVED 10/15/92 | DELIVERY DATE 10/28/92 | PAGE 1 |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | | | ACTIVITY [PCI/GM DRY] | NUCL-UNIT-% U/M * | MID-COUNT | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|------|---------|--------------------------|----------------------|-----------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | TIME | NUCLIDE | | | TIME | DATE | | |
| 93051 | 82791-1 B1 | | 10/12 | | | GR-A | 2.5 +-0.8 E 01 | | 10/22 | | 3 | |
| | | | | | | GR-B | 1.0 +-0.1 E 02 | | 10/22 | | 3 | |
| | | | | | | RA-226 | 9.9 +-1.0 E-01 | | 10/30 | | 4 | |
| | | | | | | RA-228 | 1.9 +-0.2 E 00 | | 10/30 | | 4 | |
| 93052 | 82791-2 S1 | | 10/12 | | | GR-A | 1.5 +-0.6 E 01 | | 10/22 | | 3 | |
| | | | | | | GR-B | 4.2 +-0.4 E 01 | | 10/22 | | 3 | |
| | | | | | | RA-226 | 8.1 +-0.9 E-01 | | 10/30 | | 4 | |
| | | | | | | RA-228 | 1.7 +-0.2 E 00 | | 10/30 | | 4 | |
| 93053 | 82791-3 S2 | | 10/12 | | | GR-A | 1.3 +-0.6 E 01 | | 10/22 | | 3 | |
| | | | | | | GR-B | 4.4 +-0.4 E 01 | | 10/22 | | 3 | |
| | | | | | | RA-226 | 7.2 +-0.8 E-01 | | 10/30 | | 4 | |
| | | | | | | RA-228 | 8.8 +-1.5 E-01 | | 10/30 | | 4 | |

LAST PAGE OF REPORT

APPROVED BY *J. Guenther* 11/04/92

SEND 1 COPIES TO AN133T PATTI DE ANDINO

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB. *

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651, Supplemental

February 1, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses was subcontracted to Teledyne Isotopes. Please see attached copy of their report.


Reviewed &
Approved by:

Name: Carmine M. Floriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

27 JANUARY 1993

 **TELEDYNE ISOTOPES**
50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/27/93

| | | | | | |
|--|-----------------------------|----------------------|---------------------------|---------------------------|--------|
| ATTN: G A DEPT ANALYTIKEM INC 28 SPRINGDALE ROAD CHERRY HILL NJ | WORK ORDER NUMBER 3-5807 | CUSTOMER P.O. NUMBER | DATE RECEIVED 01/07/93 | DELIVERY DATE 02/09/93 | PAGE 1 |
| 08003 | | | | | |

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 00665 | 60651-01 <i>55</i> | | 12/28 | | GR-A | 9.4 +-5.3 E 00 | | 01/15 | | 3 | |
| | | | | | GR-B | 1.4 +-0.3 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 7.5 +-1.6 E-01 | | 01/21 | 4 | | |
| 00666 | 60651-02 <i>57</i> | | 12/29 | | GR-A | 1.3 +-0.6 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.1 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 8.1 +-0.8 E-01 | | 01/21 | 4 | | |
| | | | | | RA-228 | 7.1 +-1.1 E-01 | | 01/21 | 4 | | |
| 00667 | 60651-03 <i>56</i> | | 12/29 | | GR-A | 2.8 +-0.8 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.2 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.4 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.3 +-0.2 E 00 | | 01/21 | 4 | | |
| 00668 | 60651-04 <i>55</i> | | 12/29 | | GR-A | 2.7 +-0.8 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.3 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.0 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 3.2 +-0.3 E 00 | | 01/21 | 4 | | |
| 00669 | 60651-05 <i>58</i> | | 12/29 | | GR-A | 4.0 +-1.0 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.6 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 5.9 +-0.6 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | 4 | | |
| 00670 | 60651-06 <i>59</i> | | 12/29 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 8.3 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 8.9 +-1.0 E-01 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | 4 | | |

TELEDYNE ISOTOPIES

REPORT OF ANALYSIS

RUN DATE 01/27/93

ATTN: Q A DEPT
ANALYTIKEM INC
28 SPRINGDALE ROAD
CHERRY HILL NJ

WORK ORDER NUMBER 3-5807

CUSTOMER P.O. NUMBER 08003

DATE RECEIVED 01/07/93

DELIVERY DATE 02/09/93

PAGE 2

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | MUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 00671 | 60651-07 <i>S10</i> | | 12/29 | | GR-A | 4.2 +-1.0 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 6.7 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 3.5 +-0.4 E 00 | | 01/21 | 4 | | |
| 00672 | 60651-08 <i>S4</i> | | 12/29 | | GR-A | 2.2 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 4.5 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.3 +-0.1 E 00 | | 01/21 | 4 | | |
| 00673 | 60651-09 <i>S14</i> | | 12/30 | | GR-A | 2.0 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 2.6 +-0.3 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.6 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.7 +-0.2 E 00 | | 01/21 | 4 | | |
| 00674 | 60651-10 <i>S12</i> | | 12/30 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.5 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| 00675 | 60651-11 <i>S13</i> | | 12/30 | | GR-A | 3.7 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.4 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.5 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.9 +-0.3 E 00 | | 01/21 | 4 | | |

LAST PAGE OF REPORT

APPROVED BY *D. Guenther* D. GUENTHER 01/27/93

SEND 1 COPIES TO AN133S ATTN: Q A DEPT

2 - GAS LAB.

3 - RADIO CHEMISTRY LAB.

4 - GE(LI) GAMMA SPEC LAB.

5 - TRITIUM GAS/L.S. LAB.

6 - ALPHA SPEC LAB.

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: EVSCI Sample Collector: Steve Stadelman
 Project: 592032 AnalytiKEM Contact: Holley

Laboratory
 2324 Veinsdale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9680
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grab or Composite | 40 ml Vials | 950 ml Org. Pres. | 500 ml Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCl | 870 ml SEC. | 750 ml W.P.M. | PARAMETERS |
|-------------|--------------------|-------------|------|--------|-------------------|-------------|-------------------|----------------|------------------|--------------------------------|------|-----|-------------|---------------|---|
| | | | | | | | | | | | | | | | |
| 1 | S5 | 12-28 92 | 1430 | Soil | G | | 2 | | | | | 1 | 3 | | 8240, 8370, T66P metals, ground, gross β, Ra 226-228, Br, Sg. Analytes per attached sheet |
| 2 | S7 | 12-29 92 | 1030 | " | G | | 2 | | | | | 1 | 3 | | |
| 3 | S6 | 12-29 92 | 1215 | " | G | | 2 | | | | | 1 | 3 | | |
| 4 | S5 | 12-29 92 | 1300 | " | G | | 2 | | | | | 1 | 3 | | |
| 5 | S8 | 12-29 92 | 1415 | " | G | | 2 | | | | | 1 | 3 | | |
| 6 | S9 | 12-29 92 | 1445 | " | G | | 2 | | | | | 1 | 3 | | |
| 7 | S10 | 12-29 92 | 1515 | " | G | | 2 | | | | | 1 | 3 | | |
| 8 | S4 | 12-29 92 | 1600 | " | G | | 2 | | | | | 1 | 3 | | |
| 9 | S14 | 12-30 92 | 1100 | " | G | | 2 | | | | | 1 | 3 | | |
| 10 | S12 | 12-30 92 | 1130 | " | G | | 2 | | | | | 1 | 3 | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|------------------------------|
| 1 | 1-10 | Steve Stadelman | Grady Lane | 12-30 92 | 1400 | Rush turnaround P.O. # 31894 |
| 2 | 1-10 | Grady Lane | James W. Dierkes | 12-30 92 | 1605 | |
| 3 | 1-10 | J. W. Dierkes | [Signature] | 1/4/93 | 1805 | [Signature] |
| 4 | | | | | | SAMPLER'S SIGNATURE |

Chain-of-Custody Record

Solid and Hazardous Waste

Sample Collector: Steve Stadelman

AnalytIKEM Contact: Holley

Laboratory
 2324 Vemsdale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| Grab or Composite | 40 ml Vials | 350 ml Org. Pres. | 750 ml Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCl | 850 ml Sept. | 750 ml W.PAL. | PARAMETERS |
|-------------------|-------------|-------------------|----------------|------------------|--------------------------------|------|-----|--------------|---------------|---|
| | | | | | | | | | | |
| G | | 2 | | | | | 1 | 3 | | 8240, 8270, TELP metals, gross B, Ra 226-228, Br, SO ₄ . Analyzes per attached sheet |
| G | | 2 | | | | | 1 | 3 | | } |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |
| G | | 2 | | | | | 1 | 3 | | |

| TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-------------------------|----------|------|---------------------|
| <u>Grady Lee</u> | 12-30-92 | 1400 | Rush turnaround |
| <u>James H. Dinkins</u> | 12-30-92 | 1605 | P.O. # 31894 |
| <u>[Signature]</u> | 1/4/93 | 1600 | <u>[Signature]</u> |
| | | | SAMPLER'S SIGNATURE |

AnalytIKEM An American NUKEM Company

AnalytIKEM Inc.
 28 Springdale Road
 Cherry Hill, NJ 08003
 609/751-1122
 1-800-TRY-LAB1
 Fax: 609/751-0824

Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: SP2032 AnalytiKEM Contact: Holley

| | |
|--|--|
| Laboratory 2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|--|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 40 ml vials | 950 ml | Orig. Pres. | 500 ml | Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCl | 250 ml | 500 ml | PARAMETERS |
|-------------|--------------------|-------------|------|--------|---|-------------------|-------------|--------|-------------|--------|---------|---------------------|-----------------------------------|---------|--------|--------|--------|---|
| | | | | | | | | | | | | | | | | | | |
| 1 | S13 | 12-30 92 | 1215 | Soil | G | | | 2 | | | | | | | 1 | 3 | | 8240, 8270 P&P metals, gross d, gross f, Re 226-228; Bq 504. Analyte per attached sheet |
| 2 | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | |
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| 8 | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---|
| 1 | 1 | Steve Stadelman | Grady Lane | 12-30 92 | 1400 | KusL turnaround. |
| 2 | 1 | Grady Lane | Janet Winkler | 12-30 92 | 1605 | P.O. # 31894 |
| 3 | 1 | Janet Winkler | | 1/4/93 | 1000 | |
| 4 | | | | | | <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651, Supplemental

February 1, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses was subcontracted to Teledyne Isotopes. Please see attached copy of their report.


Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

27 JANUARY 1993

 **TELEDYNE ISOTOPES**
50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/27/93

WORK ORDER NUMBER 3-5807 CUSTOMER P.O. NUMBER DATE RECEIVED 01/07/93 DELIVERY DATE 02/09/93 PAGE 1

ATTN: Q A DEPT
ANALYTIKEM INC
28 SPRINGDALE ROAD
CHERRY HILL NJ

08003

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | | | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-X U/M * | MID-COUNT | | VOLUME - UNITS ASH-NGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|------|--------------|----------------|--------------------------|----------------------|-----------|------|--------------------------------|------|
| | | | START DATE | TIME | STOP DATE | TIME | | | DATE | TIME | | |
| 00665 | 60651-01 | | 12/28 | | GR-A | 9.4 +-5.3 E 00 | | 01/15 | | 3 | | |
| | | | | | GR-B | 1.4 +-0.3 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 7.5 +-1.6 E-01 | | 01/21 | | 4 | | |
| 00666 | 60651-02 | | 12/29 | | GR-A | 1.3 +-0.6 E 01 | | 01/15 | | 3 | | |
| | | | | | GR-B | 5.1 +-0.4 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 8.1 +-0.8 E-01 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 7.1 +-1.1 E-01 | | 01/21 | | 4 | | |
| 00667 | 60651-03 | | 12/29 | | GR-A | 2.8 +-0.8 E 01 | | 01/15 | | 3 | | |
| | | | | | GR-B | 5.2 +-0.4 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 1.4 +-0.1 E 00 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 1.3 +-0.2 E 00 | | 01/21 | | 4 | | |
| 00668 | 60651-04 | | 12/29 | | GR-A | 2.7 +-0.8 E 01 | | 01/15 | | 3 | | |
| | | | | | GR-B | 7.3 +-0.5 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 1.0 +-0.1 E 00 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 3.2 +-0.3 E 00 | | 01/21 | | 4 | | |
| 00669 | 60651-05 | | 12/29 | | GR-A | 4.0 +-1.0 E 01 | | 01/15 | | 3 | | |
| | | | | | GR-B | 5.6 +-0.4 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 5.9 +-0.6 E 00 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | | 4 | | |
| 00670 | 60651-06 | | 12/29 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | | |
| | | | | | GR-B | 8.3 +-0.5 E 01 | | 01/15 | | 3 | | |
| | | | | | RA-226 | 8.9 +-1.0 E-01 | | 01/21 | | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | | 4 | | |

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/27/93

WORK ORDER NUMBER CUSTOMER P.O. NUMBER DATE RECEIVED DELIVERY DATE PAGE 2

3-5807 01/07/93 02/09/93

ATTN: Q A DEPT
ANALYTIKEM INC
28 SPRINGDALE ROAD
CHERRY HILL NJ

08003

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|--------------------|-------------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE TIME | STOP DATE TIME | | | | DATE | TIME | | |
| 00671 | 60651-07 | | 12/29 | | GR-A | 4.2 +-1.0 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 6.7 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 3.5 +-0.4 E 00 | | 01/21 | 4 | | |
| 00672 | 60651-08 | | 12/29 | | GR-A | 2.2 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 4.5 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.3 +-0.1 E 00 | | 01/21 | 4 | | |
| 00673 | 60651-09 | | 12/30 | | GR-A | 2.0 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 2.6 +-0.3 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.6 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.7 +-0.2 E 00 | | 01/21 | 4 | | |
| 00674 | 60651-10 | | 12/30 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.5 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| 00675 | 60651-11 | | 12/30 | | GR-A | 3.7 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.4 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.5 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.9 +-0.3 E 00 | | 01/21 | 4 | | |

LAST PAGE OF REPORT

J. Guenther
APPROVED BY J. GUENTHER 01/27/93

SEND 1 COPIES TO AN1335 ATTN: Q A DEPT

2 - GAS LAB.

3 - RADIO CHEMISTRY LAB.

4 - GE(LI) GAMMA SPEC LAB.

5 - TRITIUM GAS/L.S. LAB.

6 - ALPHA SPEC LAB.

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI

Sample Collector: Steve Stadelman

Project: 592032

AnalytiKEM Contact: Holley

| | |
|---|--|
| Laboratory 2324 Vemsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378 | Sales Office 454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689 |
|---|--|

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 40 ml vials | 950 ml Org. Pres. | 500 ml Unpres. | PH ₂ O ₂ | H ₂ SO ₄ | NaOH | HCl | 250 ml | 500 ml | 750 ml | PARAMETERS |
|-------------|--------------------|-------------|------|--------|---|-------------------|-------------|-------------------|----------------|--------------------------------|--------------------------------|------|-----|--------|--------|--------|--|
| | | | | | | | | | | | | | | | | | |
| 1 | B5 | 12-28 92 | 1430 | Soil | G | | | 2 | | | | | 1 | 3 | | | 8240, 8370, TCCP metals, grand, gross β, Ra 226-228, Br, SO ₄ . Analyzed per attached sheet |
| 2 | S7 | 12-29 92 | 1030 | " | G | | | 2 | | | | | 1 | 3 | | | [Large empty box for notes/signatures] |
| 3 | S6 | 12-29 92 | 1215 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 4 | S5 | 12-29 92 | 1300 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 5 | S8 | 12-29 92 | 1415 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 6 | S9 | 12-29 92 | 1445 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 7 | S10 | 12-29 92 | 1515 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 8 | S4 | 12-29 92 | 1600 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 9 | S14 | 12-30 92 | 1100 | " | G | | | 2 | | | | | 1 | 3 | | | |
| 10 | S12 | 12-30 92 | 1130 | " | G | | | 2 | | | | | 1 | 3 | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---|
| 1 | 1-10 | <i>Steve Stadelman</i> | <i>Brady Lane</i> | 12-30 92 | 1400 | Rush turnaround P.O. # 31894 |
| 2 | 1-10 | <i>Brady Lane</i> | <i>Janet Denton</i> | 12-30 92 | 1605 | |
| 3 | 1-10 | <i>J. Wendler</i> | <i>[Signature]</i> | 1/4/93 | 1600 | |
| 4 | | | | | | <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |

Chain of Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalyTIKEM Contact: Holley

Laboratory
 2324 Vennedale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 40 ml vials | 800 ml Org. Pres. | 500 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | HCL ml | 250 ml | 250 ml | 250 ml | PARAMETERS |
|-------------|--------------------|----------|------|--------|---|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|--------|--------|--------|---|
| | | | | | | | | | | | | | | | | | |
| 1 | 513 | 12-30-92 | 1215 | Soil | Q | | | 2 | | | | | 1 | 3 | | | 8270, 8270 RLP metals, gross d, gross f, Re 226-228; Bq504. Analysis per attached sheet |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | |
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| 9 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|------|--|
| 1 | 1 | Steve Stadelman | Grady Lane | 12-30-92 | 1400 | Kust turnaround. |
| 2 | 1 | Grady Lane | Janet Winkler | 12-30-92 | 1605 | P.O. # 31894 |
| 3 | 1 | Janet Winkler | | 1/4/92 | 1605 | |
| 4 | | | | | | Steve Stadelman SAMPLER'S SIGNATURE |

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60651, Supplemental

February 1, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses was subcontracted to Teledyne Isotopes. Please see attached copy of their report.

Reviewed &
Approved by:

Name: Carmine M. Fioriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

27 JANUARY 1993

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/27/93

| | | | | | | |
|--|-------------------|----------------------|---------------|---------------|------|---|
| | WORK ORDER NUMBER | CUSTOMER P.O. NUMBER | DATE RECEIVED | DELIVERY DATE | PAGE | 1 |
| ATTN: O A DEPT ANALYTIKEM INC 28 SPRINGDALE ROAD CHERRY HILL NJ | 3-5807 | | 01/07/93 | 02/09/93 | | |
| | 08003 | | | | | |

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-X U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | | DATE | TIME | | |
| 00665 | 60651-01 | | 12/28 | | GR-A | 9.4 +-5.3 E 00 | | 01/15 | | 3 | |
| | | | | | GR-B | 1.4 +-0.3 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 7.5 +-1.6 E-01 | | 01/21 | 4 | | |
| 00666 | 60651-02 | | 12/29 | | GR-A | 1.3 +-0.6 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.1 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 8.1 +-0.8 E-01 | | 01/21 | 4 | | |
| | | | | | RA-228 | 7.1 +-1.1 E-01 | | 01/21 | 4 | | |
| 00667 | 60651-03 | | 12/29 | | GR-A | 2.8 +-0.8 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.2 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.4 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.3 +-0.2 E 00 | | 01/21 | 4 | | |
| 00668 | 60651-04 | | 12/29 | | GR-A | 2.7 +-0.8 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.3 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.0 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 3.2 +-0.3 E 00 | | 01/21 | 4 | | |
| 00669 | 60651-05 | | 12/29 | | GR-A | 4.0 +-1.0 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 5.6 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 5.9 +-0.6 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | 4 | | |
| 00670 | 60651-06 | | 12/29 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 8.3 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 8.9 +-1.0 E-01 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.8 +-0.3 E 00 | | 01/21 | 4 | | |

TELEDYNE ISOTOPES
REPORT OF ANALYSIS

RUN DATE 01/27/93

ATTN: Q A DEPT
ANALYTIKEM INC
28 SPRINGDALE ROAD
CHERRY HILL NJ 08003

WORK ORDER NUMBER 3-5807

CUSTOMER P.O. NUMBER

DATE RECEIVED 01/07/93

DELIVERY DATE 02/09/93

PAGE 2

S O I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | NUCLIDE | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|--------------------|-------------------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE TIME | STOP DATE TIME | | | | DATE | TIME | | |
| 00671 | 60651-07 | | 12/29 | | GR-A | 4.2 +-1.0 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 6.7 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 3.5 +-0.4 E 00 | | 01/21 | 4 | | |
| 00672 | 60651-08 | | 12/29 | | GR-A | 2.2 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 4.5 +-0.4 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.3 +-0.1 E 00 | | 01/21 | 4 | | |
| 00673 | 60651-09 | | 12/30 | | GR-A | 2.0 +-0.7 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 2.6 +-0.3 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.6 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 1.7 +-0.2 E 00 | | 01/21 | 4 | | |
| 00674 | 60651-10 | | 12/30 | | GR-A | 3.6 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.5 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.1 +-0.1 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.1 +-0.2 E 00 | | 01/21 | 4 | | |
| 00675 | 60651-11 | | 12/30 | | GR-A | 3.7 +-0.9 E 01 | | 01/15 | | 3 | |
| | | | | | GR-B | 7.4 +-0.5 E 01 | | 01/15 | 3 | | |
| | | | | | RA-226 | 1.5 +-0.2 E 00 | | 01/21 | 4 | | |
| | | | | | RA-228 | 2.9 +-0.3 E 00 | | 01/21 | 4 | | |

LAST PAGE OF REPORT

APPROVED BY *J. Guenther* J. GUENTHER 01/27/93

SEND 1 COPIES TO AN1335 ATTN: Q A DEPT

2 - GAS LAB.

3 - RADIO CHEMISTRY LAB.

4 - GELIUM GAMMA SPEC LAB.

5 - TRITIUM GAS/L.S. LAB.

6 - ALPHA SPEC LAB.

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: EVSCI

Sample Collector: Steve Stadelman

Project: 592032

AnalytIKEM Contact: Holley

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | G | Grab or Composite | 40 ml vials | 80 ml O49 Pres. | 520 ml Unpres. | 100 ml HNO ₃ | 10 ml H ₂ SO ₄ | 10 ml NaOH | 10 ml HCl | 250 ml Sept. | 750 ml Sept. | PARAMETERS |
|-------------|--------------------|-------------|------|--------|---|-------------------|-------------|-----------------|----------------|-------------------------|--------------------------------------|------------|-----------|--------------|--------------|--|
| | | | | | | | | | | | | | | | | |
| 1 | B5 | 12-29 92 | 1430 | Soil | G | | | 2 | | | | | 1 | 3 | | 8240, 8370, TCEP metals, grand, gross B, Ra 226-228, Br, SO ₄ . Analyses per attached sheet |
| 2 | S7 | 12-29 92 | 1030 | " | G | | | 2 | | | | | 1 | 3 | | |
| 3 | S6 | 12-29 92 | 1215 | " | G | | | 2 | | | | | 1 | 3 | | |
| 4 | S5 | 12-29 92 | 1300 | " | G | | | 2 | | | | | 1 | 3 | | |
| 5 | S8 | 12-29 92 | 1415 | " | G | | | 2 | | | | | 1 | 3 | | |
| 6 | S9 | 12-29 92 | 1445 | " | G | | | 2 | | | | | 1 | 3 | | |
| 7 | S10 | 12-29 92 | 1515 | " | G | | | 2 | | | | | 1 | 3 | | |
| 8 | S4 | 12-29 92 | 1600 | " | G | | | 2 | | | | | 1 | 3 | | |
| 9 | S14 | 12-29 92 | 1100 | " | G | | | 2 | | | | | 1 | 3 | | |
| 10 | S12 | 12-30 92 | 1130 | " | G | | | 2 | | | | | 1 | 3 | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|-------------|------|---------------------------------|
| 1 | 1-10 | Steve Stadelman | Grady Lane | 12-30 92 | 1400 | Rush turnaround P.O. # 31894 |
| 2 | 1-10 | Grady Lane | Janet Winters | 12-30 92 | 1605 | |
| 3 | 1-10 | J. Winters | [Signature] | 1/4/93 | 1000 | [Signature] |
| 4 | | | | | | SAMPLER'S SIGNATURE |

Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI Sample Collector: Steve Stadelman

Project: 592032 AnalytIKEM Contact: Holley

Laboratory
 2324 Varnsdale Road
 Rock Hill, South Carolina 29731
 (803) 324-5310
 Fax: (803) 324-8378

Sales Office
 454 South Anderson Road BTC 532
 Rock Hill, South Carolina 29730
 (803) 329-9690
 Fax: (803) 329-9689

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grab or Composite | 40 ml vials | 950 ml Orib. Pres. | 7.525 ml Unpres. | HNO ₃ | H ₂ SO ₄ | NaOH | HCl | 250 ml Sept. | 750 ml Sept. | | PARAMETERS |
|-------------|--------------------|----------|------|--------|-------------------|-------------|--------------------|------------------|------------------|--------------------------------|------|-----|--------------|--------------|--|---|
| | | | | | | | | | | | | | | | | |
| 1 | S13 | 12-30-92 | 1215 | Soil | G | | 2 | | | | | | 1 | 3 | | 8270, 8270 RLP metals, gross d, gross f, Ra 226-228; Bq, 204. Analysis per attached sheet |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|----------|------|------------------------------------|
| 1 | 1 | Steve Stadelman | Grady Lane | 12-30-92 | 1400 | Kust turnaround. P.O. # 31894 |
| 2 | 1 | Grady Lane | Janet Winkler | 12-30-92 | 1605 | |
| 3 | 1 | Janet Winkler | [Signature] | 1/4/93 | 1605 | [Signature] SAMPLER'S SIGNATURE |
| 4 | | | | | | |

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690
Fax: 803/324-3982

TEST REPORT NO. A83007, Supplemental

January 12, 1993

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

Note: The Radiological analyses were subcontracted to Teledyne Isotopes.
Please see the attached copy of their report.

Reviewed &
Approved by:


Name: Carmine M. Fioriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

8 JANUARY 1993

JAN 11 1993

 **TELEDYNE ISOTOPES**
50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES
 REPORT OF ANALYSIS

RUN DATE 01/07/93

| | | | | | |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|
| PATTI DE ANDINO ANALYTIKEN INC 2324 VERNSDALE ROAD ROCK HILL SC | WORK ORDER NUMBER 3-5322 | CUSTOMER P.O. NUMBER 29731 | DATE RECEIVED 12/10/92 | DELIVERY DATE 01/13/93 | PAGE 1 |
|--|-----------------------------|-------------------------------|---------------------------|---------------------------|-----------|

S D I L

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | | | ACTIVITY (PCI/GM DRY) | NUCL-UNIT-% U/M * | MID-COUNT TIME | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|------|---------|--------------------------|----------------------|-------------------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | TIME | NUCLIDE | | | DATE | TIME | | |
| 98106 | 83007-1 | | 12/04 | | | GR-A | 1.5 +-0.6 E 01 | | 12/16 | | 3 | |
| | | | | | | GR-B | 6.3 +-0.4 E 01 | | 12/16 | | 3 | |
| | | | | | | RA-226 | 6.7 +-0.9 E-01 | | 12/24 | | 4 | |
| | | | | | | RA-228 | 1.0 +-0.2 E 00 | | 12/24 | | 4 | |

LAST PAGE OF REPORT

APPROVED BY *J. Guenther* J. GUENTHER 01/07/93

SEND 1 COPIES TO AN133T PATTI DE ANDINO

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LII) GAMMA SPEC LAB. 5 - TRITIUM GAS/L+S. LAB. 6 - ALPHA SPEC LAB.

AnalytiKEM Inc.
28 Springdale Road
Cherry Hill, NJ 08003
609/751-1122
1-800-TRY-LAB1
Fax: 609/751-0824

TEST REPORT NO. A60646, Supplemental

B4

January 24, 1993

Prepared for:

ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Attention: Steven Stadelman

Project: Mannington Tile Soil (S92032)

The Radiological analyses were subcontracted to Teledyne Isotopes. Please see the attached copy of their report.

Reviewed &
Approved by:

Name: Carmine M. Floriglio

Title: QA/QC Manager

REPORT OF ANALYSIS

20 JANUARY 1993

 **TELEDYNE ISOTOPES**

50 Van Buren Ave., P.O. Box 1235
Westwood, N.J. 07675-1235
Phone: 201/664-7070
FAX: 201/664-5586

TELEDYNE ISOTOPES

REPORT OF ANALYSIS

RUN DATE 01/19/93

ATTN: Q A DEPT
 ANALYTIKER INC
 28 SPRINGDALE ROAD
 CHERRY HILL NJ 08003

WORK ORDER NUMBER 3-5557
 CUSTOMER P.O. NUMBER
 DATE RECEIVED 12/24/92
 DELIVERY DATE 01/27/93
 PAGE 1

S O L I D S

| TELEDYNE SAMPLE NUMBER | CUSTOMER'S IDENTIFICATION | STA NUM | COLLECTION-DATE | | ACTIVITY {PCI/GM DRY} | NUCL-UNIT-% U/M * | MID-COUNT | | VOLUME - UNITS ASH-WGHT-% * | LAB. |
|------------------------------|------------------------------|------------|-----------------|--------------|--------------------------|----------------------|-----------|------|--------------------------------|------|
| | | | START DATE | STOP DATE | | | TIME | TIME | | |
| 99486 | 60646-1 | | 12/16 | | GR-A | 1.4 +-0.5 E 01 | 01/06 | | 3 | |
| | | | | | GR-B | 5.1 +-0.4 E 01 | 01/06 | | 3 | |
| | | | | | RA-226 | 6.9 +-0.7 E-01 | 01/08 | | 4 | |
| | | | | | RA-228 | 7.0 +-1.3 E-01 | 01/08 | | 4 | |

LAST PAGE OF REPORT

J. Guenther
 APPROVED BY J. GUENTHER 01/19/93

SEND 1 COPIES TO AN133S ATTN: Q A DEPT

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GELIUM GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

Appendix C

Analytical Reports for Stabilized Sludge Samples



February 18, 1993

Mr. Steve Stadelman
ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

Dear Mr. Stadelman:

Enclosed is the report for ten soil samples received at Enseco-Rocky Mountain Analytical Laboratory on January 6, 1993.

Included with the report is a quality control summary.

Please call if you have any questions.

Sincerely,



Nancy Voiland-Dow
Project Administrator

NVD/nvd
Enclosures

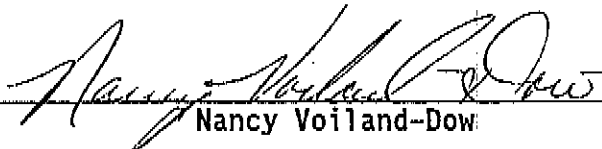
RMAL #027566



ANALYTICAL RESULTS
FOR
ENSCI Corporation
ENSECO-RMAL NO. 027566

FEBRUARY 18, 1993

Reviewed by:


Nancy Voiland-Dow

ENSCI Corporation Job #S92032

I. OVERVIEW

On January 6, 1993, Enseco-Rocky Mountain Analytical Laboratory received ten soil samples from ENSCI Corporation.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

DISCUSSION

The samples for this project were originally received at the laboratory on January 6, 1993 and were logged in on RMAL project 027019. With permission from Steve Stadelman at ENSCI Corporation, these samples were relogged under RMAL project 027566 for the Radium 226 analysis only. All other requested analyses have been reported under RMAL project 027019.

A reagent blank is analyzed with all radiochemistry parameters and must be within established control limits. The results for Radium 226 are calculated by subtracting the reagent blank.

II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Enseco - RMAL is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

SAMPLE DESCRIPTION INFORMATION
for
ENSCI Corporation

| Lab ID | Client ID | Matrix | Sampled | | Received Date |
|----------------|-----------|--------|-----------|-------|------------------|
| | | | Date | Time | |
| 027566-0001-SA | 1 | SOIL | 02 JAN 93 | 09:30 | 06 JAN 93 |
| 027566-0002-SA | 2 | SOIL | 02 JAN 93 | 10:00 | 06 JAN 93 |
| 027566-0003-SA | 3 | SOIL | 02 JAN 93 | 10:30 | 06 JAN 93 |
| 027566-0004-SA | 10 | SOIL | 03 JAN 93 | 09:30 | 06 JAN 93 |
| 027566-0005-SA | 9 | SOIL | 03 JAN 93 | 10:00 | 06 JAN 93 |
| 027566-0006-SA | 8 | SOIL | 03 JAN 93 | 10:30 | 06 JAN 93 |
| 027566-0007-SA | 7 | SOIL | 03 JAN 93 | 10:45 | 06 JAN 93 |
| 027566-0008-SA | 6 | SOIL | 03 JAN 93 | 11:00 | 06 JAN 93 |
| 027566-0009-SA | 5 | SOIL | 03 JAN 93 | 11:15 | 06 JAN 93 |
| 027566-0010-SA | 4 | SOIL | 03 JAN 93 | 11:45 | 06 JAN 93 |

ANALYTICAL TEST REQUESTS
for
ENSCI Corporation

| Lab ID: 027566 | Group Code | Analysis Description | Custom Test? |
|-------------------|---------------|---|-----------------|
| 0001 - 0010 | A | Radium-226 in soil/ Radon De-emanation Prep - Radium-226 in soil/ Radon De-emanation | N N |

III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Enseco reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Enseco-RMAL does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.5, May, 1992.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method. The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is given in Section IV.

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 1
Lab ID: 027566-0001-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 4.59E+0 | +/-5.3E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 2
Lab ID: 027566-0002-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.50E+0 | +/-4.8E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 3
Lab ID: 027566-0003-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 4.43E+0 | +/-4.9E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 10
Lab ID: 027566-0004-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 1.78E+0 | +/-3.0E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 9
Lab ID: 027566-0005-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 2.87E+0 | +/-3.6E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 8
Lab ID: 027566-0006-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.15E+0 | +/-3.6E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 7
Lab ID: 027566-0007-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.30E+0 | +/-4.0E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 6
Lab ID: 027566-0008-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.70E+0 | +/-4.4E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 5
Lab ID: 027566-0009-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.56E+0 | +/-3.7E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 4
Lab ID: 027566-0010-SA
Matrix: SOIL
Authorized: 10 FEB 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------|---------|----------------------------|-------|----------------------|------------------|
| Radium-226 | 3.23E+0 | +/-3.6E-1 | pCi/g | EPA Ra-01 | 12 FEB 93 |

Reported By: Mark Stella

Approved By: Grant Wilton

IV. QUALITY CONTROL REPORT

The Enseco laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Enseco QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

QC LOT ASSIGNMENT REPORT
Radiochemistry

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 027566-0001-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0002-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0003-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0004-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0005-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0006-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0007-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0008-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0009-SA | SOLID | RA226-S | 05 FEB 93-9A | - |
| 027566-0010-SA | SOLID | RA226-S | 05 FEB 93-9A | - |

RADIOCHEMISTRY QUALITY CONTROL REPORT

Parameter: Radium 226

QC Lot # 05-Feb-93 -9A

Units: pCi/g

Matrix: SOIL

DUPLICATE CONTROL SAMPLE REPORT

| SAMPLE | Activity +/- 2 s | units | Spike Activity +/- 2 s | units |
|--------|-------------------|-------|------------------------|-------|
| DCS1 | 4.9E+02 +/- 2E+01 | pCi/g | 5.00E+02 +/- 6E+01 | pCi/g |
| DCS2 | 4.7E+02 +/- 2E+01 | pCi/g | 5.00E+02 +/- 6E+01 | pCi/g |

| Analyte | Duplicate Control Sample # 1 | | | Duplicate Control Sample # 2 | | | Duplicate Control Sample Statistics | | | | |
|------------|------------------------------|----------------|--------------|------------------------------|----------------|--------------|-------------------------------------|-----------------|---------------------|-----|--------|
| | Activity +/- 2 sigma | Spike Activity | Accuracy (%) | Activity +/- 2 sigma | Spike Activity | Accuracy (%) | Mean % | Accuracy Limits | DCS Precision (RPD) | RPD | Limits |
| Radium 226 | 4.9E+02 +/- 2E+01 pCi/g | 5.0E+02 pCi/g | 98% | 4.7E+02 +/- 2E+01 pCi/g | 5.0E+02 pCi/g | 95% | 97% | 70-130 | 4% | 20% | |

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI
Project: 592032

Sample Collector: Steve Stadelman
Greg Russell
AnalytiKEM Contact: Don McDowell

Laboratory
2324 Vornsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 5
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

1
2
3
4
5
6
7
8
9
10

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | Grab or Composite | 40 ml vials | 80 ml Org. Pres. Unpres. | 100 ml HNO ₃ | 100 ml H ₂ SO ₄ | 100 ml NaOH | 100 ml HCL | 250 ml 500 ml | PARAMETERS |
|-------------|--------------------|--------|------|--------|-------------------|-------------|--------------------------|-------------------------|---------------------------------------|-------------|------------|---------------|--|
| | | | | | | | | | | | | | |
| 1 | 1 | 1-2-93 | 0930 | Soil | | | 3 | | | | 1 | 2 | P. 240, 5370, metals by FEL, or; SO ₄ , R-72 ANALYSIS PER ATTACHED SHEET |
| 2 | 2 | 1-2-93 | 1000 | | | | 3 | | | | 1 | 2 | |
| 3 | 3 | 1-2-93 | 1030 | | | | 2 | | | | 1 | 4 | |
| 4 | 10 | 1-3-93 | 0930 | | | | 4 | | | | 1 | | |
| 5 | 9 | 1-3-93 | 1000 | | | | 4 | | | | 1 | | |
| 6 | 8 | 1-3-93 | 1015 | | | | 4 | | | | 1 | | |
| 7 | 7 | 1-3-93 | 1045 | | | | 4 | | | | 1 | | |
| 8 | 6 | 1-3-93 | 1100 | | | | 4 | | | | 1 | | |
| 9 | 5 | 1-3-93 | 1115 | | | | 4 | | | | 1 | | |
| 10 | 4 | 1-3-93 | 1145 | | | | 4 | | | | 1 | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|--------|-------|--|
| 1 | 1-10 | <i>Steve Stadelman</i> | <i>Greg Russell</i> | 1-4-93 | 1600 | P.O. # 31904 Rust turnaround on metals <i>Steve Stadelman</i> SAMPLEE'S SIGNATURE |
| 2 | | | | 1-6-93 | 09:00 | |
| 3 | | | | | | |
| 4 | | | | | | |



February 11, 1993

Mr. Steve Stadelman
ENSCI Corporation
1108 Old Thomasville Road
High Point, NC 27260

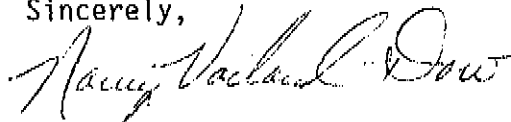
Dear Mr. Stadelman:

Enclosed is the report for ten soil samples received at Enseco-Rocky Mountain Analytical Laboratory on January 6, 1993.

Included with the report is a quality control summary.

Please call if you have any questions.

Sincerely,



Nancy Voiland-Dow
Project Administrator

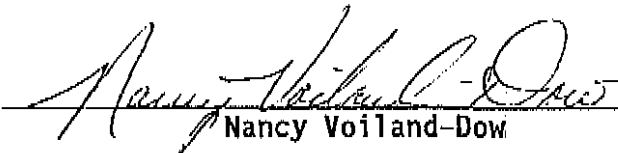
NVD/nvd
Enclosures

RMAL #027019



ANALYTICAL RESULTS
FOR
ENSCI Corporation
ENSECO-RMAL NO. 027019
FEBRUARY 11, 1993

Reviewed by:


Nancy Voiland-Dow

ENSCI Corporation Job #S92032

Enseco Incorporated
4955 Yarrow Street
Arvada, Colorado 80002
303/421-6611 Fax: 303/431-7171

I. OVERVIEW

On January 6, 1993, Enseco-Rocky Mountain Analytical Laboratory received ten soil samples from ENSCI Corporation.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report

DISCUSSION

The percent recovery of one or more acid surrogates was outside the Enseco advisory acceptance criteria for the Method 8270 analysis of RMAL samples 027019-0001 through -0010. These sample surrogate recoveries suggest a matrix interference. As discussed with Steve Stadelman and Henry Havener of ENSCI Corporation on January 15, 1993, these samples were not reprepared and the original sample data were reported.

A matrix spike was performed for the TCLP-Praseodymium (141) analysis of RMAL sample 027019-0005.

As discussed with Steve Stadelman on February 10, 1993, the Radium 226 analyses of RMAL samples 027019-0001 through -0010 were cancelled. These samples were relogged under RMAL project 027566. The Radium 226 analytical data will be reported under this new project.

Samples within this project have been analyzed for TCLP as in 40 CFR Part 261, Appendix II, and corrected in the Federal Register, November 24, 1992 (57 FR 55114.) TCLP leachates are prepared using Method 1311 and analyzed using Methods 6010, 7470, and 7740 for metals, 8240 for volatiles,

8270 for semivolatiles, 8080 for pesticides, and 8150 for herbicides. Every effort was made to achieve reporting limits below the regulated limit on each sample. However, as with all environmental analyses, matrix interferences or target compounds may be present in some samples which limit the effectiveness of the analytical method to achieve these limits.

The final TCLP rule of November 24, 1992, contains a requirement that a matrix spike be analyzed for each analytical batch; however, bias correction using the matrix spike recoveries, is not required by the US EPA. In accordance with this rule, all data reported have not been corrected for bias. The results from the QC sample analyses (surrogates, lab controls and matrix spikes) are contained in the report, should these data be of interest in adjusting reported values. As stated in Method 1311, use of alternate methods may be needed when the recovery of the matrix spike is below the expected analytical performance.

II. SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Enseco - RMAL is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

SAMPLE DESCRIPTION INFORMATION
for
ENSCI Corporation

| Lab ID | Client ID | Matrix | Sampled | | Received Date |
|----------------|-----------|--------|-----------|-------|------------------|
| | | | Date | Time | |
| 027019-0001-SA | 1 | SOIL | 02 JAN 93 | 09:30 | 06 JAN 93 |
| 027019-0002-SA | 2 | SOIL | 02 JAN 93 | 10:00 | 06 JAN 93 |
| 027019-0003-SA | 3 | SOIL | 02 JAN 93 | 10:30 | 06 JAN 93 |
| 027019-0004-SA | 10 | SOIL | 03 JAN 93 | 09:30 | 06 JAN 93 |
| 027019-0005-SA | 9 | SOIL | 03 JAN 93 | 10:00 | 06 JAN 93 |
| 027019-0005-MS | 9 | SOIL | 03 JAN 93 | 10:00 | 06 JAN 93 |
| 027019-0006-SA | 8 | SOIL | 03 JAN 93 | 10:30 | 06 JAN 93 |
| 027019-0007-SA | 7 | SOIL | 03 JAN 93 | 10:45 | 06 JAN 93 |
| 027019-0008-SA | 6 | SOIL | 03 JAN 93 | 11:00 | 06 JAN 93 |
| 027019-0009-SA | 5 | SOIL | 03 JAN 93 | 11:15 | 06 JAN 93 |
| 027019-0010-SA | 4 | SOIL | 03 JAN 93 | 11:45 | 06 JAN 93 |

ANALYTICAL TEST REQUESTS
 for
 ENSCI Corporation

| Lab ID: 027019 | Group Code | Analysis Description | Custom Test? |
|-------------------|---------------|---|-----------------|
| 0001 - 0010 | A | Digestion for Metals from a TCLP leachate | N |
| | | TCLP Extraction / Extractable Organics & Metals | N |
| | | Volatile Organics | N |
| | | Target Compound List (TCL) | N |
| | | GC Screen For Low Level Soils | N |
| | | TCL Semivolatile Organics | N |
| | | Prep - Semivolatile Organics by GC/MS | N |
| | | Sulfate, Ion Chromatography | N |
| | | Deionized Water Leach | N |
| | | Bromide by IC | N |
| | | Gross Alpha/Beta-Gas Proportional Counter | N |
| | | Prep- Gross Alpha/Beta-Gas Proportional Counter | N |
| | | Radium-226 in soil/ Radon De-emanation | N |
| | | Prep - Radium-226 in soil/ Radon De-emanation | N |
| | | Radium-228 in soil/ Gamma Spec | N |
| | | Prep - Radium-228 in soil/ Gamma Spec | N |
| | | Metals, ICP/MS-Bromine | N |
| | | ICP/MS DI Leach | N |
| | | ICP/MS Metals (TCLP Leachate)- | Y |
| | | Praseodymium (141) | |

III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Enseco reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Enseco-RMAL does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.5, May, 1992.

In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method. The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is given in Section IV.

The analytical data reported are subject to the following limitations of the analytical methodology:

GC/MS

Volatile Organics

- a) The cis- and trans-isomers of 1,2-dichloroethene cannot be distinguished using EPA Method 624 or 8240. All dichloroethene present is reported as 1,2-dichloroethene (total).

Semivolatile Organics

- a) Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra; retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.
- b) 1,2-diphenylhydrazine is measured as azobenzene.
- c) Diphenylamine cannot be distinguished from N-nitrosodiphenylamine.
- d) 3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and retention times are almost identical. Results are reported as 3/4-methyl phenol (or m&p-cresols).
- e) Several Appendix IX and Refinery List compounds are not consistently recovered using Method 8270, and reporting limits cannot be established. These compounds include: dimethoate, famphur, hexachlorophene, 4-nitroquinoline-1-oxide, 4-phenylenediamine, and benzenethiol.
- f) Two Refinery List compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 1
Lab ID: 027019-0001-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|-----------------------------|--------|---------------|-----------------|
| Acetone | 60 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery |
|----------------------|----------|
| Toluene-d8 | 99 % |
| 4-Bromofluorobenzene | 95 % |

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 1
Lab ID: 027019-0001-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

Surrogate

Recovery

1,2-Dichloroethane-d4

99 %

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 2
Lab ID: 027019-0002-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|---------------------------|--------|---------------|-----------------|
| Acetone | 99 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | 10 | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 10 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Toluene-d8 | 100 | % |
| 4-Bromofluorobenzene | 102 | % |

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 2
Lab ID: 027019-0002-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Surrogate | Recovery | |
|-----------------------|----------|---|
| 1,2-Dichloroethane-d4 | 99 | % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
 Target Compound List (TCL)
 Method 8240

Client Name: ENSCI Corporation
 Client ID: 3
 Lab ID: 027019-0003-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 08 JAN 93

Received: 06 JAN 93
 Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|---------------------------|----------|------------------|--------------------|
| Acetone | 92 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 10 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |
| Surrogate | Recovery | | |
| Toluene-d8 | 93 | % | |
| 4-Bromofluorobenzene | 102 | % | |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 3
Lab ID: 027019-0003-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Surrogate | Recovery | |
|-----------------------|----------|---|
| 1,2-Dichloroethane-d4 | 92 | % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 10
Lab ID: 027019-0004-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|-----------------------------|--------|---------------|-----------------|
| Acetone | 110 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | 12 | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Toluene-d8 | 103 | % |
| 4-Bromofluorobenzene | 101 | % |

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 10
Lab ID: 027019-0004-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Surrogate | Recovery |
|-----------------------|----------|
| 1,2-Dichloroethane-d4 | 100 % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 9
Lab ID: 027019-0005-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|--------------------------------|--------|------------------|--------------------|
| Acetone | 96 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | 11 | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery |
|----------------------|----------|
| Toluene-d8 | 100 % |
| 4-Bromofluorobenzene | 100 % |

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 9
Lab ID: 027019-0005-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Surrogate | Recovery |
|-----------------------|----------|
| 1,2-Dichloroethane-d4 | 99 % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 8
Lab ID: 027019-0006-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|---------------------------|--------|---------------|-----------------|
| Acetone | 190 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | 22 | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 10 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery |
|----------------------|----------|
| Toluene-d8 | 103 % |
| 4-Bromofluorobenzene | 101 % |

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ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 8
Lab ID: 027019-0006-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 12 JAN 93

| Surrogate | Recovery |
|-----------------------|----------|
| 1,2-Dichloroethane-d4 | 98 % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 7
Lab ID: 027019-0007-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|---------------------------|--------|---------------|-----------------|
| Acetone | 83 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 10 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Toluene-d8 | 101 | % |
| 4-Bromofluorobenzene | 100 | % |

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 7
Lab ID: 027019-0007-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Surrogate | Recovery | |
|-----------------------|----------|---|
| 1,2-Dichloroethane-d4 | 99 | % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 6
Lab ID: 027019-0008-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|-----------------------------|----------|---------------|-----------------|
| Acetone | 48 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |
| Surrogate | Recovery | | |
| Toluene-d8 | 93 | % | |
| 4-Bromofluorobenzene | 105 | % | |

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ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 6
Lab ID: 027019-0008-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Surrogate | Recovery |
|-----------------------|----------|
| 1,2-Dichloroethane-d4 | 93 % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
 Target Compound List (TCL)
 Method 8240

Client Name: ENSCI Corporation
 Client ID: 5
 Lab ID: 027019-0009-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 08 JAN 93

Received: 06 JAN 93
 Analyzed: 13 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|--------------------------------|--------|------------------|--------------------|
| Acetone | 100 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Toluene-d8 | 99 | % |
| 4-Bromofluorobenzene | 102 | % |

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ND = Not detected
 NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 5
Lab ID: 027019-0009-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Surrogate | Recovery | |
|-----------------------|----------|---|
| 1,2-Dichloroethane-d4 | 101 | % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 4
Lab ID: 027019-0010-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Parameter | Result | Wet wt. Units | Reporting Limit |
|---------------------------|----------|---------------|-----------------|
| Acetone | 160 | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | 16 | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 5.0 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |
| Surrogate | Recovery | | |
| Toluene-d8 | 98 | % | |
| 4-Bromofluorobenzene | 103 | % | |

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ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

Volatile Organics
Target Compound List (TCL)
Method 8240

Client Name: ENSCI Corporation
Client ID: 4
Lab ID: 027019-0010-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: 08 JAN 93

Received: 06 JAN 93
Analyzed: 13 JAN 93

| Surrogate | Recovery | |
|-----------------------|----------|---|
| 1,2-Dichloroethane-d4 | 97 | % |

ND = Not detected
NA = Not applicable

Reported By: Debbie Coyle

Approved By: Shawn Kassner

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 1
 Lab ID: 027019-0001-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 1
 Lab ID: 027019-0001-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|----------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Surrogate | Recovery | | |
| Nitrobenzene-d5 | 76 | % | |
| 2-Fluorobiphenyl | 74 | % | |
| Terphenyl-d14 | 84 | % | |
| Phenol-d5 | 22 | % | |
| 2-Fluorophenol | ND | % | |
| 2,4,6-Tribromophenol | 14 | % | |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 2
 Lab ID: 027019-0002-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 2
 Lab ID: 027019-0002-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 80 | % |
| 2-Fluorobiphenyl | 75 | % |
| Terphenyl-d14 | 64 | % |
| Phenol-d5 | 42 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 32 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 3
 Lab ID: 027019-0003-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 3
 Lab ID: 027019-0003-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 76 | % |
| 2-Fluorobiphenyl | 75 | % |
| Terphenyl-d14 | 66 | % |
| Phenol-d5 | 41 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 43 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 10
 Lab ID: 027019-0004-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

 Client Name: ENSCI Corporation
 Client ID: 10
 Lab ID: 027019-0004-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

 Sampled: 03 JAN 93
 Prepared: 12 JAN 93

 Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|----------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Surrogate | Recovery | | |
| Nitrobenzene-d5 | 86 | % | |
| 2-Fluorobiphenyl | 82 | % | |
| Terphenyl-d14 | 70 | % | |
| Phenol-d5 | 47 | % | |
| 2-Fluorophenol | ND | % | |
| 2,4,6-Tribromophenol | 31 | % | |

 ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 9
 Lab ID: 027019-0005-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 9
 Lab ID: 027019-0005-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 65 | % |
| 2-Fluorobiphenyl | 68 | % |
| Terphenyl-d14 | 64 | % |
| Phenol-d5 | 51 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 40 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 8
 Lab ID: 027019-0006-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 8
 Lab ID: 027019-0006-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 82 | % |
| 2-Fluorobiphenyl | 78 | % |
| Terphenyl-d14 | 68 | % |
| Phenol-d5 | 44 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 24 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 7
 Lab ID: 027019-0007-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 7
 Lab ID: 027019-0007-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 77 | % |
| 2-Fluorobiphenyl | 76 | % |
| Terphenyl-d14 | 61 | % |
| Phenol-d5 | 32 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 16 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 6
 Lab ID: 027019-0008-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 6
 Lab ID: 027019-0008-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 74 | % |
| 2-Fluorobiphenyl | 70 | % |
| Terphenyl-d14 | 65 | % |
| Phenol-d5 | 36 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 32 | % |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

 Client Name: ENSCI Corporation
 Client ID: 5
 Lab ID: 027019-0009-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

 Sampled: 03 JAN 93
 Prepared: 12 JAN 93

 Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

 ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

Client Name: ENSCI Corporation
 Client ID: 5
 Lab ID: 027019-0009-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|----------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Surrogate | Recovery | | |
| Nitrobenzene-d5 | 75 | % | |
| 2-Fluorobiphenyl | 70 | % | |
| Terphenyl-d14 | 63 | % | |
| Phenol-d5 | 34 | % | |
| 2-Fluorophenol | ND | % | |
| 2,4,6-Tribromophenol | 20 | % | |

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics

Method 8270

Client Name: ENSCI Corporation
 Client ID: 4
 Lab ID: 027019-0010-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: 12 JAN 93

Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|------------------------------|--------|-------|-----------------|
| Phenol | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 1,3-Dichlorobenzene | ND | ug/kg | 330 |
| 1,4-Dichlorobenzene | ND | ug/kg | 330 |
| Benzyl alcohol | ND | ug/kg | 330 |
| 1,2-Dichlorobenzene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| bis(2-Chloroisopropyl) ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| Hexachloroethane | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| Benzoic acid | ND | ug/kg | 1600 |
| bis(2-Chloroethoxy) methane | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 1,2,4-Trichlorobenzene | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 330 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Dibenzofuran | ND | ug/kg | 330 |

(continued on following page)

ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

TCL Semivolatile Organics (CONT.)

Method 8270

 Client Name: ENSCI Corporation
 Client ID: 4
 Lab ID: 027019-0010-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

 Sampled: 03 JAN 93
 Prepared: 12 JAN 93

 Received: 06 JAN 93
 Analyzed: 14 JAN 93

| Parameter | Result | Units | Reporting Limit |
|-----------------------------|--------|-------|-----------------|
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| bis(2-Ethylhexyl) phthalate | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Indeno(1,2,3-cd)pyrene | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |

| Surrogate | Recovery | |
|----------------------|----------|---|
| Nitrobenzene-d5 | 70 | % |
| 2-Fluorobiphenyl | 67 | % |
| Terphenyl-d14 | 71 | % |
| Phenol-d5 | 34 | % |
| 2-Fluorophenol | ND | % |
| 2,4,6-Tribromophenol | 21 | % |

 ND = Not detected
 NA = Not applicable

Reported By: Philip Tallarico

Approved By: Richard Murphy

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 1
Lab ID: 027019-0001-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.063 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 2
Lab ID: 027019-0002-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.11 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
 Client ID: 3
 Lab ID: 027019-0003-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.098 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 10
Lab ID: 027019-0004-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|--------------------|----------------------|------------------|------------------|
| Bromine (81) | 0.10 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals
Total Metals

Client Name: ENSCI Corporation
Client ID: 9
Lab ID: 027019-0005-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.090 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 8
Lab ID: 027019-0006-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|--------------------|----------------------|------------------|------------------|
| Bromine (81) | 0.10 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 7
Lab ID: 027019-0007-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|--------------------|----------------------|------------------|------------------|
| Bromine (81) | 0.11 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 6
Lab ID: 027019-0008-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.090 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 5
Lab ID: 027019-0009-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.090 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

Total Metals

Client Name: ENSCI Corporation
Client ID: 4
Lab ID: 027019-0010-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 03 JAN 93
Prepared: See Below

Received: 06 JAN 93
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromine (81) | 0.11 | mg/kg | 0.025 | RMAL | 12 JAN 93 | 12 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation

Client ID: 1

Lab ID: 027019-0001-SA

Matrix: SOIL

Sampled: 02 JAN 93

Received: 06 JAN 93

Authorized: 06 JAN 93

Leached: 12 JAN 93

Prepared: See Below

Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
 Client ID: 2
 Lab ID: 027019-0002-SA
 Matrix: SOIL

Sampled: 02 JAN 93
 Received: 06 JAN 93
 Authorized: 06 JAN 93

Leached: 12 JAN 93
 Prepared: See Below
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 3
Lab ID: 027019-0003-SA
Matrix: SOIL

Sampled: 02 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93
Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 10
Lab ID: 027019-0004-SA
Matrix: SOIL

Sampled: 03 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93

Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|--------------------|----------------------|------------------|------------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
 Client ID: 9
 Lab ID: 027019-0005-SA
 Matrix: SOIL

Sampled: 03 JAN 93
 Received: 06 JAN 93
 Authorized: 06 JAN 93

Leached: 12 JAN 93
 Prepared: See Below
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
 Client ID: 8
 Lab ID: 027019-0006-SA
 Matrix: SOIL

Sampled: 03 JAN 93
 Received: 06 JAN 93
 Authorized: 06 JAN 93

Leached: 12 JAN 93
 Prepared: See Below
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals
TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 7
Lab ID: 027019-0007-SA
Matrix: SOIL

Sampled: 03 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93

Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 6
Lab ID: 027019-0008-SA
Matrix: SOIL

Sampled: 03 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93

Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|--------------------|----------------------|------------------|------------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 5
Lab ID: 027019-0009-SA
Matrix: SOIL

Sampled: 03 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93

Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

ICP/MS Metals

TCLP Leachate

Client Name: ENSCI Corporation
Client ID: 4
Lab ID: 027019-0010-SA
Matrix: SOIL

Sampled: 03 JAN 93
Received: 06 JAN 93
Authorized: 06 JAN 93

Leached: 12 JAN 93
Prepared: See Below
Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|--------------------|--------|-------|-----------------|-------------------|---------------|---------------|
| Praseodymium (141) | ND | mg/L | 0.00050 | 6020 | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
NA = Not applicable

Reported By: Scott Heideman

Approved By: Richard Persichitte

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 1
 Lab ID: 027019-0001-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

 Client Name: ENSCI Corporation
 Client ID: 2
 Lab ID: 027019-0002-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

 Sampled: 02 JAN 93
 Prepared: See Below

 Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

 ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 3
 Lab ID: 027019-0003-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

 Client Name: ENSCI Corporation
 Client ID: 10
 Lab ID: 027019-0004-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

 Sampled: 03 JAN 93
 Prepared: See Below

 Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

 ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 9
 Lab ID: 027019-0005-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 8
 Lab ID: 027019-0006-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 7
 Lab ID: 027019-0007-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 6
 Lab ID: 027019-0008-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 5
 Lab ID: 027019-0009-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

General Inorganics

Client Name: ENSCI Corporation
 Client ID: 4
 Lab ID: 027019-0010-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93
 Prepared: See Below

Received: 06 JAN 93
 Analyzed: See Below

| Parameter | Result | Units | Reporting Limit | Analytical Method | Prepared Date | Analyzed Date |
|-----------|--------|-------|-----------------|-------------------|---------------|---------------|
| Bromide | ND | mg/kg | 1.0 | 300.0 Mod. | 12 JAN 93 | 13 JAN 93 |
| Sulfate | ND | mg/kg | 25.0 | 300.0 Mod. | 12 JAN 93 | 14 JAN 93 |

ND = Not detected
 NA = Not applicable

Reported By: Kirsten Meier

Approved By: Julie Martinez

Radiochemistry

 Client Name: ENSCI Corporation
 Client ID: 1
 Lab ID: 027019-0001-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 5E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 3E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 6.8E-1 | +/-1.3E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

 Client Name: ENSCI Corporation
 Client ID: 2
 Lab ID: 027019-0002-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 5E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 8.2E-1 | +/-1.2E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
Client ID: 3
Lab ID: 027019-0003-SA
Matrix: SOIL
Authorized: 06 JAN 93

Sampled: 02 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 5E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 8.3E-1 | +/-1.0E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

 Client Name: ENSCI Corporation
 Client ID: 10
 Lab ID: 027019-0004-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|---------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 5E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 3E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 1.19E+0 | +/-1.7E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
 Client ID: 9
 Lab ID: 027019-0005-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|---------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 6E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 1.15E+0 | +/-1.0E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
 Client ID: 8
 Lab ID: 027019-0006-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|---------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 7E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 1.22E+0 | +/-1.6E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
 Client ID: 7
 Lab ID: 027019-0007-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|---------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 1.02E+0 | +/-1.2E-1 | pCi/g | GAMMA SPEC | 18 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
 Client ID: 6
 Lab ID: 027019-0008-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 3E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 9.2E-1 | +/-1.1E-1 | pCi/g | GAMMA SPEC | 19 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

Client Name: ENSCI Corporation
 Client ID: 5
 Lab ID: 027019-0009-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 4E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 3E+01 | +/- 3E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 9.1E-1 | +/-1.0E-1 | pCi/g | GAMMA SPEC | 19 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

Radiochemistry

 Client Name: ENSCI Corporation
 Client ID: 4
 Lab ID: 027019-0010-SA
 Matrix: SOIL
 Authorized: 06 JAN 93

Sampled: 03 JAN 93

Received: 06 JAN 93

| Parameter | Result | +/- 2 Sigma Uncertainty | Units | Analytical Method | Analyzed Date |
|------------------------------|--------|----------------------------|-------|----------------------|------------------|
| Gross Alpha | 3E+01 | +/- 2E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Gross Beta | 6E+01 | +/- 3E+01 | pCi/g | DIRECT COUNT | 12 JAN 93 |
| Radium-228(Actinium -228) | 8.4E-1 | +/-1.0E-1 | pCi/g | GAMMA SPEC | 19 JAN 93 |

Reported By: Brett Allison

Approved By: Robert Shannon

IV. QUALITY CONTROL REPORT

The Enseco laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

In addition, the Enseco laboratories maintain a comprehensive set of certifications from both state and federal governmental agencies which require frequent analyses of blind audit samples. Enseco - Rocky Mountain Analytical Laboratory is certified by the EPA under the EPA/CLP program for both Organic and Inorganic analyses, under the USATHAMA (U.S. Army) program, by the Army Corps of Engineers, and the states of Colorado, New Jersey, New York, Utah, and Florida, among others.

The standard laboratory QC package is designed to:

- 1) establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data
- 2) assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix
- 3) establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and
- 4) provide a standard set of reportables which assures the client of the quality of his data.

The Enseco QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 027019-0001-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0002-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0003-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0004-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0005-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0006-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0007-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0008-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0009-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |
| 027019-0010-SA | SOIL | 8240-SL | 11 JAN 93-D | 12 JAN 93-D |

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

| Analyte | Spiked | Concentration | | AVG | Accuracy | | Precision | | |
|----------------------------|--------|---------------|------------------|------|----------|----------------------|--------------------|-----------|--|
| | | DCS1 | Measured DCS2 | | DCS | Average(%) Limits | (RPD) DCS Limit | DCS Limit | |
| Category: 8240-SL | | | | | | | | | |
| Matrix: SOIL | | | | | | | | | |
| QC Lot: 11 JAN 93-D | | | | | | | | | |
| Concentration Units: ug/kg | | | | | | | | | |
| 1,1-Dichloroethene | 50 | 39.9 | 39.3 | 39.6 | 79 | 75-121 | 1.5 | 18 | |
| Trichloroethene | 50 | 44.9 | 45.1 | 45.0 | 90 | 75-108 | 0.4 | 11 | |
| Benzene | 50 | 43.9 | 44.2 | 44.0 | 88 | 81-118 | 0.7 | 15 | |
| Toluene | 50 | 44.8 | 46.2 | 45.5 | 91 | 83-115 | 3.1 | 14 | |
| Chlorobenzene | 50 | 43.5 | 45.1 | 44.3 | 89 | 81-115 | 3.6 | 14 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Volatile Organics by GC/MS

| Analyte | Result | Units | Reporting Limit |
|--|--------|-------|-----------------|
| Test: 8240CPL-TCL-S | | | |
| Matrix: SOIL | | | |
| QC Lot: 11 JAN 93-D QC Run: 12 JAN 93-D | | | |
| Acetone | ND | ug/kg | 10 |
| Benzene | ND | ug/kg | 5.0 |
| Bromodichloromethane | ND | ug/kg | 5.0 |
| Bromoform | ND | ug/kg | 5.0 |
| Bromomethane | ND | ug/kg | 10 |
| 2-Butanone (MEK) | ND | ug/kg | 10 |
| Carbon disulfide | ND | ug/kg | 5.0 |
| Carbon tetrachloride | ND | ug/kg | 5.0 |
| Chlorobenzene | ND | ug/kg | 5.0 |
| Chloroethane | ND | ug/kg | 10 |
| Chloroform | ND | ug/kg | 5.0 |
| Chloromethane | ND | ug/kg | 10 |
| Dibromochloromethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethane | ND | ug/kg | 5.0 |
| 1,2-Dichloroethane | ND | ug/kg | 5.0 |
| 1,1-Dichloroethene | ND | ug/kg | 5.0 |
| 1,2-Dichloroethene | ND | ug/kg | 5.0 |
| (total) | ND | ug/kg | 5.0 |
| 1,2-Dichloropropane | ND | ug/kg | 5.0 |
| cis-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| trans-1,3-Dichloropropene | ND | ug/kg | 5.0 |
| Ethylbenzene | ND | ug/kg | 5.0 |
| 2-Hexanone | ND | ug/kg | 10 |
| Methylene chloride | ND | ug/kg | 5.0 |
| 4-Methyl-2-pentanone | ND | ug/kg | 5.0 |
| (MIBK) | ND | ug/kg | 10 |
| Styrene | ND | ug/kg | 5.0 |
| 1,1,2,2-Tetrachloroethane | ND | ug/kg | 5.0 |
| Tetrachloroethene | ND | ug/kg | 5.0 |
| Toluene | ND | ug/kg | 5.0 |
| 1,1,1-Trichloroethane | ND | ug/kg | 5.0 |
| 1,1,2-Trichloroethane | ND | ug/kg | 5.0 |
| Trichloroethene | ND | ug/kg | 5.0 |
| Vinyl acetate | ND | ug/kg | 10 |
| Vinyl chloride | ND | ug/kg | 10 |
| Xylenes (total) | ND | ug/kg | 5.0 |

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC/MS

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 027019-0001-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0002-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0003-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0004-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0005-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0006-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0007-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0008-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0009-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |
| 027019-0010-SA | SOIL | 8270-S | 12 JAN 93-8A | 12 JAN 93-8A |

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

| Analyte | Spiked | Concentration | | AVG | Accuracy | | Precision | | |
|--------------------------------|--------|---------------|------------------|------|----------|--------|--------------------|-----------|--|
| | | DCS1 | Measured DCS2 | | DCS | Limits | (RPD) DCS Limit | DCS Limit | |
| Category: 8270-S | | | | | | | | | |
| Matrix: SOIL | | | | | | | | | |
| QC Lot: 12 JAN 93-8A | | | | | | | | | |
| Concentration Units: ug/kg | | | | | | | | | |
| Phenol | 6670 | 4970 | 5840 | 5400 | 81 | 40-116 | 16 | 20 | |
| 2-Chlorophenol | 6670 | 5080 | 5860 | 5470 | 82 | 42-114 | 14 | 14 | |
| 1,4-Dichlorobenzene | 3330 | 2510 | 2860 | 2680 | 81 | 52-108 | 13 | 16 | |
| N-Nitroso-di- n-propylamine | 3330 | 2280 | 2590 | 2440 | 73 | 55-108 | 13 | 15 | |
| 1,2,4-Trichlorobenzene | 3330 | 2520 | 2950 | 2740 | 82 | 54-102 | 16 | 16 | |
| 4-Chloro-3-methylphenol | 6670 | 5000 | 5880 | 5440 | 82 | 49-121 | 16 | 19 | |
| Acenaphthene | 3330 | 2680 | 3040 | 2860 | 86 | 60-103 | 13 | 17 | |
| 4-Nitrophenol | 6670 | 6090 | 6800 | 6440 | 97 | 33-120 | 11 | 24 | |
| 2,4-Dinitrotoluene | 3330 | 2580 | 2810 | 2700 | 81 | 61-106 | 8.5 | 15 | |
| Pentachlorophenol | 6670 | 5230 | 6440 | 5840 | 87 | 21-139 | 21 | 31 | |
| Pyrene | 3330 | 3020 | 3360 | 3190 | 96 | 51-126 | 11 | 16 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

QC LOT ASSIGNMENT REPORT
Inorganic-CLP

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 027019-0001-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0001-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0002-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0002-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0003-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0003-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0004-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0004-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0005-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0005-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0005-MS | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0006-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0006-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0007-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0007-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0008-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0008-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0009-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0009-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |
| 027019-0010-SA | SOLID | ICPMSGP-S | 12 JAN 93-9A | 12 JAN 93-9A |
| 027019-0010-SA | AQUEOUS | ICPMSMI-AT | 12 JAN 93-9M | 12 JAN 93-9M |

DUPLICATE CONTROL SAMPLE REPORT
Inorganic-CLP

| Analyte | Concentration Spiked | Concentration Measured | | AVG | Accuracy Average(%) | | Precision (RPD) | | |
|---|----------------------|------------------------|------|-----|---------------------|--------|-----------------|-------|--|
| | | DCS1 | DCS2 | | DCS | Limits | DCS | Limit | |
| Category: ICPMSGLP-S Matrix: SOLID QC Lot: 12 JAN 93-9A Concentration Units: mg/kg | | | | | | | | | |
| Bromine (81) | 2.5 | 2.4 | 2.3 | 2.4 | 94 | 85-115 | 2.4 | 20 | |

Category: ICPMSMI-AT
Matrix: AQUEOUS
QC Lot: 12 JAN 93-9M
Concentration Units: mg/L

| | | | | | | | | |
|--------------------|--------|--------|--------|--------|----|--------|-----|----|
| Arsenic | 0.0474 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Barium | 2.04 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Cadmium | 0.498 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Chromium | 0.510 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Copper | 0.519 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Lead | 0.50 | 0.493 | 0.488 | 0.491 | 98 | 75-125 | 0.9 | 20 |
| Nickel | 0.497 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Selenium | 0.0526 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Silver | 0.498 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Zinc | 3.32 | NA | NA | NC | NC | 75-125 | NC | 20 |
| Praseodymium (141) | 0.10 | 0.0890 | 0.0861 | 0.0876 | 88 | 75-125 | 3.3 | 20 |

ND = Not detected
NC = Not calculated, calculation not applicable
NA = Not applicable

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Inorganic-CLP

| Analyte | Result | Units | Reporting Limit |
|--|--------|-------|-----------------|
| Test: ICPMS-BR-GLP-S Matrix: SOIL QC Lot: 12 JAN 93-9A QC Run: 12 JAN 93-9A | | | |
| Bromine (81) | ND | mg/kg | 0.025 |
| Test: ICPMS-MICH-TCLP-L Matrix: SOIL QC Lot: 12 JAN 93-9M QC Run: 12 JAN 93-9M | | | |
| Praseodymium (141) | ND | mg/L | 0.00050 |
| Test: ICPMS-MICH-TCLP-L Matrix: SOIL QC Lot: 12 JAN 93-9M QC Run: 12 JAN 93-9M | | | |
| Praseodymium (141) | ND | mg/L | 0.00050 |

**MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Inorganic-CLP**

| QC SAMPLE TYPE | TEST | LABORATORY SAMPLE NUMBER | QC LOT |
|-------------------|-------------------|-----------------------------|--------------|
| MATRIX SPIKE | ICPMS-MICH-TCLP-L | 027019-0005-MS | 12 JAN 93-9M |

MATRIX SPIKE REPORT
Inorganic-CLP

| Analyte | Sample | Concentration Matrix Spike | Amount Spiked | % Rec |
|--|--------|----------------------------------|------------------|----------|
| Test: ICPMS-MICH-TCLP-L Matrix SOIL Sample: 027019-0005 Units: mg/L | | | | |
| Praseodymium (141) | ND | 0.096 | 0.10 | 96 |

ND = Not detected
 NC = Not calculated, calculation not applicable

All calculations are performed before rounding to avoid round-off errors in calculated results.

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|--------------------------|-----------|-------------|---------------------|---------------------------|
| 027019-0001-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0001-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0002-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0002-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0003-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0003-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0004-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0004-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0005-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0005-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0006-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0006-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0007-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0007-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0008-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0008-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0009-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0009-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |
| 027019-0010-SA | SOLID | S04-IC-S | 14 JAN 93-9A | 11 JAN 93-9A |
| 027019-0010-SA | AQUEOUS | BR-IC-A | 13 JAN 93-9A | 11 JAN 93-9A |

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

| Analyte | Spiked | Concentration | | AVG | Accuracy | | Precision | | |
|---|--------|---------------|------------------|------|----------|----------------------|--------------------|----|--|
| | | DCS1 | Measured DCS2 | | DCS | Average(%) Limits | (RPD) DCS Limit | | |
| Category: S04-IC-S Matrix: SOLID QC Lot: 14 JAN 93-9A Concentration Units: mg/kg | | | | | | | | | |
| Sulfate | 100 | 98.9 | 98.8 | 98.8 | 99 | 75-125 | 0.1 | 15 | |
| Category: BR-IC-A Matrix: AQUEOUS QC Lot: 13 JAN 93-9A Concentration Units: mg/L | | | | | | | | | |
| Bromide | 10 | 9.94 | 9.96 | 9.95 | 100 | 90-110 | 0.1 | 20 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

| Analyte | Result | Units | Reporting Limit |
|---|--------|-------|-----------------|
| Test: S04-IC-S | | | |
| Matrix: SOIL | | | |
| QC Lot: 14 JAN 93-9A QC Run: 11 JAN 93-9A | | | |
| Sulfate | ND | mg/kg | 25.0 |
| Test: BR-IC-S | | | |
| Matrix: SOIL | | | |
| QC Lot: 13 JAN 93-9A QC Run: 11 JAN 93-9A | | | |
| Bromide | ND | mg/kg | 1.0 |

QC LOT ASSIGNMENT REPORT
Radiochemistry

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK) |
|-----------------------------|-----------|-------------|------------------------|------------------------------|
| 027019-0001-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0001-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0002-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0002-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0003-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0003-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0004-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0004-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0005-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0005-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0006-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0006-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0007-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0007-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0008-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0008-SA | SOLID | RA228-S | 19 JAN 93-9A | - |
| 027019-0009-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0009-SA | SOLID | RA228-S | 18 JAN 93-9A | - |
| 027019-0010-SA | SOLID | GAB-S | 12 JAN 93-9A | - |
| 027019-0010-SA | SOLID | RA228-S | 18 JAN 93-9A | - |

Radiochemistry Quality Control Report

Parameter: Gross Alpha and Beta
QC Lot # 12-Jan-93 -9A
Matrix: SOIL

Control Sample Report

| Test | Observed | | | Spike Activity +/- 2s | |
|--------|--------------|----|-------------|-----------------------|-------------|
| | Activity +/- | 2s | units | | units |
| Am-241 | 144 +/- | | 3 pCi / std | 135 +/- | 4 pCi / std |
| Sr-90 | 86 +/- | | 2 pCi / std | 92 +/- | 3 pCi / std |

Control Sample Statistics

| Test | Accuracy | |
|-------------|----------|------------|
| | Mean % | Limits |
| Gross Alpha | 106% | 70% - 130% |
| Gross Beta | 93% | 70% - 130% |

RADIOCHEMISTRY QUALITY CONTROL REPORT FOR GAMMA SPECTRAL ANALYSIS

Analyst: BA
 Units: Bq
 Standard: Analytics SRNS # 43563-288

DUPLICATE COUNT REPORT QC LOT # 18-Jan-93 -9A

COUNT DATA

STANDARD DATA

| COUNT # | RADIONUCLIDE | COUNT DATE | COUNT START | Activity +/- 2 σ | | | 1173.24 keV | | SRNS # 43563-288 | | |
|---------|--------------|------------|-------------|-----------------------|----------|-----------|-----------------------|---------|------------------|--|--|
| | | | | Bq | Centroid | Δ keV | Activity | +/- 2 σ | Bq | | |
| Count 1 | Cobalt 60 | 18-Jan-93 | 07:44 | 1.66E+03 +/- 6E+01 Bq | 1173.12 | -0.12 keV | 1.63E+03 +/- 7E+01 Bq | | | | |
| Count 2 | Cobalt 60 | 18-Jan-93 | 16:27 | 1.62E+03 +/- 4E+01 Bq | 1173.20 | -0.04 keV | 1.63E+03 +/- 7E+01 Bq | | | | |

ACCURACY

MEAN ACCURACY

REL. % DIFFERENCE

Count 1 101.8%
 Count 2 99.4%

100.6%

2.4%

RADIOCHEMISTRY QUALITY CONTROL REPORT FOR GAMMA SPECTRAL ANALYSIS

Analyst: BA
 Units: Bq
 Standard: Analytics SRNS # 43563-288

DUPLICATE COUNT REPORT QC LOT # 19-Jan-93 -9A

COUNT DATA

STANDARD DATA

| COUNT # | RADIONUCLIDE | COUNT DATE | COUNT START | Activity +/- 2 σ | | 1173.24 keV | | SRNS # 43563-288 | | |
|---------|--------------|------------|-------------|------------------|----------|-------------|----------|------------------|----------|----|
| | | | | Bq | | Centroid | Δ keV | Activity | +/- 2 σ | Bq |
| Count 1 | Cobalt 60 | 19-Jan-93 | 09:12 | 1.63E+03 +/- | 4E+01 Bq | 1173.43 | 0.19 keV | 1.63E+03 +/- | 7E+01 Bq | |
| Count 2 | Cobalt 60 | 19-Jan-93 | 15:41 | 1.59E+03 +/- | 4E+01 Bq | 1173.57 | 0.33 keV | 1.63E+03 +/- | 7E+01 Bq | |

ACCURACY

| | |
|---------|--------|
| Count 1 | 100.4% |
| Count 2 | 97.9% |

MEAN ACCURACY

99.1%

REL. % DIFFERENCE

2.5%

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI

Sample Collector: Steve Stadelman

Project: 592032

Analyst/Contact: Greg Russell
Don McDowell

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

6101.7

01
02
03
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06
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08
09
10

| ITEM NUMBER | SAMPLE DESIGNATION | DATE | TIME | MATRIX | ANALYSES | | | | | | | | | | PARAMETERS | |
|-------------|--------------------|--------|------|--------|-------------------|-------------|-------------------|----------------|---------------------|-----------------------------------|---------|--------|--------|--------|------------|---|
| | | | | | Grab or Composite | 40 ml Vials | 850 ml Org. Pres. | 475 ml Unpres. | ml HNO ₃ | ml H ₂ SO ₄ | ml NaOH | ml HCl | 250 ml | 500 ml | | |
| 1 | 1 | 1-2-93 | 0930 | Soil | | | | 3 | | | | | | 1 | 2 | 8240, 8270, metals by ICP, Ar, SO ₄ , Rn 226/222 |
| 2 | 2 | 1-2-93 | 1000 | | | | | 3 | | | | | | 1 | 2 | ANALYSES PER ATTACHED SHEET |
| 3 | 3 | 1-2-93 | 1030 | | | | | 2 | | | | | | 1 | 4 | |
| 4 | 10 | 1-3-93 | 0930 | | | | | 4 | | | | | | 1 | | |
| 5 | 9 | 1-3-93 | 1000 | | | | | 4 | | | | | | 1 | | |
| 6 | 8 | 1-3-93 | 1030 | | | | | 4 | | | | | | 1 | | |
| 7 | 7 | 1-3-93 | 1045 | | | | | 4 | | | | | | 1 | | |
| 8 | 6 | 1-3-93 | 1100 | | | | | 4 | | | | | | 1 | | |
| 9 | 5 | 1-3-93 | 1115 | | | | | 4 | | | | | | 1 | | |
| 10 | 4 | 1-3-93 | 1145 | | | | | 4 | | | | | | 1 | | |

| TRANSFER NUMBER | ITEM NUMBER | TRANSFERS RELINQUISHED BY | TRANSFERS ACCEPTED BY | DATE | TIME | REMARKS |
|-----------------|-------------|---------------------------|-----------------------|--------|-------|--|
| 1 | 1-10 | <i>Steve Stadelman</i> | | 1-4-93 | 1600 | P.O. # 31904 Rush turnaround on metals <i>Steve Stadelman</i> SAMPLER'S SIGNATURE |
| 2 | | | <i>Greg Russell</i> | 1-6-93 | 09:00 | |
| 3 | | | | | | |
| 4 | | | | | | |



EFEH & ASSOCIATES

10919 SAGEWIND DRIVE • HOUSTON, TEXAS 77089 • TELEPHONE (713) 996-5031

January 22, 1993

Mr. Steve Stadelman
ENSCI Corporation

1108 Old Thomasville Road
High Point, North Carolina 27260

Dear Mr. Stadelman:

Following are the results of the soil samples submitted to our laboratory for analyses on January 19, 1993:

P.O. #: 31965

| SAMPLE I.D. | #1 | #2 | #3 |
|-------------|---------|---------|---------|
| | 1/18/93 | 1/18/93 | 1/18/93 |
| | 08:45 | 09:00 | 09:15 |
| LAB NO. | G-2476 | G-2477 | G-2478 |

TCLP INORGANICS (Leachate)

| | | | |
|--------------------|--------|--------|--------|
| Arsenic, mg/l | <0.01 | <0.01 | <0.01 |
| Barium, mg/l | 2.80 | 2.58 | 2.77 |
| Boron, mg/l | 13.11 | 19.30 | 14.49 |
| Cadmium, mg/l | <0.01 | <0.01 | <0.01 |
| Chromium, mg/l | 0.04 | <0.01 | 0.01 |
| Cobalt, mg/l | <0.01 | <0.01 | <0.01 |
| Lead, mg/l | <0.01 | <0.01 | <0.01 |
| Manganese, mg/l | <0.01 | 0.04 | <0.01 |
| Mercury, mg/l | <0.002 | <0.002 | <0.002 |
| Nickel, mg/l | <0.01 | <0.01 | <0.01 |
| Praseodymium, mg/l | 0.02 | <0.01 | <0.01 |
| Selenium, mg/l | <0.01 | <0.01 | <0.01 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | 0.02 | <0.01 | <0.01 |
| Vanadium, mg/l | 0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 0.02 | 0.02 | 0.01 |

| | | | |
|-------------|------------------------|------------------------|------------------------|
| SAMPLE I.D. | #4 1/18/93 09:30 | #5 1/18/93 09:45 | #6 1/18/93 10:00 |
| LAB NO. | G-2479 | G-2480 | G-2481 |

TCLP INORGANICS (Leachate)

| | | | |
|--------------------|--------|--------|--------|
| Arsenic, mg/l | <0.01 | 0.04 | 0.04 |
| Barium, mg/l | 2.28 | 4.92 | 4.68 |
| Boron, mg/l | 22.65 | 29.34 | 20.03 |
| Cadmium, mg/l | <0.01 | 0.08 | 0.05 |
| Chromium, mg/l | <0.01 | <0.01 | <0.01 |
| Cobalt, mg/l | 0.02 | 0.30 | 0.23 |
| Lead, mg/l | <0.01 | 11.11 | 7.08 |
| Manganese, mg/l | 0.11 | 0.75 | 0.54 |
| Mercury, mg/l | <0.002 | <0.002 | <0.002 |
| Nickel, mg/l | 0.01 | 0.04 | 0.04 |
| Praseodymium, mg/l | <0.01 | <0.01 | <0.01 |
| Selenium, mg/l | <0.01 | <0.01 | <0.01 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | <0.01 | <0.01 | <0.01 |
| Vanadium, mg/l | <0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 0.06 | 364.27 | 70.75 |

| | | | |
|-------------|------------------------|------------------------|---------------|
| SAMPLE I.D. | #7 1/18/93 10:15 | #8 1/18/93 10:30 | #9 1/18/93 |
| LAB NO. | G-2482 | G-2483 | G-2484 |

TCLP INORGANICS (Leachate)

| | | | |
|--------------------|--------|--------|--------|
| Arsenic, mg/l | 0.05 | <0.01 | <0.01 |
| Barium, mg/l | 2.69 | 2.46 | 3.00 |
| Boron, mg/l | 14.68 | 17.75 | 15.83 |
| Cadmium, mg/l | <0.01 | <0.01 | 0.01 |
| Chromium, mg/l | <0.01 | <0.01 | <0.01 |
| Cobalt, mg/l | 0.25 | 0.03 | 0.07 |
| Lead, mg/l | <0.01 | <0.01 | 0.14 |
| Manganese, mg/l | 0.29 | 0.12 | 0.27 |
| Mercury, mg/l | <0.002 | <0.002 | <0.002 |
| Nickel, mg/l | 0.01 | <0.01 | 0.03 |
| Praseodymium, mg/l | <0.01 | <0.01 | <0.01 |
| Selenium, mg/l | <0.01 | <0.01 | <0.01 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | <0.01 | <0.01 | <0.01 |
| Vanadium, mg/l | <0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 0.78 | 0.07 | 4.62 |

SAMPLE I.D. #10
1/18/93
11:00

LAB NO. G-2485

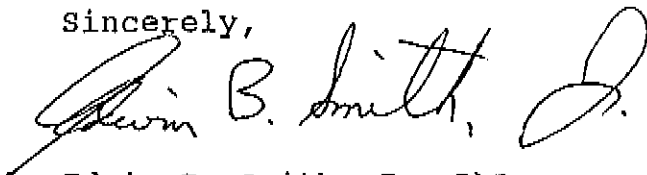
TCLP INORGANICS (Leachate)

| | |
|--------------------|--------|
| Arsenic, mg/l | 0.06 |
| Barium, mg/l | 1.81 |
| Boron, mg/l | 9.82 |
| Cadmium, mg/l | <0.01 |
| Chromium, mg/l | 0.02 |
| Cobalt, mg/l | 0.02 |
| Lead, mg/l | <0.01 |
| Manganese, mg/l | <0.01 |
| Mercury, mg/l | <0.002 |
| Nickel, mg/l | 0.01 |
| Praseodymium, mg/l | <0.01 |
| Selenium, mg/l | <0.01 |
| Silver, mg/l | <0.01 |
| Titanium, mg/l | <0.01 |
| Vanadium, mg/l | <0.01 |
| Zinc, mg/l | <0.01 |

METHODS: EPA 1311/6010/7471

Please contact me if you have any questions concerning these results.

Sincerely,



Edwin B. Smith, Jr. PhD



EFEH & ASSOCIATES

14112 JARVING DRIVE • HOUSTON, TEXAS 77040 • TELEPHONE (713) 996-1111

Shipping Address:

EFEH ASS.
3319 Industrial Dr
Pearland, TX. 77581
ATT. David Burnette
phone (713) 996-5031

CHAIN OF CUSTODY RECORD

| Company Name & Address | | | | | | # of Containers | 500ml Sample | | | | | | Remarks & Analysis Requested: |
|--|---------|------|------|------|-------------------------------|-----------------|--------------|-----------------------------|--|--|------------------|-------|------------------------------------|
| Sta. # | Date | Time | comp | Grab | Station / Sample Location / # | | | | | | | | |
| ENSCI Corporation 1108 Old Thomasville Rd. High Point, NC 27260 | | | | | | | | | | | | | TCLP metals per attached list (NO) |
| | 1-18-93 | 0845 | | | G-2476 1 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 0900 | | | G-2477 2 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 0915 | | | G-2478 3 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 0930 | | | G-2479 4 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 0945 | | | G-2480 5 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 1000 | | | G-2481 6 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 1015 | | | G-2482 7 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 1030 | | | G-2483 8 | 1 | 1 | | | | | | " " |
| | 1-18-93 | | | | G-2484 9 | 1 | 1 | | | | | | " " |
| | 1-18-93 | 1100 | | | G-2485 10 | 1 | 1 | | | | | | " " |
| Relinquished by: <i>[Signature]</i> | | | | | | Date: 1-18-93 | Time: 1600 | Received by: | | | Relinquished by: | Date: | Time: |
| Relinquished by: | | | | | | Date: | Time: | Received by: | | | Relinquished by: | Date: | Time: |
| Relinquished by: | | | | | | Date: | Time: | Received for Laboratory by: | | | Date: | Time: | |
| Remarks: Rush turnaround - results by end of work on Friday 1-18-93. P.O. # 31965 Send results to: Steve Stadelman | | | | | | | | | | | | | |



EFEH & ASSOCIATES

10919 SAGEWIND DRIVE • HOUSTON, TEXAS 77089 • TELEPHONE (713) 996-5031

January 29, 1993

Mr. Steve Stadelman
ENSCI Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260

Dear Mr. Stadelman:

Following are the results of the soil samples submitted to our laboratory for analyses on January 26, 1993:

P.O. #: 31998

| SAMPLE I.D. | S4R 1/23/93 09:00 | S10R 1/23/93 09:00 | E1 1/23/93 10:00 |
|----------------------------|-------------------------|--------------------------|------------------------|
| LAB NO. | G-2710 | G-2711 | G-2712 |
| TCLP INORGANICS (Leachate) | | | |
| Arsenic, mg/l | <0.01 | 0.07 | <0.01 |
| Barium, mg/l | 0.16 | 0.21 | 1.41 |
| Boron, mg/l | 1.01 | 0.41 | 0.95 |
| Cadmium, mg/l | <0.01 | <0.01 | <0.01 |
| Chromium, mg/l | <0.01 | <0.01 | <0.01 |
| Cobalt, mg/l | <0.01 | <0.01 | 0.07 |
| Lead, mg/l | 0.06 | <0.01 | <0.01 |
| Manganese, mg/l | 0.05 | 0.06 | 1.65 |
| Mercury, mg/l | 0.006 | <0.002 | <0.002 |
| Nickel, mg/l | <0.01 | <0.01 | 0.01 |
| Praseodymium, mg/l | <0.01 | <0.01 | <0.01 |
| Selenium, mg/l | 0.10 | 0.10 | 0.07 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | <0.01 | 0.01 | <0.01 |
| Vanadium, mg/l | <0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 1.07 | 0.78 | 5.35 |

| | | | |
|-------------|------------------------|------------------------|------------------------|
| SAMPLE I.D. | E2 1/23/93 10:15 | E3 1/23/93 11:30 | E4 1/23/93 12:00 |
| LAB NO. | G-2713 | G-2714 | G-2715 |

TCLP INORGANICS (Leachate)

| | | | |
|--------------------|--------|-------|-------|
| Arsenic, mg/l | <0.01 | 0.09 | 0.01 |
| Barium, mg/l | 0.18 | 0.12 | 0.49 |
| Boron, mg/l | 2.05 | 2.18 | 5.20 |
| Cadmium, mg/l | <0.01 | <0.01 | <0.01 |
| Chromium, mg/l | <0.01 | <0.01 | <0.01 |
| Cobalt, mg/l | <0.01 | <0.01 | <0.01 |
| Lead, mg/l | <0.01 | 0.07 | 0.28 |
| Manganese, mg/l | 0.03 | <0.01 | 0.01 |
| Mercury, mg/l | <0.002 | 0.123 | 0.004 |
| Nickel, mg/l | 0.02 | <0.01 | 0.01 |
| Praseodymium, mg/l | <0.01 | <0.01 | <0.01 |
| Selenium, mg/l | <0.01 | <0.01 | 0.01 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | <0.01 | <0.01 | <0.01 |
| Vanadium, mg/l | <0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 5.42 | 0.19 | 0.42 |

| | | | |
|-------------|------------------------|-----------------------|-----------------------|
| SAMPLE I.D. | E5 1/23/93 12:30 | 6 1/23/93 13:00 | 5 1/23/93 13:00 |
| LAB NO. | G-2716 | G-2717 | G-2718 |

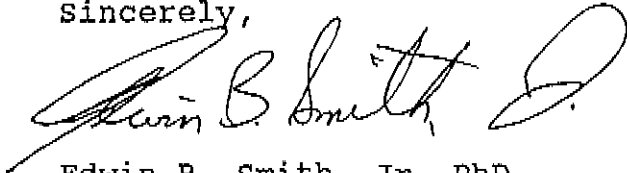
TCLP INORGANICS (Leachate)

| | | | |
|--------------------|-------|-------|-------|
| Arsenic, mg/l | 0.01 | <0.01 | 0.07 |
| Barium, mg/l | 0.29 | 1.92 | 2.14 |
| Boron, mg/l | 0.83 | 1.24 | 1.53 |
| Cadmium, mg/l | <0.01 | <0.01 | <0.01 |
| Chromium, mg/l | <0.01 | 0.09 | 0.10 |
| Cobalt, mg/l | <0.01 | <0.01 | <0.01 |
| Lead, mg/l | 0.03 | 0.03 | 0.01 |
| Manganese, mg/l | 0.08 | <0.01 | <0.01 |
| Mercury, mg/l | 0.345 | 0.254 | 0.066 |
| Nickel, mg/l | <0.01 | <0.01 | <0.01 |
| Praseodymium, mg/l | <0.01 | <0.01 | <0.01 |
| Selenium, mg/l | <0.01 | 0.10 | 0.01 |
| Silver, mg/l | <0.01 | <0.01 | <0.01 |
| Titanium, mg/l | <0.01 | <0.01 | <0.01 |
| Vanadium, mg/l | <0.01 | <0.01 | <0.01 |
| Zinc, mg/l | 0.04 | <0.01 | <0.01 |

METHODS: EPA 1311/6010/7471

Please contact me if you have any questions concerning these results.

Sincerely,

A handwritten signature in cursive script, appearing to read "Edwin B. Smith, Jr.", written in dark ink.

Edwin B. Smith, Jr. PhD



EFEH & ASSOCIATES

12112 TACONING DRIVE • HOUSTON, TEXAS 77033 • TELEPHONE (713) 561-1111

Shipping Address:

EFEH ASS.
3319 INDUSTRIAL DR
PEARLAND, TX. 77581
ATT. David Burnette
phone (713) 996-5031

CHAIN OF CUSTODY RECORD

| Company Name & Address | | | | | | # of Containers | TCLP | SW | | | | | Remarks & Analysis Requested: |
|--|---------|------|---------|-------|-------------------------------|-----------------|------|------------------|--|--|-------|--------|--------------------------------|
| Sta. # | Date | Time | comp | Grab | Station / Sample Location / # | | | | | | | | |
| ENSCI Corporation 1108 Old Thomasville Rd High Point, NC 27260 | | | | | | | | | | | | | |
| | 1-23-93 | 0900 | | X | S4R | 1 | 1 | | | | | G-2710 | TCLP metals per attached sheet |
| | 1-23-93 | 0900 | | X | S10R | 1 | 1 | | | | | | G-2711 |
| | 1-23-93 | 1000 | | X | E1 | 1 | 1 | | | | | | G-2712 |
| | 1-23-93 | 1015 | | X | E2 | | 1 | | | | | | G-2713 |
| | 1-23-93 | 1130 | | X | E3 | | 1 | | | | | | G-2714 |
| | 1-23-93 | 1200 | | X | E4 | | 1 | | | | | | G-2715 |
| | 1-23-93 | 1230 | | X | E5 | | 1 | | | | | | G-2716 |
| | 1-23-93 | 1300 | X | | 6 | | 1 | | | | | | G-2717 |
| | 1-23-93 | 1300 | X | | 5 | | 1 | | | | | | G-2718 |
| Relinquished by: | | | Date: | Time: | Received by: | | | Relinquished by: | | | Date: | Time: | |
| <i>Steve Stadelman</i> | | | 1-25-93 | 1600 | | | | | | | | | |
| Relinquished by: | | | Date: | Time: | Received by: | | | Relinquished by: | | | Date: | Time: | |
| | | | | | | | | | | | | | |
| Relinquished by: | | | Date: | Time: | Received for Laboratory by: | | | Relinquished by: | | | Date: | Time: | |
| | | | | | | | | | | | | | |
| Remarks: | | | | | | | | | | | | | |
| Rush turnaround. Send results to Steve Stadelman. P.O. # 31998 | | | | | | | | | | | | | |

Appendix D
Geo Composite Layer Certification



March 1, 1993

H. Havener
ENSCI Corporation
1108 Old Thomasville Rd.
High Point, NC 27260

Re: Certification for Mannington Ceramic Tile, Project #20650

Dear H. Havener:

We herein certify that the Claymax 500SP rolls shipped under Shippers number(s) 617 meet(s) or exceed(s) the minimum or maximum values outlined below with a 95% confidence level.

The certification is based on quality control testing performed by the Clem Corporation on the specific manufactured Lot from which the delivered material was produced. Bentonite property testing was conducted on bentonite removed from the finished product. All quality control testing was performed in strict accordance with the Clem Corporation Quality Management Manual.

| PROPERTY/METHOD | SPECIFICATION | TYPICAL VALUES |
|--|--|--|
| Hydraulic conductivity/ ASTM 5084 modified | 5 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi eff. stress | 2.0 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi |
| Hydraulic conductivity on overlapped seams ASTM 5084 | 5 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi eff. stress | 3.0 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi |
| Bentonite Free Swell/ USP NF XVII | 30 ml min. | 35-40 ml |
| Bentonite Fluid Loss/ API 13A | 15 ml max. | 10-13 ml |
| Bentonite pH/ ASTM D4972 | 8.5-10.5 | 9.0 - 9.5 |
| Bentonite unit weight reported @ 20% M.C. | 0.95 psf min. | 1.02 psf |
| Roll width | 13.5 feet min. | 13.6 feet |
| Roll length | per project requirements | 100 feet |

Sincerely,



Thomas N. Dobras
Thomas N. Dobras, P.E.

Technical Manager, James Clem Corporation
JAMES CLEM CORPORATION

3/1/93
Date



January 28, 1993

H. Havener
ENSCI Corporation
1108 Old Thomasville Rd.
High Point, NC 27260

Re: Certification for Mannington Ceramic Tile, project #20650

Dear Mr. Havener:

We herein certify that the Claymax 200R rolls shipped under Shippers number(s) 571 meet or exceed the minimum or maximum values outlined below with a 95% confidence level.

The certification is based on quality control testing performed by the Clem Corporation on the specific manufactured Lot from which the delivered material was produced. Bentonite property testing was conducted on bentonite removed from the finished product. All quality control testing was performed in strict accordance with the Clem Corporation Quality Management Manual.

| PROPERTY/METHOD | SPECIFICATION | TYPICAL VALUES |
|--|--|--|
| Hydraulic conductivity/ ASTM 5084 modified | 5 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi eff. stress | 2.0 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi |
| Hydraulic conductivity on overlapped seams ASTM 5084 | 5 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi eff. stress | 3.0 X 10 ⁽⁻⁹⁾ cm/sec @ 2 psi |
| Bentonite Free Swell/ USP NF XVII | 27 ml min. | 35-40 ml |
| Bentonite Fluid Loss/ API 13A | 15 ml max. | 10-13 ml |
| Bentonite pH/ ASTM D4972 | 8.5-10.5 | 9.0 - 9.5 |
| Bentonite unit weight reported @ 20% M.C. | 0.95 pcf min. | 1.02 pcf |
| Roll width | 13.5 feet min. | 13.6 feet |
| Roll length | per project requirements | 100 feet |

Sincerely,

Thomas N. Dobras
Thomas N. Dobras, P.E.
Technical Manager, James Clem Corporation

1/28/93
Date



JAMES CLEM CORPORATION

Corporate Office 444 North Michigan Suite 1610 Chicago, IL 60611 USA Phone: 312-321-6255 Fax: 312-321-6258

Appendix E
Density Results For Fill Material

LAW ENGINEERING

7347-F WEST FRIENDLY AVENUE, GREENSBORO, NC 27410

REPORT OF FIELD DENSITY TESTS

RECEIVED
MAR 19 1993

CLIENT: ENSCI CORPORATION

JOB NO.: 257-2219

PROJECT: MANNINGTON TILE
LEXINGTON, NORTH CAROLINA

| TEST NUMBER | MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PROCTOR NUMBER | COMPACTION (%) | SPECIFIED COMPACTION (%) | TEST METHOD | ELEVATION OR DEPTH |
|-----------------------------|----------------------------------|-------------------|----------------|----------------|--------------------------|-------------|--------------------|
| Tests Performed on 03/10/93 | | | | | | | |
| 1 | 23.7 | 98.6 | 1 | 99 | 95 | 1 | |
| 2 | 25.9 | 95.0 | 1 | 96 | 95 | 1 | |
| TEST LOCATIONS: | | | | | | | |
| 1 | 95'W & 20'N OF NORTHEAST CORNER | | | | | | |
| 2 | 220'W & 15'N OF NORTHEAST CORNER | | | | | | |

TEST COMPARED TO:

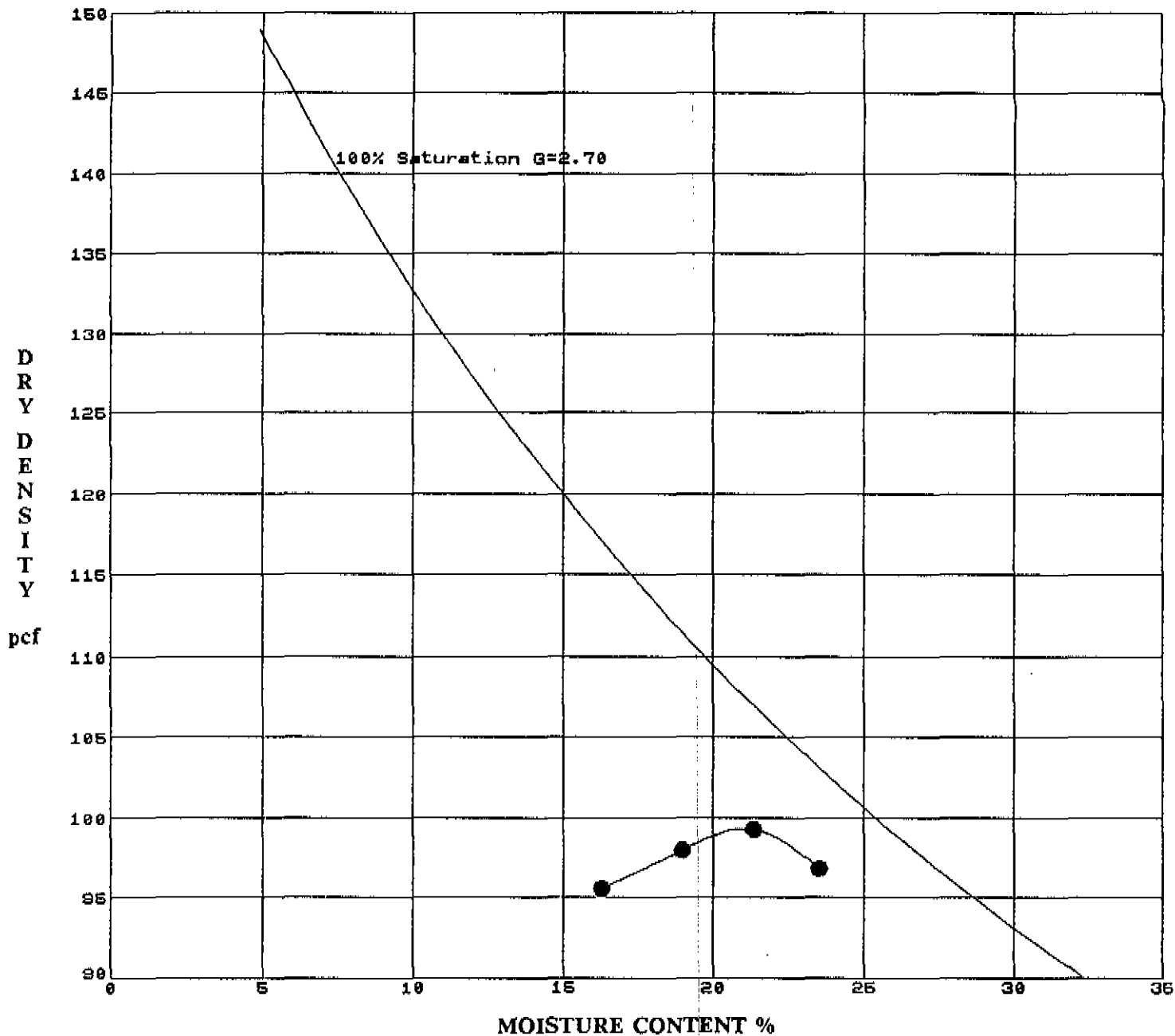
| PROCTOR NUMBER | MAXIMUM DRY DENSITY (PCF) | OPTIMUM MOISTURE (%) |
|----------------|---------------------------|----------------------|
| 1 | 99.3 | 21.3 |

REMARKS

Performed In General Accordance With:
1 - ASTM D2937

RESPECTFULLY SUBMITTED:

Todd Pearson
For THOMAS C. PEGRAM, JR., E.I.T.



SOURCE: ONSITE

CURVE NO.: 1

DESCRIPTION: RED BROWN SLIGHTLY MICACEOUS CLAYEY SILT

MAXIMUM DRY DENSITY, pcf: 99.3

OPTIMUM MOISTURE CONTENT, %: 21.3

NATURAL MOISTURE CONTENT, %:

CLIENT NAME: ENSCI CORPORATION

March 1993

MANNINGTON TILE- LEXINGTON, NORTH CAROLINA

257-2219-01

ASTM D-698 PROCTOR COMPACTION TEST

LAW ENGINEERING- GREENSBORO, NC

FIGURE 1

Appendix F

Flexible Membrane Liner Certification

Gundle Lining Construction Corp



19103 Gundle Road
Houston, Texas 77073-3598
U.S.A.

Phone: (713) 443-8564
Toll Free: (800) 435-2008
Telex: 166657 GUNDLE HOU
FAX: (713) 875-6010

February 10, 1993

Henry Havener
MANNINGTON CERAMIC TILE
C/O ENSCI, Corp.
20 Victor Street
Lexington, NC 27587

RE: Quality Control Certification


Dear Mr. Havener:

This is to certify that each seam was tested within Gundle Quality Control procedures to ensure you a quality product.

"Hot wedge welds are pressure tested, pressurizing the gap created by the split face design of the hot wedge."

If you have any questions concerning this matter, please do not hesitate to contact me at (800) 285-8336, extension 863.

Sincerely,


Paul Rone
Fabrication Manager

PR/rmb

cc: Travis Teykl
Job File

Appendix G
Drainage Layer (Sand)

W. R. BONSAI COMPANY
Preliminary Test on Fine Aggregate

Date 3-12-93

Car No. Under Drain sand

Shipped to _____

Destination _____

Lab. No. _____

Ret. on $\frac{1}{4}$ in. _____

Color beige

Elutriation 0.7

Retained _____ per ct. Ret. _____ per ct. Pass _____

| | | |
|-----------------------------|----------------------|---------------------------|
| No. <u>4</u> <u>4.75 mm</u> | per ct. No. <u>0</u> | per ct. Pass <u>100.0</u> |
|-----------------------------|----------------------|---------------------------|

| | | |
|----------------------------|-------------------------|--------------------------|
| No. <u>8</u> <u>7.5 mm</u> | per ct. No. <u>13.2</u> | per ct. Pass <u>86.8</u> |
|----------------------------|-------------------------|--------------------------|

| | | |
|------------------------------|-------------------------|--------------------------|
| No. <u>16</u> <u>1.18 mm</u> | per ct. No. <u>35.6</u> | per ct. Pass <u>64.4</u> |
|------------------------------|-------------------------|--------------------------|

| | | |
|-----------------------------|-------------------------|--------------------------|
| No. <u>30</u> <u>0.6 mm</u> | per ct. No. <u>65.6</u> | per ct. Pass <u>34.4</u> |
|-----------------------------|-------------------------|--------------------------|

| | | |
|-----------------------------|-------------------------|-------------------------|
| No. <u>50</u> <u>0.3 mm</u> | per ct. No. <u>91.0</u> | per ct. Pass <u>9.0</u> |
|-----------------------------|-------------------------|-------------------------|

| | | |
|-------------------------------|-------------------------|-------------------------|
| No. <u>100</u> <u>0.15 mm</u> | per ct. No. <u>98.2</u> | per ct. Pass <u>1.8</u> |
|-------------------------------|-------------------------|-------------------------|

Total _____ per ct. Pass _____

F. M. 304

Remarks: _____

d_{15} " 0.32 mm

Hydraulic conductivity calculation

The grain size distribution curve was plotted and the following determined:

$$d_{10} = .32 \text{ mm} = .032 \text{ cm} = \text{fine sand}$$

The hydraulic conductivity was calculated using the Hazen method (ref. Fetter, 1988).

$$K (\text{cm/sec}) = C (d_{10})^2$$

$$d_{10} = .032 \text{ cm}$$

$$C = 40-80 \text{ for fine sand}$$

$$K = 4.1 \times 10^{-2} \text{ cm/sec} \quad \text{using } C = 40$$

$$K = 8.2 \times 10^{-2} \text{ cm/sec} \quad \text{using } C = 80$$

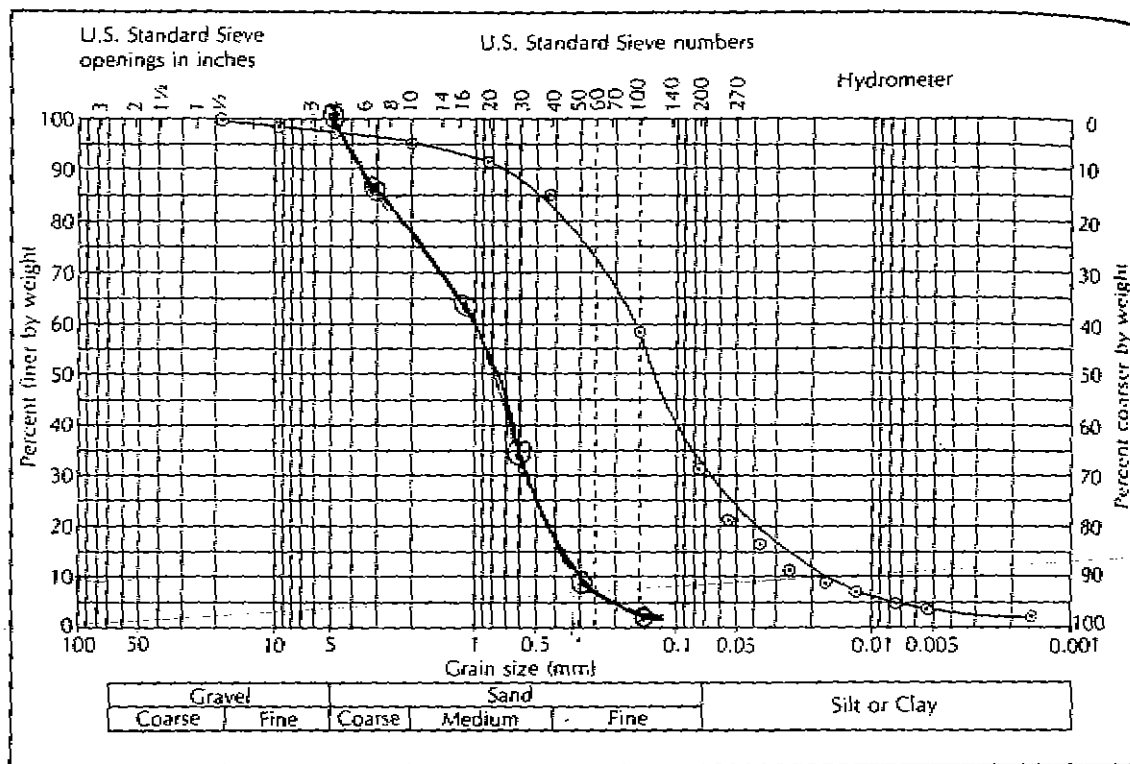


FIGURE 4.4 Grain-size distribution curve of a silty fine to medium sand.

Clays and some clay-rich or organic soils can have very high porosities. Organic materials do not pack very closely because of their irregular shapes. The dispersive effect of the electrostatic charge present on the surfaces of certain book-shaped clay minerals causes clay particles to be repelled by each other. The result is a relatively large proportion of void space.

The general range of porosity that can be expected for some typical sediments is listed in Table 4.2.

TABLE 4.2 Porosity ranges for sediments (1-4)

| | |
|----------------------------|--------|
| Well sorted sand or gravel | 25-50% |
| Sand and gravel, mixed | 20-35% |
| Glacial till | 10-20% |
| Silt | 35-50% |
| Clay | 33-60% |

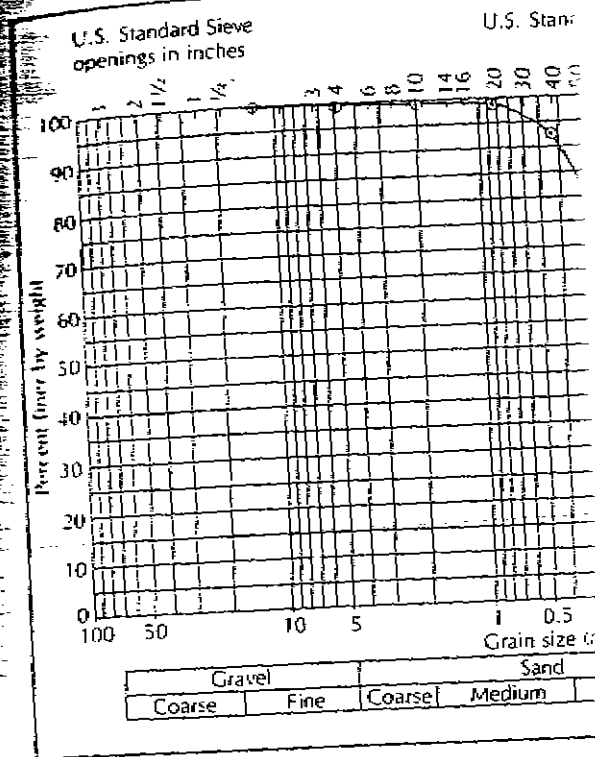


FIGURE 4.5 Grain-size distribution curve of a fine sand.

4.1.3 POROSITY OF SEDIMENT

Sedimentary rocks are formed as diagenesis. A sediment, which is chemically precipitated material, and physicochemical reactions within the sediment. This includes compaction, and transformation of mineral grains. Compaction reduces pore volume. The deposition of cementing materials reduce porosity, although the dissolved fluid will increase porosity. The porosity preserved in the sedimentary rock. The porosity can be influenced by the grain size, size of the sediment. Diagenesis is a process that reduces the porosity of a sedimentary rock will be especially true of fine-grained sediment.

Appendix H
Gravel Base Density Testing

LAW ENGINEERING

7347-F WEST FRIENDLY AVENUE, GREENSBORO, NC 27410

RECEIVED
MAY - 5 1993

REPORT OF FIELD DENSITY TESTS

CLIENT: ENSCI CORPORATION

JOB NO: 257-2219

PROJECT: MANNINGTON TILE
LEXINGTON, NORTH CAROLINA

| TEST NUMBER | MOISTURE CONTENT (%) | DRY DENSITY (PCF) | PROCTOR NUMBER | COMPACTION (%) | SPECIFIED COMPACTION (%) | TEST METHOD | ELEVATION OR DEPTH |
|-----------------------------|---|-------------------|----------------|----------------|--------------------------|-------------|--------------------|
| Tests Performed on 04/19/93 | | | | | | | |
| 3 | 6.2 | 144.3 | 2 | 100+ | | 2 | GRADE |
| 4 | 6.1 | 142.5 | 2 | 100+ | | 2 | GRADE |
| 5 | 6.0 | 145.4 | 2 | 100+ | | 2 | GRADE |
| TEST LOCATIONS: | | | | | | | |
| 3 | AT STATION 40+04 AND 16'N OF CENTERLINE OF ROAD | | | | | | |
| 4 | AT STATION 2+30 AND 2'N OF CENTERLINE OF ROAD | | | | | | |
| 5 | AT STATION 3+80 AND 11'N OF CENTERLINE OF ROAD | | | | | | |

TEST COMPARED TO:

PROCTOR NUMBER

MAXIMUM DRY DENSITY (PCF)

OPTIMUM MOISTURE (%)

2

136.0

8.8

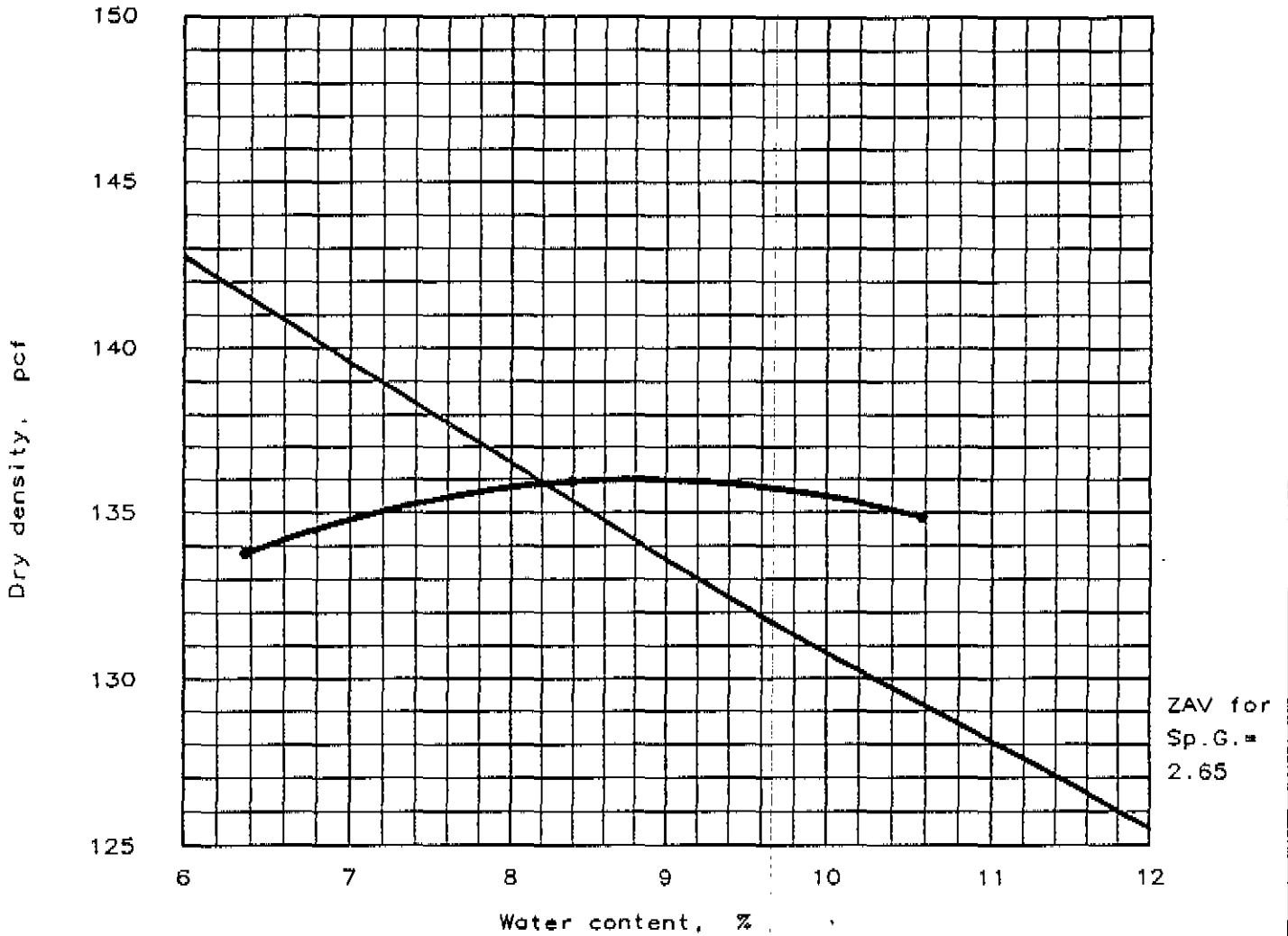
REMARKS

Performed In General Accordance With:
2 - ASTM D1556

RESPECTFULLY SUBMITTED:


THOMAS C. PEGRAM, JR., E.I.T.

PROCTOR TEST REPORT



"Standard" Proctor, ASTM D 698, Method D

| Elev/ Depth | Classification | | Nat. Moist. | Sp.G. | LL | PI | % > 3/4 in | % < No.200 |
|----------------|----------------|--------|----------------|-------|----|----|---------------|---------------|
| | USCS | AASHTO | | | | | | |
| | | | | | | | | |

| TEST RESULTS | MATERIAL DESCRIPTION |
|--|-------------------------------------|
| Optimum moisture = 8.8 % Maximum dry density = 136.0 pcf | CRUSHER RUN |
| Project No.: 257-2219-01 Project: MANNINGTON TILE Location: ON-SITE Date: 4-19-1993 | Remarks* H. M. KERN CONSTRUCTION |
| PROCTOR TEST REPORT LAW ENGINEERING | Figure No. 2 |

Appendix I

Asphalt Density Testing

.....



May 19, 1993

Ensci Corporation
1108 Old Thomasville Rd.
High Point, N.C. 28260

Attention: Mr. Steve Stadelman

Reference: Bituminous Concrete Testing Services
Mannington Ceramic Tile
Lexington, North Carolina
S&ME, Inc. Job. No. 1353-93-351 (Report 1)


Gentlemen:


S&ME, Inc. is providing asphalt testing services on part-time on call basis at the referenced project. This letter summarizes nuclear density tests performed on bituminous concrete materials on April 27, 1993.

During this reporting period an engineering technician from our office visited the site and performed fourteen (14) nuclear density tests (test 1 through 14). The field density tests were performed on the pavement areas from Station 00 + 00 to 4 + 00. All tests indicate densities ranging between 95 and 98 percent of maximum theoretical specific gravity of I-2 surface course. The results of the asphalt density tests performed on the bituminous concrete materials are enclosed for your review.

S&ME appreciate the opportunity to be of service to you. If you should have any questions or need additional information, please free to contact us at your convenience.

Very truly yours,
S&ME, Inc.


Dennis L. Apperson
Staff Engineer


Gilberto Ramos, P.E.
Construction Services Manager
N.C. Registration No. 17344

DLA/vrw

Enclosures:
Field Density Tests (test 1 through 14)



REPORT OF FIELD DENSITY TESTS

CLIENT: Ensci Corporation

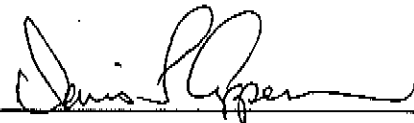
DATE: May 6, 1993

PROJECT: Mannington Ceramic Tile, Lexington, NC

JOB NO. 1353-93-351

| TEST # | WET WEIGHT | PERCENT MOISTURE | DRY DENSITY | OPTIMUM DENSITY | OPTIMUM MOISTURE | PERCENT COMPACTION | LOCATION PERFORMED AT: | DEPTH/ELEVATION |
|---------|------------|------------------|-------------|-----------------|------------------|--------------------|-------------------------------|-----------------|
| 4/27/93 | | | | | | | | |
| 1 | 140.5 | | | 144.1 | | 98 | Station 00+00, 20' left of CL | 1-2 |
| 2 | 139.4 | | | 144.1 | | 97 | Station 00+10, 20' left of CL | 1-2 |
| 3 | 137.5 | | | 144.1 | | 96 | Station 00+20, 20' left of CL | 1-2 |
| 4 | 138.7 | | | 144.1 | | 96 | Station 00+30, 20' left of CL | 1-2 |
| 5 | 140.9 | | | 144.1 | | 98 | Station 00+40, 20' left of CL | 1-2 |
| 6 | 137.3 | | | 144.1 | | 95 | Station 00+50, 20' left of CL | 1-2 |
| 7 | 138.2 | | | 144.1 | | 96 | Station 00+60, 20' left of CL | 1-2 |
| 8 | 141.5 | | | 144.1 | | 98 | Station 00+70, 20' left of CL | 1-2 |
| 9 | 138.7 | | | 144.1 | | 96 | Station 00+80, 20' left of CL | 1-2 |
| 10 | 141.7 | | | 144.1 | | 98 | Station 00+90, 20' left of CL | 1-2 |
| 11 | 139.5 | | | 144.1 | | 97 | Station 01+00, 20' left of CL | 1-2 |
| 12 | 140.2 | | | 144.1 | | 97 | Station 02+00, 20' left of CL | 1-2 |
| 13 | 140.8 | | | 144.1 | | 98 | Station 03+00, 20' left of CL | 1-2 |
| 14 | 141.7 | | | 144.1 | | 98 | Station 04+00, 20' left of CL | 1-2 |

RESPECTFULLY SUBMITTED
S & M E, INC.





June 18, 1993

Ensci Corporation
1108 Old Thomasville Rd.
High Point, N.C. 28260

Attention: Mr. Steve Stadelman

Reference: Bituminous Concrete Testing Services
Mannington Ceramic Tile
Lexington, North Carolina
S&ME, Inc. Job. No. 1353-93-351 (Report 2)


Gentlemen:

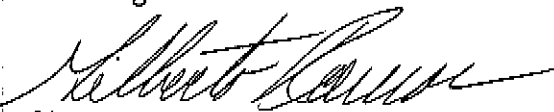
S&ME, Inc. has provided asphalt testing services on part-time on call basis for the referenced project. This letter summarizes nuclear density tests performed on bituminous concrete materials on April 24, 1993.

During this reporting period an engineering technician from our office visited the site and performed fifteen (15) nuclear density tests (test 15 through 29). The field density tests were performed on the pavement areas from Station 00 + 00 to 4 + 00. All tests indicate densities ranging between 88 and 96 percent of Maximum Theoretical Specific Gravity of Base Surface Course. The results of the asphalt density tests performed on the bituminous concrete materials are enclosed for your review.

S&ME appreciate the opportunity to be of service to you. If you should have any questions or need additional information, please free to contact us at your convenience.

Very truly yours,
S&ME, Inc.


Dennis L. Apperson
Staff Engineer


Gilberto Ramos, P.E.
Construction Services Manager
N.C. Registration No. 17344

DLA/vrw

Enclosures:
Field Density Tests (test 15 through 29)



REPORT OF FIELD DENSITY TESTS

CLIENT: ENSCI Corporation

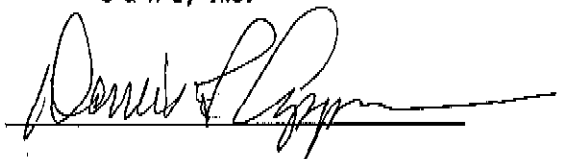
DATE: June 14, 1993

PROJECT: Mannington Ceramic Tile

JOB NO. 1353-93-351

| TEST # | WET WEIGHT | PERCENT MOISTURE | DRY DENSITY | OPTIMUM DENSITY | OPTIMUM MOISTURE | PERCENT COMPACTION | LOCATION PERFORMED AT: | DEPTH/ELEVATION |
|---------|------------|------------------|-------------|-----------------|------------------|--------------------|----------------------------|-----------------|
| 4/23/93 | | | | | | | | |
| 15 | 141.5 | | | 161.0 | | 88 | Station 0+00 | Base |
| 16 | 144.8 | | | 161.0 | | 90 | Station 0+00 | Base |
| 17 | 141.7 | | | 161.0 | | 88 | Station 0+00 | Base |
| 18 | 151.5 | | | 161.0 | | 94 | Station 2+00, 20' Lt of CL | Base |
| 19 | 154.1 | | | 161.0 | | 96 | Station 3+00, 20' Lt of CL | Base |
| 20 | 150.8 | | | 161.0 | | 94 | Station 4+00, 20' Lt of CL | Base |
| 21 | 146.5 | | | 161.0 | | 91 | Station 0+00, 15' Lt of CL | Base |
| 22 | 150.6 | | | 161.0 | | 94 | Station 1+00, 15' Lt of CL | Base |
| 23 | 147.3 | | | 161.0 | | 92 | Station 2+00, 15' Lt of CL | Base |
| 24 | 147.3 | | | 161.0 | | 92 | Station 3+00, 15' Lt of CL | Base |
| 25 | 147.6 | | | 161.0 | | 93 | Station 4+00, 15' Lt of CL | Base |
| 26 | 150.3 | | | 161.0 | | 93 | Station 0+00, 5' Lt of CL | Base |
| 27 | 151.3 | | | 161.0 | | 94 | Station 1+00, 5' Lt of CL | Base |
| 28 | 147.7 | | | 161.0 | | 92 | Station 2+00, 5' Lt of CL | Base |
| 29 | 147.4 | | | 161.0 | | 92 | Station 3+00, 5' Lt of CL | Base |

RESPECTFULLY SUBMITTED
S & M E, INC.



Appendix J

Analytical Reports for Decontamination Water



**RESEARCH & ANALYTICAL
LABORATORIES, INC.**

Analytical/Process Consultations

RECEIVED
APR - 2 1993

Chemical Analysis for Selected Parameters from Samples Identified as RM03-021 - TANK # 1770 - ~~XXXXXXXXXXXXXXXXXXXX~~ Project

| I. Volatile Organics | | | IV. BNA - Organics | | |
|---------------------------|----------------------|------------------------|-----------------------------|----------------------|------------------------|
| Method 8240 | Concentration (mg/l) | Detection Limit (mg/l) | Method 8270 | Concentration (mg/l) | Detection Limit (mg/l) |
| Methylene Chloride | BDL | 0.010 | 4-Chloro-3-methylphenol | BDL | 0.010 |
| Trichlorofluoromethane | BDL | 0.010 | 2-Chlorophenol | BDL | 0.010 |
| 1,1-Dichloroethane | BDL | 0.010 | 2,4-Dichlorophenol | BDL | 0.010 |
| 1,1-Dichloroethane | BDL | 0.010 | 2,4-Dimethylphenol | BDL | 0.010 |
| Chloroform | BDL | 0.010 | 2,4-Dinitrophenol | BDL | 0.050 |
| Carbon Tetrachloride | BDL | 0.010 | 2-Methyl-4,6-dinitrophenol | BDL | 0.050 |
| 1,2-Dichloropropane | BDL | 0.010 | 2-Nitrophenol | BDL | 0.010 |
| Trichloroethane | BDL | 0.010 | 4-Nitrophenol | BDL | 0.050 |
| Dibromochloromethane | BDL | 0.010 | Pentachlorophenol | BDL | 0.050 |
| 1,1,2-Trichloroethane | BDL | 0.010 | Phenol | BDL | 0.010 |
| Tetrachloroethane | BDL | 0.010 | 2,4,6-Trichlorophenol | BDL | 0.010 |
| Chlorobenzene | BDL | 0.010 | Acenaphthene | BDL | 0.010 |
| Trans-1,2-Dichloroethane | BDL | 0.010 | Acenaphthylene | BDL | 0.010 |
| 1,2-Dichloroethane | BDL | 0.010 | Anthracene | BDL | 0.010 |
| 1,1,1-Trichloroethane | BDL | 0.010 | Benzidine | BDL | 0.050 |
| Bromodichloromethane | BDL | 0.010 | Benzo(a)anthracene | BDL | 0.010 |
| Cis-1,3-Dichloropropene | BDL | 0.010 | Benzo(a)pyrene | BDL | 0.010 |
| Benzene | BDL | 0.010 | Benzo(b)fluoranthene | BDL | 0.010 |
| Trans-1,3-Dichloropropene | BDL | 0.010 | Benzo(ghi)perylene | BDL | 0.010 |
| Bromoform | BDL | 0.010 | Benzo(k)fluoranthene | BDL | 0.010 |
| 1,1,2,2-Tetrachloroethane | BDL | 0.010 | Benzy butyl phthalate | BDL | 0.010 |
| Toluene | BDL | 0.010 | Bis(2-chloroethoxy)methane | BDL | 0.010 |
| Ethyl Benzene | BDL | 0.010 | Bis(2-chloroethyl)ether | BDL | 0.010 |
| Chloromethane | BDL | 0.010 | Bis(2-chloroisopropyl)ether | BDL | 0.010 |
| Bromomethane | BDL | 0.010 | Bis(2-ethyl-hexyl)phthalate | BDL | 0.010 |
| Vinyl Chloride | BDL | 0.010 | 4-Bromophenyl phenyl ether | BDL | 0.010 |
| Chloroethane | BDL | 0.010 | 2-Chloronaphthalene | BDL | 0.010 |
| Acetone | BDL | 0.100 | 4-Chlorophenyl phenyl ether | BDL | 0.010 |
| Carbon Disulfide | BDL | 0.010 | Chrysene | BDL | 0.010 |
| Vinyl Acetate | BDL | 0.010 | Dibenzo(a,h)anthracene | BDL | 0.010 |
| 2-Butanone | BDL | 0.100 | 1,2-Dichlorobenzene | BDL | 0.010 |
| 4-Methyl-2-Pentanone | BDL | 0.010 | 1,3-Dichlorobenzene | BDL | 0.010 |
| 2-Hexanone | BDL | 0.010 | 1,4-Dichlorobenzene | BDL | 0.010 |
| Styrene | BDL | 0.010 | 3,3-Dichlorobenzidine | BDL | 0.020 |
| Total Xylenes | BDL | 0.010 | Diethyl phthalate | BDL | 0.010 |
| | | | Dimethyl phthalate | BDL | 0.010 |
| | | | Di-n-Butyl phthalate | BDL | 0.010 |
| | | | 2,4-Dinitrotoluene | BDL | 0.010 |
| | | | 2,6-Dinitrotoluene | BDL | 0.010 |
| | | | Di-n-Octyl phthalate | BDL | 0.010 |
| | | | 1,2-Diphenylhydrazine | BDL | 0.050 |
| | | | Fluoranthene | BDL | 0.010 |
| | | | Fluorene | BDL | 0.010 |
| | | | Hexachlorobenzene | BDL | 0.010 |
| | | | Hexachlorobutadiene | BDL | 0.010 |
| | | | Hexachlorocyclopentadiene | BDL | 0.010 |
| | | | Hexachloroethane | BDL | 0.010 |
| | | | Indeno(1,2,3-cd) pyrene | BDL | 0.010 |
| | | | Isophorone | BDL | 0.010 |
| | | | Naphthalene | BDL | 0.010 |
| | | | Nitrobenzene | BDL | 0.010 |
| | | | N-Nitrosodimethylamine | BDL | 0.010 |
| | | | N-Nitrosodi-n-propylamine | BDL | 0.010 |
| | | | N-Nitrosodiphenylamine | BDL | 0.010 |
| | | | Phenanthrene | BDL | 0.010 |
| | | | Pyrene | BDL | 0.010 |
| | | | 1,2,4-Trichlorobenzene | BDL | 0.010 |

II. Inorganics

BDL = Below Detection Limits
mg/l = milligrams per liter = parts per million
pci/l = picocuries per liter
BNA = Base Neutral/Acid Extractable

Appendix K

Disposal Manifests for Drummed Material

| | | | | | | | |
|--|--|---|---|---|---|-----------------------------------|--|
| UNIFORM HAZARDOUS WASTE MANIFEST | | 1. Generator's US EPA ID No. N.C.D.986.18.145.1000.01.0 | Manifest Document No. 1000.01.0 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law. | | |
| Generator's Name and Mailing Address MANNINGTON CERAMIC TILE 20 VICTOR ST. LEXINGTON NC 27293 | | | | A. State Manifest Document Number | | | |
| 4. Generator's Phone (919) 249 3931 | | | | B. State Generator's ID | | | |
| 5. Transporter 1 Company Name ENSCI CORPORATION | | 6. US EPA ID Number N.C.D.986.1.7.1.0.3.1 | | C. State Transporter's ID | | | |
| 7. Transporter 2 Company Name ENSCI CORPORATION | | 8. US EPA ID Number N.C.D.986.1.7.1.0.3.1 | | D. Transporter's Phone 919 883 7505 | | | |
| 9. Designated Facility Name and Site Address LAWLAW ENVIRONMENTAL SERVICES (TS) INC RT. 11 BOX 3 WATKINSON INDUSTRIAL RD REIDSVILLE NC 27320 | | 10. US EPA ID Number N.C.D.0.0.0.6.4.8.45.1 | | E. State Transporter's ID | | | |
| | | | | F. Transporter's Phone 919 883 7505 | | | |
| | | | | G. State Facility's ID | | | |
| | | | | H. Facility's Phone 919-342 6106 | | | |
| 11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) | | 12. Containers | | 13. Total Quantity | | 14. Unit Wt/Val | |
| a. <input checked="" type="checkbox"/> HAZARDOUS WASTE SOLID, NOS (D008) ORM-E ER6-31 NA9189 (contains lead) | | No. Type | | Quantity | | Waste No. | |
| | | | | 0.020 M 0.0150 P | | D008 | |
| b. | | | | | | | |
| c. | | | | | | | |
| d. | | | | | | | |
| Additional Descriptions for Materials Listed Above RVE M & 101 | | | | K. Handling Codes for Wastes Listed Above S01 | | | |
| 15. Special Handling Instructions and Additional Information PO# 32513 | | | | INVOICE: ENSCI CORPORATION 1108 OLD THOMASVILLE RD HIGH POINT NC 27260 | | | |
| EMERGENCY CONTACT: PRETLO KNIGHT (919) 883-7505 | | | | | | | |
| 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford. | | | | | | | |
| Printed/Typed Name TONY SHAW | | | | Signature <i>Tony Shaw</i> | | Month Day Year 4 29 93 | |
| 17. Transporter 1 Acknowledgement of Receipt of Materials | | | | | | | |
| Printed/Typed Name Michael M. Cook | | | | Signature <i>Michael M. Cook</i> | | Month Day Year 04 29 93 | |
| 18. Transporter 2 Acknowledgement of Receipt of Materials | | | | | | | |
| Printed/Typed Name PRETLO KNIGHT | | | | Signature <i>Pretlo Knight</i> | | Month Day Year 04 29 93 | |
| 19. Discrepancy Indication Space | | | | | | | |
| Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. | | | | | | | |
| Printed/Typed Name Steven T. Graver | | | | Signature <i>Steven T. Graver</i> | | Month Day Year 04 29 93 | |

GENERATOR

TRANSPORTER

FACILITY

Customer Notification And Certification

FORM A

Only Statements with Original Signatures will be Accepted

Generator Name/Location: MANNINGTON CERAMIC TILE

EPA I.D. Number: NC D986181451

Waste Profile or ARF Designation: RVEMQ101

Manifest Number: ~~000001~~ 0001

EPA Hazardous Waste Number(s): D008

Waste Analysis Attached? YES _____ NO X On file at facility _____

Unrestricted Waste Notification (Category 1)

If you generate a hazardous waste that is not a land disposal restricted waste (the waste has no applicable treatment standards), mark the statement below.

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d).

Restricted Waste Notification (Category 2)

If you generate a hazardous waste that is restricted from land disposal (the waste has applicable treatment standards), mark the statement below. Note: All appropriate standards must be accounted for. A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked.

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR 268, Subpart D. Waste must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; qualifies for a variance as described by Category 3 below; or meets the standard as described under Category 4 below.

For hazardous debris, the waste contains the following contaminants subject to treatment (check all that apply): § 268.45(b) (1)-Toxicity characteristic debris; _____ § 268.45(b) (2)-Debris contaminated with listed waste; _____ § 268.45(b) (3)-Cyanide reactive debris. This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45.

responding Treatment Standard(s) 40 CFR 268.41 NWIV 5 ppm

Restricted Waste Variance Notification (Category 3)

If you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR 268.5, a nationwide variance under 40 CFR 268 Subpart C, a no migration petition under 40 CFR 268.6, or other applicable variance), mark the statement below and list the appropriate variance in the space provided.

(3a) Restricted Waste Variance Notification

I notify pursuant to 40 CFR 268.7(a) (3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR 268 Subpart C, or a case-by-case extension under 40 CFR 268.5, or an exemption under 40 CFR 268.6. Applicable Variance (List the variance and give the date the waste is subject to prohibitions)

(3b) Hazardous Debris Extension Notification

For the hazardous debris waste stream accompanying this notification, I notify that I have made the necessary submittals to my operating record, or files maintained pursuant to 40 CFR 268.7(a) (5), as described in the May 15, 1992 Federal Register (57 FR 20769), and therefore this hazardous debris shipment qualifies for the one-year generic case-by-case extension.

Applicable Variance (Give the date the waste is subject to prohibitions)

5-8-93

Restricted Waste Certification (Category 4)

If you generate a hazardous waste that is restricted from land disposal (the waste has applicable treatment standards), and the waste meets the standards as generated, mark the statement below. Note: All appropriate standards must be accounted for. A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked.

I certify under penalty of law that I personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification including the possibility of fine and imprisonment.

Applicable Standards Passed (List the appropriate standard(s) for constituents not requiring treatment)

SIGNATURE: _____

Tony Shaw
TONY SHAW

DATE: 4/29/93

PRINT NAME: _____

TITLE: ENVIRONMENTAL Mgr

Appendix L
Analytical Reports for Fill Materials



RESEARCH & ANALYTICAL LABORATORIES, INC.

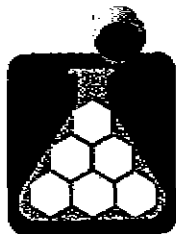
Analytical/Process Consultations

Alvex

Chemical Analysis for Selected Parameters from Stockpile Soil Sample (RAL #162528, Ensci Corporation Job #RMO3-021, 11 March 1993)

| I. Volatile Organics | | | III. BNA Organics | | |
|---------------------------|-----------------------|-------------------------|-----------------------------|-----------------------|-------------------------|
| Method 8240 | Concentration (mg/kg) | Detection Limit (mg/kg) | Method 8270 | Concentration (mg/kg) | Detection Limit (mg/kg) |
| Methylene Chloride | BDL | 0.010 | 4-Chloro-3-methylphenol | BDL | 0.33 |
| Trichlorofluoromethane | BDL | 0.010 | 2-Chlorophenol | BDL | 0.33 |
| 1,1-Dichloroethene | BDL | 0.010 | 2,4-Dichlorophenol | BDL | 0.33 |
| 1,1-Dichloroethane | BDL | 0.010 | 2,4-Dimethylphenol | BDL | 0.33 |
| Chloroform | BDL | 0.010 | 2,4-Dinitrophenol | BDL | 1.65 |
| Carbon Tetrachloride | BDL | 0.010 | 2-Methyl-4,6-dinitrophenol | BDL | 1.65 |
| 1,2-Dichloropropane | BDL | 0.010 | 2-Nitrophenol | BDL | 0.33 |
| Trichloroethene | BDL | 0.010 | 4-Nitrophenol | BDL | 1.65 |
| Dibromochloromethane | BDL | 0.010 | Pentachlorophenol | BDL | 1.65 |
| 1,1,2-Trichloroethane | BDL | 0.010 | Phenol | BDL | 0.33 |
| Tetrachloroethene | BDL | 0.010 | 2,4,6-Trichlorophenol | BDL | 0.33 |
| Chlorobenzene | BDL | 0.010 | Acenaphthene | BDL | 0.33 |
| Trans-1,2-Dichloroethane | BDL | 0.010 | Acenaphthylene | BDL | 0.33 |
| 1,2-Dichloroethane | BDL | 0.010 | Anthracene | BDL | 0.33 |
| 1,1,1-Trichloroethane | BDL | 0.010 | Benzo(a)anthracene | BDL | 1.65 |
| Bromodichloromethane | BDL | 0.010 | Benzo(a)pyrene | BDL | 0.33 |
| Cis-1,3-Dichloropropene | BDL | 0.010 | Benzo(b)fluoranthene | BDL | 0.33 |
| Benzene | BDL | 0.010 | Benzo(ghi)perylene | BDL | 0.33 |
| Trans-1,3-Dichloropropene | BDL | 0.010 | Benzo(k)fluoranthene | BDL | 0.33 |
| Bromoform | BDL | 0.010 | Benzo(a)butyl phthalate | BDL | 0.33 |
| 1,1,2,2-Tetrachloroethane | BDL | 0.010 | Bis(2-chloroethoxy)methane | BDL | 0.33 |
| Toluene | BDL | 0.010 | Bis(2-chloroethyl)ether | BDL | 0.33 |
| Ethyl Benzene | BDL | 0.010 | Bis(2-chloroisopropyl)ether | BDL | 0.33 |
| Chloromethane | BDL | 0.010 | Bis(2-ethyl-hexyl)phthalate | BDL | 0.33 |
| Bromomethane | BDL | 0.010 | 4-Bromophenyl phenyl ether | BDL | 0.33 |
| Vinyl Chloride | BDL | 0.010 | 2-Chloronaphthalene | BDL | 0.33 |
| Chloroethane | BDL | 0.010 | 4-Chlorophenyl phenyl ether | BDL | 0.33 |
| Acetone | BDL | 0.200 | Chrysene | BDL | 0.33 |
| Carbon Disulfide | BDL | 0.010 | Dibenzo(a,h)anthracene | BDL | 0.33 |
| Vinyl Acetate | BDL | 0.010 | 1,2-Dichlorobenzene | BDL | 0.33 |
| 2-Butanone | BDL | 0.200 | 1,3-Dichlorobenzene | BDL | 0.33 |
| 4-Methyl-2-Pentanone | BDL | 0.010 | 1,4-Dichlorobenzene | BDL | 0.33 |
| 2-Hexanone | BDL | 0.010 | 3,3-Dichlorobenzidine | BDL | 0.66 |
| Styrene | BDL | 0.010 | Diethyl phthalate | BDL | 0.33 |
| Total Xylenes | BDL | 0.010 | Dimethyl phthalate | BDL | 0.33 |
| | | | Di-N-Butyl phthalate | BDL | 0.33 |
| | | | 2,4-Dinitrotoluene | BDL | 0.33 |
| | | | 2,6-Dinitrotoluene | BDL | 0.33 |
| | | | Di-N-Octyl phthalate | BDL | 0.33 |
| | | | 1,2-Diphenylhydrazine | BDL | 1.65 |
| | | | Fluoranthene | BDL | 0.33 |
| | | | Fluorene | BDL | 0.33 |
| | | | Hexachlorobenzene | BDL | 0.33 |
| | | | Hexachlorobutadiene | BDL | 0.33 |
| | | | Hexachlorocyclopentadiene | BDL | 0.33 |
| | | | Hexachloroethane | BDL | 0.33 |
| | | | Indeno(1,2,3-cd) pyrene | BDL | 0.33 |
| | | | Isophorone | BDL | 0.33 |
| | | | Naphthalene | BDL | 0.33 |
| | | | Nitrobenzene | BDL | 0.33 |
| | | | N-Nitrosodimethylamine | BDL | 0.33 |
| | | | N-Nitrosodi-n-propylamine | BDL | 0.33 |
| | | | N-Nitrosodiphenylamine | BDL | 0.33 |
| | | | Phenanthrene | BDL | 0.33 |
| | | | Pyrene | BDL | 0.33 |
| | | | 1,2,4-Trichlorobenzene | BDL | 0.33 |

BNA = Base-Neutral-Acid Extractable
 mg/kg = milligrams per kilogram = parts per million
 BDL = Below Detection Limit



RESEARCH & ANALYTICAL LABORATORIES, INC.

Analytical/Process Consultations
Phone (919) 996-2841

CHAIN OF CUSTODY RECORD

| JOB NO. | | PROJECT NAME | | | | NO. OF CONTAINERS | WATER/WASTEWATER | | | | | | | | | | MISC. | | | | | | | |
|--|--|--------------|---------|--------------------|------|-------------------|------------------|------------------|-----------------------|--------------------|---------------|---------------|-------------|------------|-----------------------------|-----------------|--------------------------|-----------------------|--------------------|--|---|--|--|-------------------------------|
| SAMPLERS (SIGNATURE) | | SAMPLE NO. | DATE | TIME | COMP | | GRAB | STATION LOCATION | 2L G (BVA, Herb/Pest) | 2 40ml Vials (VOA) | 250ml G (TOX) | 250ml P (TOX) | 1L RG (DOC) | 1L G (BOD) | 1L G (Phenol, Oil & Grease) | 1L RG (COD, NP) | 1L RG (Metals, Hardness) | Sterile RG (Coliform) | REQUESTED ANALYSIS | | | | | |
| <p>ENSCI Corp. RM03-021 - life</p> <p><i>[Signature]</i></p> | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 3-11-93 | 1100 | X | | Soil | | | | | | | | | | | | | | 2 | | | 5240, 8270, RCRA metals, TCLP |
| | | 162528 | | | | | | | | | | | | | | | | | | | | | | |
| RELINQUISHED BY | | DATE/TIME | | RECEIVED BY | | REMARKS: | | | | | | | | | | | | | | | | | | |
| <i>[Signature]</i> | | 3-11-93 | | <i>[Signature]</i> | | P.O. # 33316 | | | | | | | | | | | | | | | | | | |
| RELINQUISHED BY | | DATE/TIME | | RECEIVED BY | | ON Ice | | | | | | | | | | | | | | | | | | |

March 17, 2003

Memo

To: Rosemarie Roberts

From: Sandra Moore

Re: Proposed Modifications to the Closure Plan
Porcelanite, Inc
Lexington, NC

I reviewed the partial soil investigation information for the closed sludge ponds presented in Porcelanite's "Proposed Modification to the Closure Plan". Below are my comments on a constituent by constituent basis. My comments are based on the assumption that the soil sample locations and depths were adequate and appropriate to determine the extent of contamination in the sludge pond area. Also, since I did not have a copy of Figures 2 and 3, which depict the locations of the soil samples, or the historical sampling data, I assumed that the text is correct when it refers to soil boring locations and constituent concentrations. Please let me know if there are any issues that we need to discuss concerning the site and my comments.

1. Analytical Methods 200.7 and 200.8 are both ICP methods and are basically equivalent. Method 200.8 is an ICP-MS method that is generally more sensitive. I do not see a problem with using either the 200.7 or 200.8 method.
2. EPA Methods 9056 and 300.1 both analyze for inorganic ions by ion chromatography so they should be equivalent.
3. Arsenic- I concur with the conclusion that no further investigation or remediation is warranted since all 53 soil samples and the four background samples were below the PQL (0.894 and 3.75 mg/kg range) and arsenic was not detected in the groundwater above the detection limit (PQL was 0.005 mg/L and 2L standard is 0.01 mg/L). Even though the soil PQLs are above the Region 9 residential PRG of 0.39 mg/kg, if the average soil concentration for the site fell between 0.894 mg/kg and 3.75 mg/kg, the risk from arsenic exposure to soil would fall in the range of 10 E-5 to 10 E-6. From a risk management standpoint, it would not be reasonable to require remediation for arsenic at these levels.
4. Barium- I concur with the conclusion that no further investigation or remediation is warranted based on the frequency of detection of barium in soil above the SSL of 848 mg/kg (1/53) and that no concentrations exceeded the EPA Region 9 residential PRG of 5500 mg/kg. Also, barium has not been detected above the 2L groundwater standard.
5. Boron- Based on the soil data for this area it would appear that no further investigation or remediation is warranted. However, I can not make a definitive determination without more information since boron was detected above the 2L in four adjacent wells. The information I would need to make a determination would be the following: i) What is the background concentration for boron at the site? ii) What were the concentrations of boron detected in the four wells? iii) Is there another potential source of groundwater contamination adjacent to the sludge ponds? If there are no other suspected sources and the boron background concentration is close to the concentration in the four wells, I would concur with the no

- further action determination. If there is not a boron background groundwater concentration and the boron concentrations in the four wells are less than the EPA Region 9 tap water values of 7 mg/L, I would conclude no further action.
6. Methods 9056 and 300.1 specifically analyze for bromide, not bromine. I would have Porcelanite confirm in writing that the lab used the appropriate method (either 9056 or 300.1 or equivalent bromide method) to analyze for bromide, not bromine, in the soil samples. **I believe that Porcelanite confirmed that bromide was analyzed for and not detected above the PQL, therefore no further action is warranted.**
 7. Cadmium- I concur with the conclusion that no further soil investigation or remediation is warranted. They did not state whether or not cadmium had been detected in the groundwater so I am assuming that it has not been detected or that it has not been analyzed for.
 8. Chromium- I concur with the conclusion that no further soil investigation or remediation is warranted. Since only two of the 53 soil samples were marginally (33.6 and 33.3 mg/kg) above the SSL of 27.2 mg/kg and chromium has not been detected in the groundwater above the 2L, I do not believe soil removal is necessary for chromium unless other constituents are present that are greater than soil cleanup goals.
 9. Cobalt- I concur with the conclusion that no further investigation is warranted and that the soil exceeding the SCSs should be removed and properly disposed. I would evaluate the groundwater cobalt levels as suggested above with boron in comment #5 to ensure that there is not another source of cobalt to groundwater in this area. The Region 9 tap water concentration for cobalt is 0.73 ug/kg or ppm. **The lab detection limit was the default NCGS. I would compare the concentrations detected in the groundwater to the Region 9 tap water PRG. If it is below, I would conclude no further action.**
 10. Lead- I concur with the conclusion that no further investigation is warranted for the sludge pond area and that the soil exceeding the SCSs should be removed and properly disposed. For Porcelanite's information, the EPA Region 9 soil action levels for lead are 400 mg/kg and 750 mg/kg for protection residential and industrial human receptors, respectively.
 11. Manganese- I concur with the conclusion that no further investigation is warranted and that the soil exceeding the SCSs should be removed and properly disposed. I would evaluate the groundwater manganese levels as suggested above with boron (comment #5) and cobalt (comment #9) to ensure that there is not another source of manganese to groundwater in this area. The Region 9 tap water concentration for manganese is 0.88 mg/L.
 12. Mercury- All nine detections of mercury in soil were well below the EPA Region 9 residential PRG for soil mercury of 23 mg/kg. Unless mercury has been detected in the groundwater downgradient of the sludge ponds, I would concur that no further action is warranted. If mercury was not analyzed for in downgradient groundwater wells but there is not a suspected source, I would also concur that NFA was necessary.
 13. Nickel- I concur that no further action is warranted.
 14. Selenium- I concur that no further action is warranted.
 15. Silver- I concur that no further action is warranted.
 16. Sulfate- I concur that no further action is warranted since only the one holding time was exceeded (out of 53 and the fact that it has not been detected above the 2L standard in groundwater).
 17. Titanium- Since there is not a 2L standard for titanium, I'm assuming that Porcelanite is referring to the PQL when they state that "past groundwater sampling indicates that titanium

has not exceeded NCGS standards in the adjacent monitoring well.” If that is the case then I concur that no further investigation is warranted.

18. Vanadium- Since there is not a 2L standard for vanadium, I assume Porcelanite is referring to the PQL when they state that “past ground water sampling indicates that vanadium has not exceeded NCGS standards in the adjacent monitoring wells.” If that is the case, I concur that no further investigation is warranted. There is an EPA Region 9 tap water concentration of 0.26 mg/L for vanadium that could be used for screening purposes.
19. Zinc- I concur with the conclusion that no further investigation is warranted and that the soil exceeding the SCSs should be removed and properly disposed. I would evaluate the groundwater zinc to ensure that there is not another source of zinc to groundwater in this area.
20. Gross Alpha- I concur with the conclusion that no further investigation or remediation is warranted.
21. Gross Beta- I concur with the conclusion that no further investigation is warranted in this area; however, I would evaluate the groundwater gross beta levels as suggested to ensure that there is not another source of gross beta to groundwater in this area since past groundwater sampling indicates that gross beta has exceeded NCGS in the adjacent monitoring wells.
22. Radium 226 and Radium 228- I concur with the conclusion that no further investigation or remediation is warranted; however, I would check and see if there have been any detections in groundwater in downgradient wells.



July 14, 2004

Ms. Elizabeth Cannon- Section Chief
North Carolina Department of Environment
and Natural Resources
Hazardous Waste Section
Post Office Box 27687
Raleigh, North Carolina 27611-7687

RECEIVED
JUL 15 2004
Hazardous Waste Section

Reference: Revised Closure Plan
Former Settling Ponds
Porcelanite, Inc.
Lexington, North Carolina
NCD 986 181 451
Waters Edge Job No. R1-21

Dear Ms. Cannon:

We had an April 1, 2004 meeting with a representative from the North Carolina Department of Environment and Natural Resources (NCDENR), Hazardous Waste Section (HWS), concerning the closure status of the former settling ponds at the Porcelanite facility located in Lexington, North Carolina (see Figure 1). We were attempting to determine the most prudent approach to document closure of this hazardous waste management unit (HWMU). This HWMU had undergone partial closure according to the May 1992 *Revised Closure Plan* submitted by ENSCI which was documented in a June 29, 1993 *Closure Report for Settling Ponds*. Based upon continued negotiations with NCDENR, it was decided to pursue a modified closure using risk-based concentrations (RBCs).

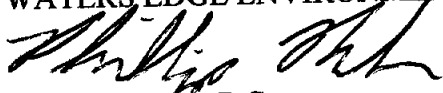
Based on some additional sampling outside of the former settling ponds, it appeared that some of the settling pond material had overflowed over the ponds during their operation. Several investigative efforts were conducted to determine the horizontal and vertical extent of the affected soil. Also, during this time period, NCDENR began to adopt a RBC approach to determining remedial thresholds. These levels were finally accepted by both Porcelanite and NCDENR and are shown in Table 1 and locations shown in Figure 2 along with the results of the soil investigative efforts. Based upon these levels, Porcelanite has removed almost all of the affected soils, which were disposed in an approved landfill with disposal manifests shown in Appendix A. There were a few soil samples, which slightly exceeded isolated RBCs (see Figures 3 and 4). The area of affected soil removed is shown in Figure 5.

Subsequent to these efforts, based upon direction from NCDENR, we provided a November 5, 2002 modified risk assessment to justify our position that the remaining slight exceedances should remain in place (see supporting documentation in Appendix B). This risk assessment was subsequently accepted by representatives of NCDENR and would comprise our modification to the existing closure plan.

If you have any questions regarding this report or require additional information, please call me at 919.859.9987.

Sincerely,

WATERS EDGE ENVIRONMENTAL, LLC



Phillip L. Rahn, P.G.
President

04-074/PLR

Figures

| <u>Figure No.</u> | <u>Title</u> |
|-------------------|--|
| 1 | Project Location Map |
| 2 | Soil Boring Location Map |
| 3 | Soil Boring Exceedance Location Map – 1 ft depth |
| 4 | Soil Boring Exceedance Location Map – 3-6 ft depth |
| 5 | Area of Excavation |

Tables

| <u>Table No.</u> | <u>Title</u> |
|------------------|----------------------------------|
| 1 | Soil Sampling Analytical Results |

Appendices

| <u>Appendix</u> | <u>Title</u> |
|-----------------|---|
| A | Landfill Disposal Manifests |
| B | Modified Risk Assessment – supporting documentation |

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-1 | SS-2 | SS-3 | SS-4 | SS-4-2 | SS-4-2 | SS-5 | SS-6 | SS-7 | SS-7-2 | SS-7-2 | SS-8 | SS-9 | SS-16 | SS-17 |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|-----------------|-----------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|---------------|---------------|-----------------|-----------------|------------------|------------------|
| | | | | | 0-1' 5/27/94 | 0-1' 11/4/99 | 0-1' 11/4/99 | 0-1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0-1' 11/4/99 | 0-1' 11/4/99 | 0-1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0-1' 5/27/94 | 0-1' 5/27/94 | 0-1' 11/10/99 | 0-1' 11/10/99 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <3.62 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <3.73 | <3.75 | <1.13 | <1.15 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 80.1 | 246 | 149 | 47.7 | NA | NA | 373 | 64.3 | 146 | NA | NA | 186 | 31.7 | 25.3 | 21.8 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 26 | 30.9 | 61.9 | 74.2 | NA | NA | <10.5 | 31.6 | <12.7 | NA | NA | 61.2 | 11.2 | 18.2 | <11.5 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.725 | 0.712 | 0.696 | 0.623 | NA | NA | 0.335 | 0.249 | 0.329 | NA | NA | <0.746 | <0.806 | <0.113 | <1.15 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.19 | 15.4 | 33.5 | 33.3 | 8.39 | 6.74 | 4.81 | 8.58 | 13.2 | NA | NA | 8.58 | 4.04 | 8.03 | 6.71 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | <3.62 | 19.9 | 11.3 | 6.48 | NA | NA | 20.9 | 6.96 | 19.9 | NA | NA | 14 | <4.04 | 1.58 | 1.26 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 93.4 | 226 | 207 | 18.5 | NA | NA | 155 | 145 | 397 | <11.8 | 12.6 | 996 | 42.7 | 10.5 | 25.5 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 82.4 | 392 | 298 | 201 | NA | NA | 312 | 290 | 285 | NA | NA | 122 | 278 | 58.4 | 35.1 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | <0.145 | 0.901 | 1.28 | 0.855 | NA | NA | 0.855 | 0.413 | 0.862 | NA | NA | <0.149 | <0.172 | 0.476 | 0.652 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 3.12 | 13.3 | 8.77 | 6.48 | NA | NA | 7.32 | 3.73 | 10.0 | NA | NA | 7.31 | <4.04 | 2.26 | 1.72 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.45 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <1.49 | <1.50 | 2.37 | 1.72 |
| Silver | 0.223/380 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.725 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <0.746 | <0.807 | <1.13 | <1.15 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 168 | 49.9 | <25 | 97.5 | NA | NA | 48.2 | 51.8 | <25 | NA | NA | 537 | 172 | 27.6 | <250 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 92.2 | 789 | 1,040 | 948 | NA | NA | 59 | 453 | 130 | NA | NA | 118 | 36.1 | 39.3 | 43.5 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 33.8 | 66 | 151 | 173 | NA | NA | 12.2 | 56 | 37.6 | NA | NA | 33.2 | 9.62 | 28.7 | 21.6 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 388 | 2,290 | 625 | 330 | NA | NA | 3,630 | 269 | 855 | NA | NA | 5,230 | 39.8 | 62.3 | 111 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 15.4 | 7.7 | 9.3 | 10.6 | NA | NA | 10.8 | 19.5 | 7.7 | NA | NA | 16.3 | 8 | 29.1 | 28.8 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 38.6 | 13.3 | 12.9 | 8.9 | NA | NA | 27.2 | 32.1 | 20.7 | NA | NA | 29 | 33.3 | 38.1 | 47.9 |
| Praseodymium | NL | Method 1620 | MDL | MDL | <6.71 | <11.9 | <12.9 | <12.2 | NA | NA | <10.4 | <12.2 | <12.7 | NA | NA | <7.48 | <7.52 | <11.3 | <11.5 |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 0.6 | 0.7 | 1.4 | 1.5 | NA | NA | 1.2 | 1.0 | 1.6 | NA | NA | 2.2 | 1.2 | 0.7 | 1.1 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | 1.1 | <1.0 | <1.0 | <0.9 | NA | NA | <0.8 | <1.0 | <1.0 | NA | NA | 1.2 | <0.8 | <1.0 | <1.0 |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL: Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-18 | SS-19 | SS-20 | SS-21 | SS-22 | SS-23 | SS-24 | SS-24 | SS-24-2 | SS-24-2 | SS-25 | SS-25 | SS-26 | SS-27 | SS-28 |
|---------------------------|---|---|--|-----------------------|------------------|------------------|------------------|------------------|-----------------|------------------|------------------|----------------|---------------|---------------|-----------------|----------------|------------------|-----------------|-----------------|
| | | | | | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/4/99 | 0-1' 11/18/99 | 0-1' 11/18/99 | 3' 11/18/99 | 4' 9/13/02 | 6' 9/13/02 | 0-1' 11/4/99 | 3' 11/18/99 | 0-1' 11/10/99 | 0-1' 1/19/00 | 0-1' 1/19/00 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.16 | <1.00 | <1.01 | <1.09 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 19.2 | 20.1 | 15.3 | 12 | 1,490 | 47 | 64.8 | 260 | NA | NA | 54.4 | 78.7 | 135 | 18.1 | 8.3 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 13.1 | <10 | <10.1 | 13.6 | 33.8 | <8.94 | 11.1 | 44.2 | NA | NA | 27.2 | 70.4 | <10.1 | 6.09 | 7.41 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.116 | <0.100 | <0.101 | <0.109 | 1.37 | 0.335 | 0.168 | 0.331 | NA | NA | 0.228 | 0.318 | <0.101 | <0.113 | <0.111 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.95 | 3.11 | 2.71 | 10.1 | 8.32 | 18.3 | 17 | 15.9 | NA | NA | 9.44 | 21 | 4.65 | 6.66 | 4.65 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 1.63 | 2.0 | 1.51 | 1.53 | 39.5 | 2,090 | 203 | 285 | 11.4 | 9.96 | 3.23 | 3.37 | 6.27 | 1.35 | <1.11 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 6.16 | 9.02 | 12.7 | 7.08 | 6,630 | 3.58 | 65.9 | 972 | 372 | 170 | 19.4 | 20.2 | 65.2 | 17.2 | 6.19 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 33.4 | 161 | 172 | 42.7 | 225 | 193 | 267 | 235 | NA | NA | 180 | 97 | 189 | 51.5 | 37.2 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 0.488 | <0.200 | <0.201 | <0.218 | 2.62 | <0.179 | <0.189 | <0.194 | NA | NA | 1.28 | 0.404 | 4.02 | 0.904 | 0.592 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.76 | <1.0 | <1.01 | 2.29 | 23.8 | 50.2 | 12.9 | 17.7 | NA | NA | 3.68 | 4.24 | 2.82 | 1.58 | 1.22 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | 1.51 | <1.0 | <1.01 | 2.51 | 1.48 | 1.52 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.16 | <1.0 | <1.01 | <1.09 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 48.1 | <100 | <100 | <25 | 34.8 | 35 | 25.8 | 53 | NA | NA | 30.9 | 62.8 | <250 | 100 | 275 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 21.9 | 15.5 | 17 | 34.4 | 46.4 | 543 | 639 | 451 | NA | NA | 317 | 398 | 23.8 | 106 | 57.5 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 27.8 | 6.91 | 4.83 | 30 | 17.9 | 51.5 | 32.7 | 31.2 | NA | NA | 44.2 | 117 | 9.2 | 26.3 | 26.9 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 183.71 | 1,100 | 34.3 | 13.1 | 21.5 | 17.2 | 7,020 | 28.7 | 131 | 1,200 | 1,070 | 710 | 40 | 417 | 885 | 13.1 | 12.3 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 23.3 | 14.8 | 11.1 | 22.8 | 11.6 | 1.9 | 2.1 | 8.9 | NA | NA | 20.2 | 22.8 | 15.4 | NA | NA |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 36.6 | 40.3 | 36 | 38.1 | 24.4 | 9.9 | 8.6 | 16.3 | NA | NA | 29.8 | 17.3 | 43.5 | NA | NA |
| Praseodymium | NL | Method 1620 | MDL | MDL | <11.6 | <10.0 | <10.1 | <10.9 | <11.4 | NA | <9.42 | <9.63 | NA | NA | <11.5 | <12.5 | <10.1 | NA | NA |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 2.4 | 1.1 | 0.9 | 0.6 | 0.9 | 1.1 | 0.5 | 0.9 | NA | NA | 1.3 | 0.5 | 0.8 | NA | NA |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | 1.0 | 1.1 | <1.0 | 1.5 | 1.0 | <1.1 | <1.0 | <1.1 | NA | NA | <1.0 | <1.1 | <1.0 | NA | NA |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-29 | SS-30 | SS-31 | SS-32 | SS-33 | SS-33 | SS-34 | SS-34 | SS-35 | SS-35 | SS-36 | SS-36 | SS-36-2 | SS-37 | SS-37 |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|---------------|
| | | | | | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 3' 9/13/02 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 13 | 22.9 | 30 | 25.8 | 25.5 | 25.2 | 39.9 | 29.9 | 23.1 | 17.2 | 690 | 10.2 | NA | 14.6 | 5.4 |
| Boron | 20.5/5,600 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 11.8 | 7.72 | 8.05 | <5.19 | <5.20 | 12.5 | <5.30 | 19.0 | 107 | 31.9 | 56 | 22.4 | NA | 32.3 | 22.0 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | <10 | ** | <10 | ** | <10 | ** | <10 | ** | NA | <10 | ** |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.113 | <0.107 | <0.105 | <0.104 | <0.098 | 0.159 | <0.106 | <0.105 | <0.122 | 0.228 | <0.126 | 0.162 | NA | <0.120 | <0.120 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 7.13 | 7.29 | 6.66 | 4.15 | 6.97 | 11.0 | 5.08 | 8.42 | 17.1 | 12.2 | 13.2 | 3.86 | NA | 10.2 | 3.6 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 1.92 | 1.29 | 4.23 | 2.7 | 2.26 | 2.35 | 4.45 | 3.05 | 3.42 | 1.86 | 3.42 | 1.87 | NA | 1.32 | <1.20 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 4.87 | 3.75 | 15.9 | 9.12 | 10.5 | 5.44 | 12.5 | 8.21 | 17.5 | 9.16 | 23.5 | 7.36 | NA | 7.46 | 4.2 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 87.9 | 26.5 | 298 | 305 | 400 | 73.5 | 164 | 105 | 120 | 62.7 | 91.5 | 168 | NA | 28.9 | 47.1 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 2.19 | 0.858 | 0.918 | 0.624 | 1.41 | ** | 0.425 | ** | 3.67 | ** | 1.43 | ** | NA | 2.65 | ** |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.81 | 1.29 | 1.16 | <1.04 | <0.982 | 1.71 | 1.17 | 2.63 | 5.74 | 3.01 | 4.43 | 1.64 | NA | 1.56 | <1.20 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | <25 | 43 | <250 | 43.4 | <250 | ** | <250 | ** | 67 | ** | 5,560 | ** | 101 | 36.8 | ** |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 137 | 51.3 | 61.1 | 42.8 | 34.2 | 13.3 | 81.7 | 16.4 | 339 | 150 | 187 | 47.2 | NA | 62.2 | 22.9 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 29.2 | 19 | 12.2 | 6.74 | 6.09 | 21.0 | 8.69 | 22.9 | 210 | 66.1 | 87.7 | 23.8 | NA | 34.2 | 14.7 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 25.4 | 11.7 | 9.31 | 4.15 | 21.6 | 60.3 | 15.5 | 8.1 | 21.7 | 23.7 | 37.1 | 33.0 | NA | 11.4 | 19.9 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | NA | NA | NA | NA | 12.7 | 16.8 | 17.7 | 14.1 | 18.4 | 19.0 | 84.9 | 30.4 | NA | 27.2 | 36.2 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | NA | NA | NA | NA | 39.4 | 32.5 | 42.8 | 32.6 | 15.7 | 23.7 | 48.7 | 55.6 | NA | 34.7 | 42.5 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | NA | NA | NA | NA | 0.5 | 1.2 | 1.4 | 1.0 | 1.0 | 0.9 | 0.5 | 0.8 | NA | 0.7 | 0.6 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | NA | NA | NA | NA | <1.0 | <1.1 | <1.1 | <1.0 | <1.0 | <1.1 | 1.1 | <1.0 | NA | 1.0 | <1.0 |

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a = NC Hazardous Waste Section Target Remediation Guidelines

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DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-38 | SS-38 | SS-39 | SS-39 | SS-40 | SS-40 | SS-41 | SS-41 | SS-42 | SS-43 | SS-43 | BG-1 | BG-2 | GS-3 | GS-4 |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|----------|
| | | | | | 0-1' 1/18/00 | 3' 1/18/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 11/10/99 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 | <1.15 | <1.12 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 25 | 4.62 | 40.2 | <4.19 | 39.5 | 63.5 | 435 | 50.6 | 140 | 34.8 | 55.1 | 19.2 | 43.12 | 67.4 | 45 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 6.55 | <9.82 | <9.53 | <10.5 | <9.39 | <11.3 | <10.8 | <10.4 | 13.0 | <10.3 | <11.1 | 24.3 | <10.9 | 42.4 | 57.3 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | ** | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.101 | <0.098 | <0.095 | <0.105 | <0.094 | <0.113 | <0.108 | <0.104 | <0.097 | <0.103 | <0.111 | <0.118 | <0.109 | 0.23 | 0.504 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.07 | 3.14 | 12.7 | <1.05 | 16.7 | 3.16 | 4.53 | 8.14 | 11.8 | 6.82 | 8.64 | 11.5 | 6.76 | 18.8 | 20.6 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 2.62 | 1.18 | 6.00 | <1.05 | 8.07 | 9.59 | 5.82 | 10.5 | 9.42 | 3.92 | 3.77 | 2.0 | 2.94 | 8.64 | 20.4 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 7.77 | 5.5 | 4.67 | <0.523 | 1.03 | 11.5 | 44.6 | 20.5 | 239 | 16.8 | 32.7 | 13.4 | 13.2 | 44.1 | 52.7 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 90.5 | 42.0 | 219 | <1.05 | 234 | 4.21 | 549 | 153 | 142 | 302 | 119 | 42.5 | 123 | 183 | 305 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 0.942 | ** | <0.191 | <0.209 | <0.188 | <0.226 | 0.307 | <0.209 | <0.194 | <0.206 | <0.221 | 5.54*** | 0.862 | <0.231 | <0.224 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.72 | <0.982 | 6.96 | <1.05 | 9.95 | 3.50 | 1.84 | 2.19 | 6.31 | 1.76 | 2.66 | 2.82 | 2.73 | 6.34 | 8.28 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | 2.47 | 1.2 | <1.15 | <1.12 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.81 | PQL | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 | <1.15 | <1.12 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 37.3 | ** | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <100 | <100 | 27 | 57.7 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 47.2 | 13.4 | 357 | <10.5 | 384 | 356 | 24.8 | 26.9 | 84.7 | 22.3 | 28.3 | 65.7 | 181 | 644 | 649 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 16.6 | 9.53 | 20.6 | 1.46 | 22.5 | 33.4 | 7.87 | 16.0 | 20.1 | 12.2 | 25.6 | 45.2 | 27.6 | 89.4 | 148 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 6.56 | 7.76 | 34.9 | 2.83 | 26.2 | 32.3 | 390 | 78.8 | 258 | 21.2 | 9.60 | 149 | 124 | 124 | 101 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 16.1 | 13.6 | <2.3 | <2.0 | <2.2 | 20.3 | 19.8 | 10.0 | 7.9 | 13.3 | 27.4 | 22.4 | 23.5 | 7.9 | 6.1 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 40.6 | 38.9 | 9.1 | 2 | 10.8 | 29.6 | 30.0 | 16.1 | 14.0 | 37.6 | 37.6 | 31 | 33.2 | 6.2 | 6.8 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <11.8 | <10.9 | <11.5 | <11.2 |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 0.7 | 0.7 | 0.2 | <0.3 | <0.4 | 1.3 | 0.8 | 1.5 | 1.0 | 0.7 | 0.5 | 1 | 1.1 | 0.6 | 0.7 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.1 | <1.1 | <1.1 | <1.1 | 1.0 | 1.8 | <1.0 | 0.9 | <1.1 | <1.0 |

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** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

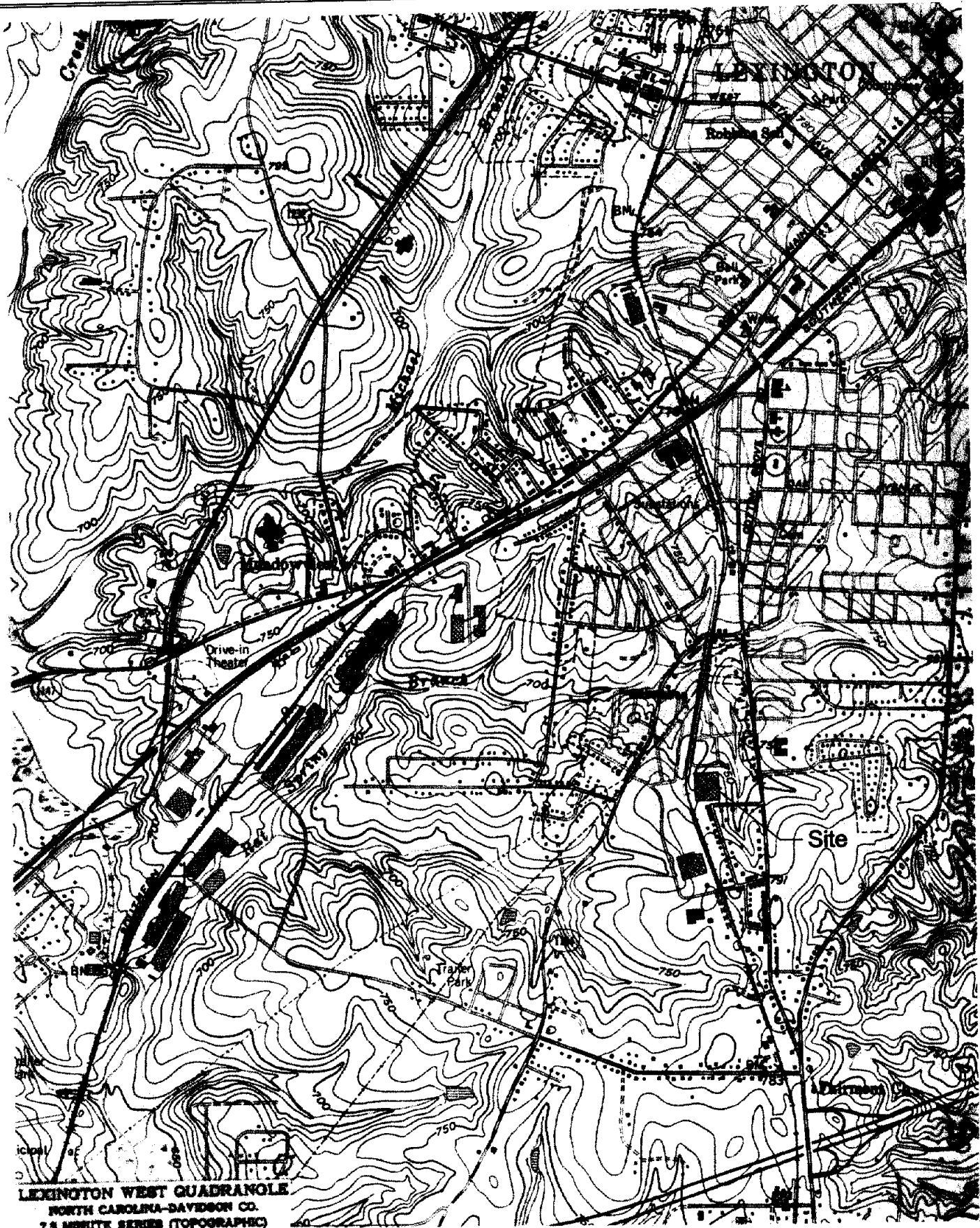
b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level



LEXINGTON WEST QUADRANGLE
 NORTH CAROLINA-DAVIDSON CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)



WATERS EDGE ENVIRONMENTAL, LLC

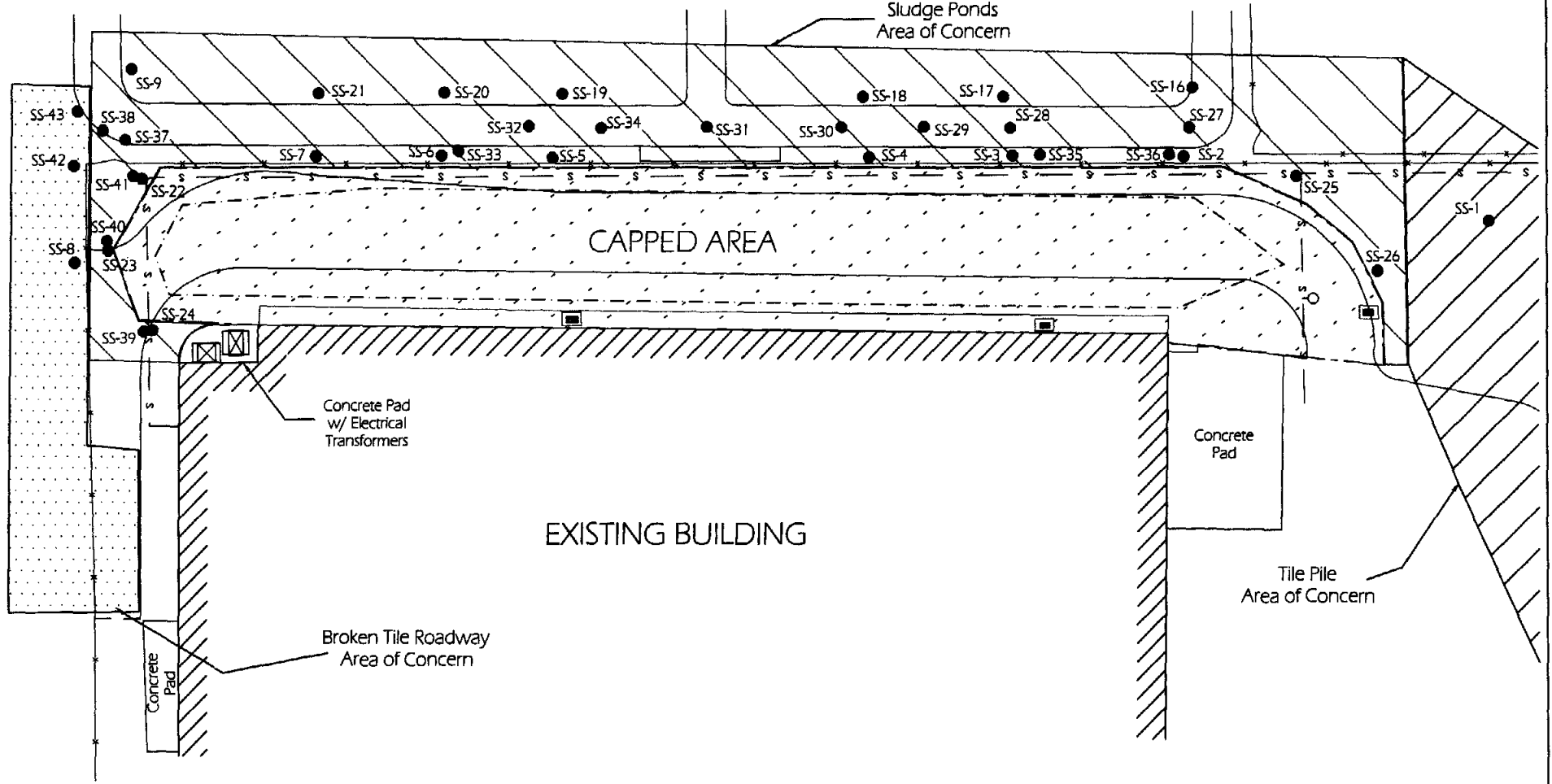
| Author | Drawing | Layers | Date | Title |
|---------|----------|--------|----------|--|
| jme | R1-21 | | 1-24-01 | Project Location Map |
| Job No. | Revision | Figure | Scale | |
| R1-21 | 11-1-02 | 1 | 1"=2000' | Porcelanite, Inc. Lexington, North Carolina |

Project Location Map

Porcelanite, Inc.
 Lexington, North Carolina

CITY OF LEXINGTON CEMETERY

Sludge Ponds Area of Concern



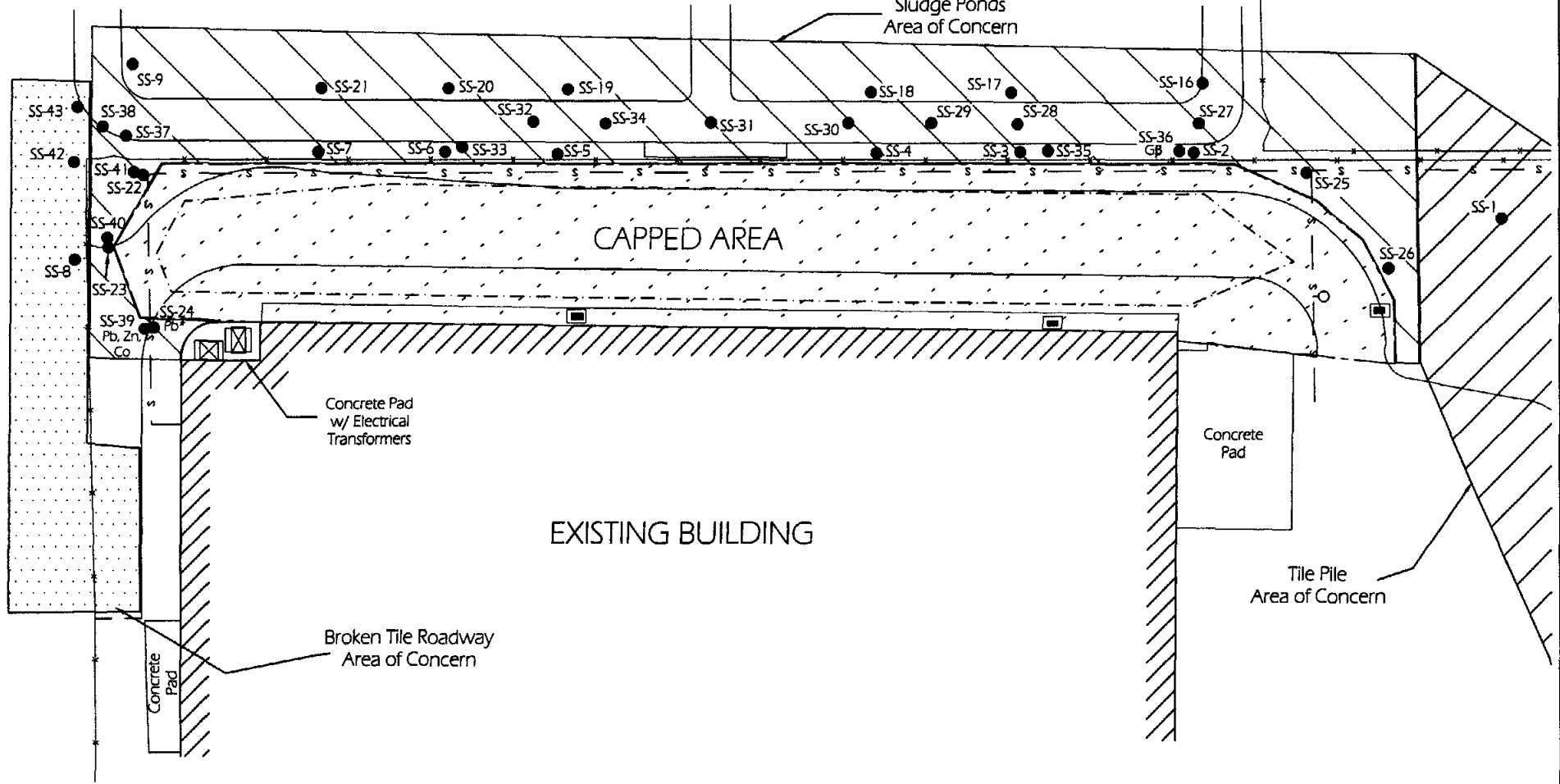
| Legend | |
|-------------------------|---------------------------|
| ● Soil Boring Locations | ▨ Capped Area |
| --- Limit of Cap | ▧ Sludge Pond AOC |
| --- Limit of Waste | ▩ Tile Pile AOC |
| --- Sanitary Sewer Line | ▤ Broken Tile Roadway AOC |



| | | | | | | | | | |
|---------|-------|----------|---------------|--------|---|-------|----------|---------|----------------------------|
| Author | jme | Drawing | 04-074 CAPMod | Layers | | Date | 09-19-02 | Title | Soil Boring Location Map |
| Job No. | R1-21 | Revision | 07-02-04 | Figure | 2 | Scale | 1" = 60' | Project | Adjacent to Former Lagoons |
| | | | | | | | | | Porcelanite |
| | | | | | | | | | Lexington, North Carolina |

CITY OF LEXINGTON CEMETERY

Sludge Ponds
Area of Concern



CAPPED AREA

EXISTING BUILDING

Concrete Pad
w/ Electrical
Transformers

Concrete
Pad

Tile Pile
Area of Concern

Broken Tile Roadway
Area of Concern

Concrete
Pad

| Key | |
|-----------------|-----------|
| Co - Cobalt | Pb - Lead |
| Gβ - Gross Beta | Zn - Zinc |

Note - All Exceedances at 3-ft bgs, except Pb in SS-24 @ 4-ft bgs

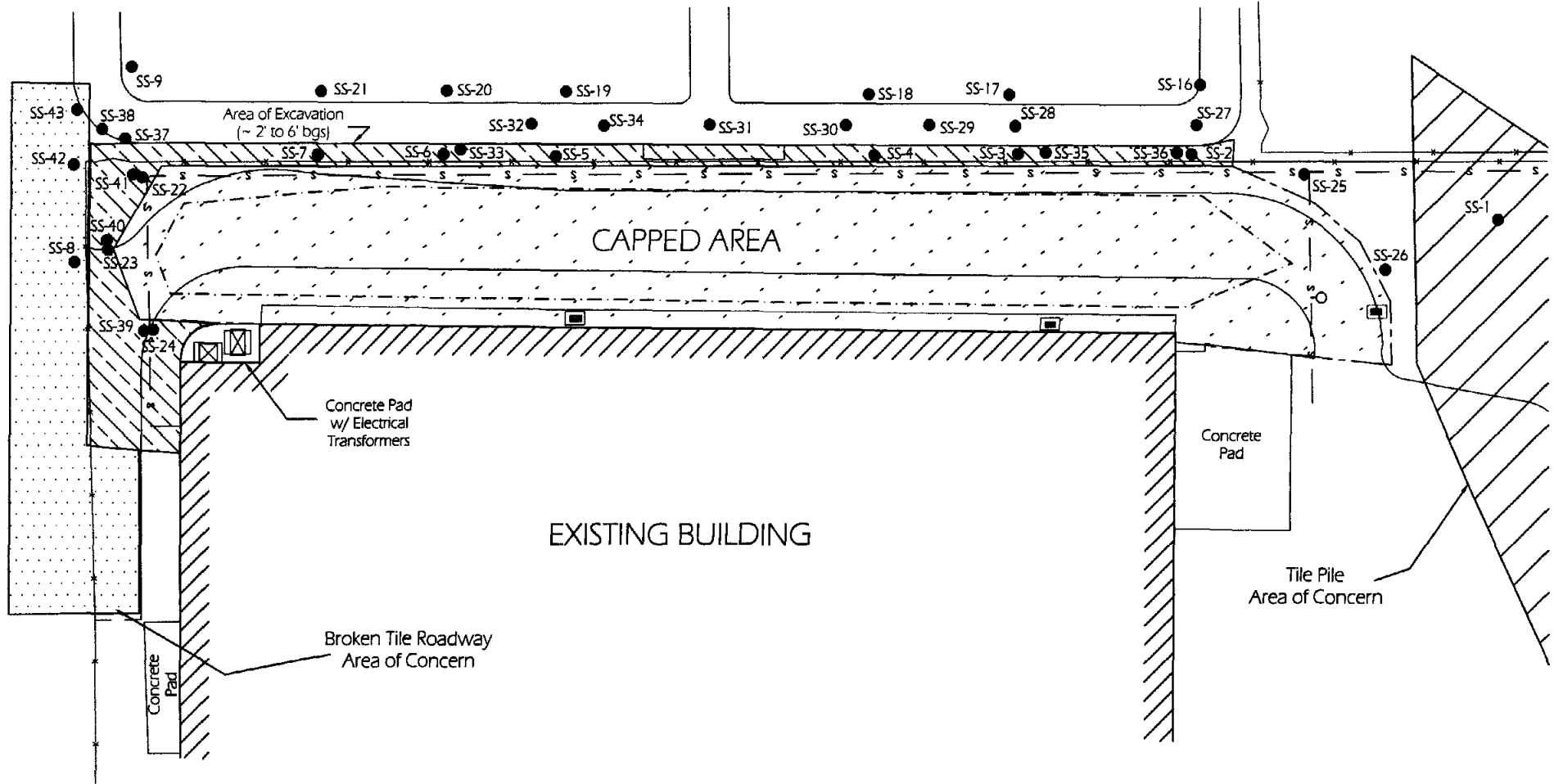
| Legend | |
|-------------------------|--------------------------------|
| ● Soil Boring Locations | SS-6 Soil Boring w/ Exceedance |
| ∩ Limit of Cap | ▨ Sludge Pond AOC |
| ∩ Limit of Waste | ▩ Tile Pile AOC |
| ▨ Capped Area | ▤ Broken Tile Roadway AOC |



WATERS EDGE ENVIRONMENTAL, LLC

| Author | Drawing | Layers | Date | Title |
|---------|---------------|--------|----------|--|
| jme | 04-074 CAPMod | | 09-19-02 | Soil Boring Exceedance Location Map |
| Job No. | Revision | Figure | Scale | Project |
| R1-21 | 07-02-04 | 4 | 1" = 60' | Porcelanite Lexington, North Carolina |

CITY OF LEXINGTON CEMETERY



| Legend | |
|--------|---------------------------|
| ● | Soil Boring Locations |
| ▨ | Capped Area |
| ▧ | Limit of Cap |
| ▩ | Broken Tile Roadway AOC |
| ▪ | Limit of Waste |
| ▫ | Area of Excavation |
| — | Sanitary Sewer Line |
| ⌒ | Limits of Excavation Area |



| | | | | | | | | | |
|---------|-------|----------|---------------|--------|---|-------|----------|---------|--|
| Author | jme | Drawing | 04-074 CAPMod | Layers | | Date | 09-19-02 | Title | Area of Excavation Map |
| Job No. | R1-21 | Revision | 07-02-04 | Figure | 5 | Scale | 1" = 60' | Project | Porcelanite Lexington, North Carolina |

Piedmont Landfill and Recycling Center

9900 Freeman Road
Kernersville, NC 27284
810-595-8677

A Waste Management Company

NON-HAZARDOUS MANIFEST

53369

GENERATOR

Generator Perceonite, Inc. L.D. # _____
 Address 20 Vester St Generator's Shipping Location of Waste _____
Lexington, NC 27292 (If different from generator address)
 Address _____
 Phone 336-434-7750 Phone _____

| Description of Waste Materials | Profile Number | Total Quantity | Unit of Measure | Container Type |
|--------------------------------|----------------|----------------|-----------------|----------------|
| <u>Dial</u> | <u>CM/569</u> | | <u>Trms</u> | <u>Dump</u> |
| | | | | |
| | | | | |
| | | | | |

I hereby certify that the above-described materials are not hazardous wastes as defined by 40.CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Eric D. McManus Eric D. McManus 10-26-00
 Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name South Co Driver Name (Print) Bonnie Brewster
 Address Brentwood St Truck Number 4602
High Point, NC Truck Type _____

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Bonnie Brewster 10-26-00 Bonnie Brewster 10-26-00
 Driver Signature Shipment Date Driver Signature Delivery Date

DESTINATION

Site Name PIEDMONT LANDFILL AND RECYCLING CENTER Phone Number (910) 595-8677
 Address 9900 FREEMAN ROAD, KERNERSVILLE, NC 27284
 Disposal Location: SAME

I hereby acknowledge receipt of the above-described materials.

Piedmont Landfill and Recycling Center
9900 Freeman Road
Kernersville, NC 27284

Authorized Agent

Brewster 10/26/00
 Signature Receipt Date

Piedmont Landfill and Recycling Center
9900 Freeman Road
Kernersville, NC 27284
910-595-6677

Box 20-1

A Waste Management Company NON-HAZARDOUS MANIFEST

53370

GENERATOR

Generator Percolonite Inc L.D. # _____
Address 20 Victor St Generator's Shipping Location of Waste _____
Beaufort, NC (if different from generator address)
Address _____
Phone 336-434-7750 Phone _____

| Description of Waste Materials | Profile Number | Total Quantity | Unit of Measure | Container Type |
|--------------------------------|----------------|----------------|-----------------|----------------|
| <u>Soil</u> | <u>CM1569</u> | | <u>Tons</u> | <u>Dump</u> |
| | | | | |
| | | | | |
| | | | | |

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

E. D. Memonis Generator Authorized Agent Name (Print) E. D. Memonis Signature 10-28-00 Delivery Date

TRANSPORTER

Transporter Name South Co. Driver Name (Print) Ronnie Brewer
Address Brentwood St Truck Number 4602
High Point, NC Truck Type _____

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Ronnie Brewer Driver Signature 10-28-00 Shipment Date Ronnie Brewer Driver Signature 10-29-00 Delivery Date

DESTINATION

Site Name PIEDMONT LANDFILL AND RECYCLING CENTER Phone Number (910) 595-6677
Address 9900 FREEMAN ROAD, KERNERSVILLE, NC 27284
Disposal Location: SAME

I hereby acknowledge receipt of the above-described materials.

Piedmont Landfill and Recycling Center
9900 Freeman Road
Kernersville, NC 27284

Authorized Agent _____ Signature JA Buss Receipt Date 10/30/00

Piedmont Landfill and Recycling Center

9900 Freeman Road
Kernersville, NC 27284
910-595-6677

A Waste Management Company

NON-HAZARDOUS MANIFEST

53371

GENERATOR

Generator: Pavelonite Inc. L.D. # _____
 Address: 20 Victoria St. Generator's Shipping Location of Waste _____
Selington, NC (if different from generator address)
 Address: _____
 Phone: 336-434-7750 Phone: _____

| Description of Waste Materials | Profile Number | Total Quantity | Unit of Measure | Container Type |
|--------------------------------|----------------|----------------|-----------------|----------------|
| <u>Soil</u> | <u>CM1569</u> | | <u>tons</u> | <u>Dump</u> |
| | | | | |
| | | | | |
| | | | | |

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

E. D. M. Marks E. D. Marks 10/26/00
 Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name: A. Dew Driver Name (Print): Guy Summers
 Address: 2718 Winton Rd. Truck Number: 02
Wah Point, NC Truck Type: DT

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Guy Summers _____ Wah Point, NC _____
 Driver Signature Shipment Date Driver Signature Delivery Date

DESTINATION

Site Name: PIEDMONT LANDFILL AND RECYCLING CENTER Phone Number: (910) 595-6677
 Address: 9900 FREEMAN ROAD, KERNERSVILLE, NC 27284
 Disposal Location: SAME

I hereby acknowledge receipt of the above-described materials.

Piedmont Landfill and Recycling Center
9900 Freeman Road
Kernersville, NC 27284

Authorized Agent

[Signature] 11/27/00
 Signature Receipt Date

Piedmont Landfill and Recycling Center

9900 Freeman Road
Kernersville, NC 27284
910-595-6677

BOY 214

A Waste Management Company **NON-HAZARDOUS MANIFEST**

53378

GENERATOR

Generator Pardolomite Inc L.D. # _____
 Address 20 N. Main St Generator's Shipping Location of Waste _____
Lexington, NC 27292 (If different from generator address)
 Address _____
 Phone _____ Phone _____

| Description of Waste Materials | Profile Number | Total Quantity | Unit of Measure | Container Type |
|--------------------------------|----------------|----------------|-----------------|----------------|
| Soil | CM150A | | Tons | Dump |
| | | | | |
| | | | | |
| | | | | |

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Eric D. McManus Eric D. McManus 10-26-00
 Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name South Co. Driver Name (Print) Ronnie Beeler
 Address Brentwood St Truck Number 4607
High Point, NC Truck Type _____

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Ronnie Beeler 10-26-00 Ronnie Beeler 10-30-00
 Driver Signature Shipment Date Driver Signature Delivery Date

DESTINATION

Site Name PIEDMONT LANDFILL AND RECYCLING CENTER Phone Number (910) 595-6677
 Address 9900 FREEMAN ROAD, KERNERSVILLE, NC 27284
 Disposal Location: SAME

I hereby acknowledge receipt of the above-described materials.

Piedmont Landfill and Recycling Center
9900 Freeman Road
Kernersville, NC 27284

 Authorized Agent Signature Receipt Date

Piedmont Landfill and Recycling Center

9900 Freeman Road
Kernersville, NC 27284
910-595-6677

21 240

17690

A Waste Management Company: **NON-HAZARDOUS MANIFEST**

GENERATOR

Generator: Powelton Inc. LD. # _____
 Address: 20 Victor St. Generator's Shipping Location of Waste _____
Sevington, NC (if different from generator address)
 Address: _____
 Phone: 336-434-7750 Phone: _____

| Description of Waste Materials | Profile Number | Total Quantity | Unit of Measure | Container Type |
|--------------------------------|----------------|----------------|-----------------|----------------|
| <u>Soil</u> | <u>CM1569</u> | <u>17.73</u> | <u>tons</u> | <u>Dump</u> |
| | | | | |
| | | | | |
| | | | | |

I hereby certify that the above-described materials are not hazardous wastes as defined by 40 CFR Part 261 or any applicable state law, have been fully and accurately described, classified and packaged, and are in proper condition for transportation according to applicable regulations.

Eric D. M. Marcus Eric D. Marcus 10-26-00
 Generator Authorized Agent Name (Print) Signature Delivery Date

TRANSPORTER

Transporter Name: A + D Env. Driver Name (Print): Guy Summers
 Address: 2718 Mechanic Dr. Truck Number: 07
High Point, NC Truck Type: DT

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above. I hereby acknowledge that the above-described materials were received from the generator site and were transported without incident to the destination listed below.

Guy Summers 10-26-00 Guy Summers 10-26-00
 Driver Signature Shipment Date Driver Signature Delivery Date

DESTINATION

Site Name: PIEDMONT LANDFILL AND RECYCLING CENTER Phone Number: (910) 595-6677
 Address: 9900 FREEMAN ROAD, KERNERSVILLE, NC 27284
 Disposal Location: SAME

I hereby acknowledge receipt of the above-described materials.

Piedmont Landfill and Recycling Center
 9900 Freeman Road
 Kernersville, NC 27284

 Authorized Agent Signature Receipt Date

"waste I delivered to this facility on this date does not contain regulated hazardous, toxic, radioactive wastes or substances, or other non-allowable wastes. I also agree to remove any non-allowable wastes I bring to this facility, or pay, all costs for proper removal of such wastes, upon request from this facility."

DRIVER: PLEASE SIGN HERE

5551369

Erica Burton

Piedmont Landfill
9900 Freeman Road
Kernersville, NC 27284-0000

Page: 01 of 01

TICKET NUMBER
0217307
ORIGINAL

| TRUCK NAME | TRUCK # | OPERATOR | ARRIVING | DEPARTING | DATE |
|---------------------|---------|----------|----------|-----------|------------|
| SOUTHCO ENTERPRISES | 4604 | EAB | 1:46PM | 2:10PM | 10/30/2000 |

PORCELANITE GROSS Lbs : 72,540.00 IN-2
TARE Lbs : 43,780.00 OUT-2

NET Lbs : 28,760.00

A & D 0004461

NC PUBLIC WEIGHMASTER EXP. 6/30/01

HAVE A LOVELY DAY!!

ADJUSTED Lbs : 28,760.00

ERICA ALAYNE BURTON

DAVIDSON COUNTY RESOURCES OTHER INFORMATION

DAVIDSON COUNTY



CM 1569 SOIL
MANIF. 53378

WASTE MANAGEMENT 27.2, 1.0, 885

| ITEM # | DESCRIPTION | QUANTITY | MEASURE | ESTIMATE | AMOUNT |
|--------|----------------|----------|---------|----------|--------|
| 691 | -SPECIAL WASTE | 14.38 | TONS | | |

"I certify that the waste I delivered to this facility on this date does not contain any regulated, hazardous, toxic, radioactive wastes or substances, or other non-allowable wastes. I also agree to remove any non-allowable wastes I bring to this facility, or pay all costs for proper removal of such wastes, upon request from this facility."

DRIVER: PLEASE SIGN HERE

[Signature]

5550932

Piedmont Landfill
 9900 Freeman Road
 Kernersville, NC 27284-0000

Page: 01 of 01

0216874

ORIGINAL

| HAZARDOUS NAME | TRUCK # | OPERATOR | TIME IN | TIME OUT | DATE |
|---------------------|---------|----------|---------|----------|------------|
| SOUTHCO ENTERPRISES | 4602 | NJB | 12:14PM | 12:47PM | 10/26/2000 |

PORCELANITE

GROSS Lbs : 85,460.00 IN-2
 TARE Lbs : 41,880.00 OUT-1
 NET Lbs : 43,580.00

A & D 0004461

NC PUBLIC WEIGHMASTER EXP. 06/30/01
 PLEASE FOLLOW ALL REQUEST BY PLF

ADJUSTED Lbs : 43,580.00

NINA BUTLER

DAVIDSON COUNTY

WMM CM 1569 SOIL
 MANIF 53369

WASTE MANAGEMENT CELL GRID# 27.2, I. 0, 885

| MATERIAL CODE/DESCRIPTION | QUANTITY | MEASURE | DATE | AMOUNT |
|---------------------------|----------|---------|------|--------|
| 601 -SPECIAL WASTE | 21.79 | TONS | | |

I certify that the waste I delivered to this facility on this date does not contain any regulated hazardous, toxic, radioactive wastes or substances, or other non-allowable wastes. I also agree to remove any non-allowable wastes I bring to this facility, or pay all costs for proper removal of such wastes, upon request from this facility.

DRIVER: PLEASE SIGN HERE

Wendy [Signature]

5551125

Piedmont Landfill
9900 Freeman Road
Kannerville, NC 27284-0000

Page: 01 of 01

0217066

ORIGINAL

| WASTE NUMBER | WASTE NAME | FACTOR | OPERATOR | SCALE | TIME DOWN | SCALE DATE |
|-------------------|------------|--------|----------|--------|-----------|------------|
| A&D ENVIRONMENTAL | | D-2 | EAB | 1:30PM | 1:31PM | 10/27/2000 |

PORCELANITE
 GROSS Lbs : 56,740.00 IN-1
 TARE Lbs : 29,540.00 OUT-0
 NET Lbs : 27,200.00

A & D 0004461

NC PUBLIC WEIGHMASTER EXP. 6/30/01
HAVE A LOVELY DAY!!

ADJUSTED Lbs : 27,200.00

ERIC RAYNE BURTON

DAVIDSON COUNTY



CM 1569 SOIL
MANIF 53371

WASTE MANAGEMENT 27.2, 1.0, 885

| MATERIAL CODE | DESCRIPTION | QUANTITY | UNITS | WEIGHT | DATE | LOCATION |
|---------------|----------------|----------|-------|--------|------|----------|
| 681 | -SPECIAL WASTE | 13.60 | TONS | | | |

"I certify that the waste I delivered to this facility on this date does not contain any regulated hazardous, toxic, radioactive wastes or substances, or other non-allowable wastes. I also agree to remove any non-allowable wastes I bring to this facility, or pay all costs for proper removal of such wastes, upon request from this facility."

DRIVER: PLEASE SIGN HERE

[Signature]

5550916

Piedmont Landfill
 9900 Freeman Road
 Kernersville, NC 27284-0000

Page: 01 of 01

0216858

ORIGINAL

| | | | | | | | | | | |
|---|--|--------------|--|---|-----------------|-----|-----|---------|---------|------------|
| A&D ENVIRONMENTAL | | | | | | D-2 | NJB | 11:59AM | 12:14PM | 10/26/2000 |
| PORCELANITE | | GROSS Lbs | | : | 65,000.00 IN-1 | | | | | |
| | | TARE Lbs | | : | 29,540.00 OUT-1 | | | | | |
| | | NET Lbs | | : | 35,460.00 | | | | | |
| A & D | | 0004451 | | | | | | | | |
| NC PUBLIC WEIGHMASTER EXP. 06/30/01 PLEASE FOLLOW ALL REQUEST BY PLF | | | | | | | | | | |
| NINA BUTLER | | ADJUSTED Lbs | | : | 35,460.00 | | | | | |

DAVIDSON COUNTY

WMM

CM 1589 SOIL
 MANIF 17690

WASTE MANAGEMENT

JULY 27, 1985

| | | | | | |
|-----|----------------|-------|------|--|--|
| 681 | -SPECIAL WASTE | 17.73 | TONS | | |
|-----|----------------|-------|------|--|--|

**Proposed Modification to the Closure Plan
Lagoon Closure Activities
Porcelanite, Inc.
Lexington, North Carolina
November 5, 2002**

Prepared For

**Porcelanite, Inc.
Lexington, North Carolina**

Prepared By

**Waters Edge Environmental, LLC
Raleigh, North Carolina**

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Appendix

| <u>Appendix</u> | <u>Title</u> |
|-----------------|------------------------------------|
| A | Porcelanite Mercury Correspondence |

2 Site Setting

2.1 Topographic Setting

The site is located in the central portion of the Piedmont Physiographic province in North Carolina. The Piedmont region is characterized by rolling hill topography. This topography was developed by tectonic uplift and subsequent erosion of the region between the Blue Ridge Mountains and the Atlantic Ocean.

The site lies on the margin of a minor first order stream known as Walltown Drain. Site topography is dictated by the stream valley and is characterized by an average topographic grade of approximately 0.085 foot per foot (ft/ft) sloping to the northeast.

2.2 Geologic Setting

The site is situated in the eastern portion of the Charlotte Lithotectonic Belt, which is a zone of regionally metamorphosed amphibolite facies igneous rocks with a similar character, bounded on the east and west sides by shear zones. According to the Charlotte geologic quadrangle map, Late Proterozoic aged undivided metavolcanic rocks underlie the site. However, bedrock ideologies encountered at the site consist of massive, quartz-potassium feldspar-muscovite granite to granodiorite that are likely associated with the Pennsylvanian to Permian aged Churchland Pluton.

2.3 Hydrogeologic Setting

As is typical of the Piedmont Physiographic Province, ground water occurs in two aquifers at the site. These include the unconsolidated (regolith) shallow aquifer water table and the underlying fractured bedrock deep aquifer. These two aquifers are directly interconnected and are not separated by a confining layer at the site. The regolith zone acts as the storage reservoir for the underlying bedrock zone, thus recharging the bedrock aquifer in response to any withdrawal of water from the bedrock. Ground water in the shallow aquifer has been mapped to illustrate the direction and gradient of ground water flow from the most recent quarterly sampling round in September 2002 (see the *Third Quarter 2002 Monitoring Report* for Porcelanite, Inc. submitted by Waters Edge on October 30, 2002). Ground water in the aquifer flows toward the northeast under a hydraulic gradient measured at 0.030 ft/ft. The local point of shallow ground water discharge from the aquifer appears to be Walltown Drain. Recharge to the aquifer occurs as surface water infiltrates through the unconsolidated (regolith) zone from higher topographic regions southwest of the site. Based upon slug testing conducted on existing monitoring wells at the site, the hydraulic conductivity of the regolith water table aquifer is approximately 0.4 ft/day.

Ground water monitoring has been conducted at the site since 1989. A total of 18 monitoring wells are currently being utilized to monitor the ground water including eight wells hydraulically cross-gradient and downgradient of the closed sludge ponds (MW-3A, MW-9, MW-10, MW-11, MW-12, MW-13, MW-14 and MW-28). It is estimated that the shallow ground water at the site is approximately 20 feet below ground surface (bgs) in the area of the closed sludge ponds.

3 Soil Boring Investigations

Since 1994, a total of 53 borings have been conducted adjacent to the former lagoons, which are depicted in Figures 2 and 3. We have also conducted four background soil borings at areas on the site, which are felt to be background borings unaffected by past operations (see Figure 2). Most of the borings were sampled for the constituent list presented as part of closure, which is comprised of 17 inorganic constituents and originally 5 radionuclides. Praseodymium was subsequently dropped at a point during these investigation activities since it was not detected in the soils. These borings were sampled at 1' bgs, with selected samples at 3' bgs dependant on whether the 1' interval met the SCS being negotiated at that point in time. Additional borings have been performed at several locations to depths of up to 6' bgs for the purpose of determining the vertical extent of contamination at locations with SCS exceedances at the 3' depth. The results are summarized in Table 1 and the current closure standard exceedances for the 1' and 3'-6' depths are depicted in Figure 4 and 5 respectively.

4 Limited Risk-Based Assessment

Based on the current soil boring cleanup objectives proposed by NCDENR, we have included a discussion of the soil analytical results versus the SCS objective on a constituent by constituent basis.

4.1 Arsenic

All 53 investigation soil samples collected adjacent to the former sludge ponds and four background soil borings were below the PQL ranging between 0.894 mg/kg and 3.75 mg/kg. Since all results were below the PQL, this meets the arsenic SCS proposed by NCDENR even though all of the PQLs would be above the Region 9 Residential Preliminary Remediation Goal (PRG) of 0.39 mg/kg; however, all of the arsenic levels are below the Region 9 Industrial PRG of 2.7 mg/kg.

4.9 Manganese

Three of the 53 investigation soil borings exceed the manganese SCS of 384.5 mg/kg. This is at SS-2 (0-1' bgs) at 392 mg/kg, SS-33 (0-1' bgs) at 408 mg/kg and SS-41 (0-1' bgs) at 519 mg/kg. SS-35 is adjacent to SS-3 and meets the manganese SCS at 3' bgs, SS-33 met the manganese SCS at 3' bgs and SS-41 met the manganese SCS at 3' bgs, therefore the extent appears to be very limited. These manganese levels are below the industrial and residential soil ingestion levels of 47,000 mg/kg and 1,800 mg/kg respectively. Past ground water sampling indicates that manganese has been detected above NCGS standards in the adjacent monitoring wells (MW-3A, MW-9, MW-12, MW28). Further investigation is not warranted and the soil exceeding the SCSs will be removed and disposed in accordance with local, state and federal regulations at SS-2, SS-33 and SS-41.

4.10 Mercury

Nine of the 53 investigation soil borings exceed the mercury SCS of 1.23 mg/kg. This is at SS-3 (0-1' bgs) at 1.28 mg/kg, SS-22 (0-1' bgs) at 2.62 mg/kg, SS-25 (0-1' bgs) at 1.28 mg/kg, SS-26 (0-1' bgs) at 4.02 mg/kg, SS-29 (0-1' bgs) at 2.19 mg/kg, SS-33 (0-1' bgs) at 1.41 mg/kg, SS-35 (0-1' bgs) at 3.67 mg/kg, SS-36 (0-1' bgs) at 1.43 mg/kg, and SS-37 (0-1' bgs) at 2.65 mg/kg. These mercury levels are all below one of the background soil samples, which detected 5.54 mg/kg but was considered a statistical outlier. Porcelanite has also documented (attached document in Appendix A) that mercury was never contained in any of their processes or waste materials. Therefore, we would conclude that the detection of mercury in these soil samples are due to background conditions and no further consideration be given to further investigation or remediation.

4.11 Nickel

All 53 investigation soil borings were less than the nickel SCS of 56.4 mg/kg. Past ground water sampling indicates that nickel has not exceeded NCGS standards in the adjacent monitoring wells. No further investigation or remediation is warranted.

4.12 Selenium

All 53 investigation soil borings were less than the selenium SCS of 12.2 mg/kg. Past ground water sampling indicates that selenium has not exceeded NCGS standards in the adjacent monitoring wells. No further investigation or remediation is warranted.

4.16 Vanadium

All 53 investigation soil borings were less than the vanadium SCS at 550 mg/kg. Past ground water sampling indicates that vanadium has not exceeded NCGS standards in the adjacent monitoring wells. No further investigation or remediation is warranted.

4.17 Zinc

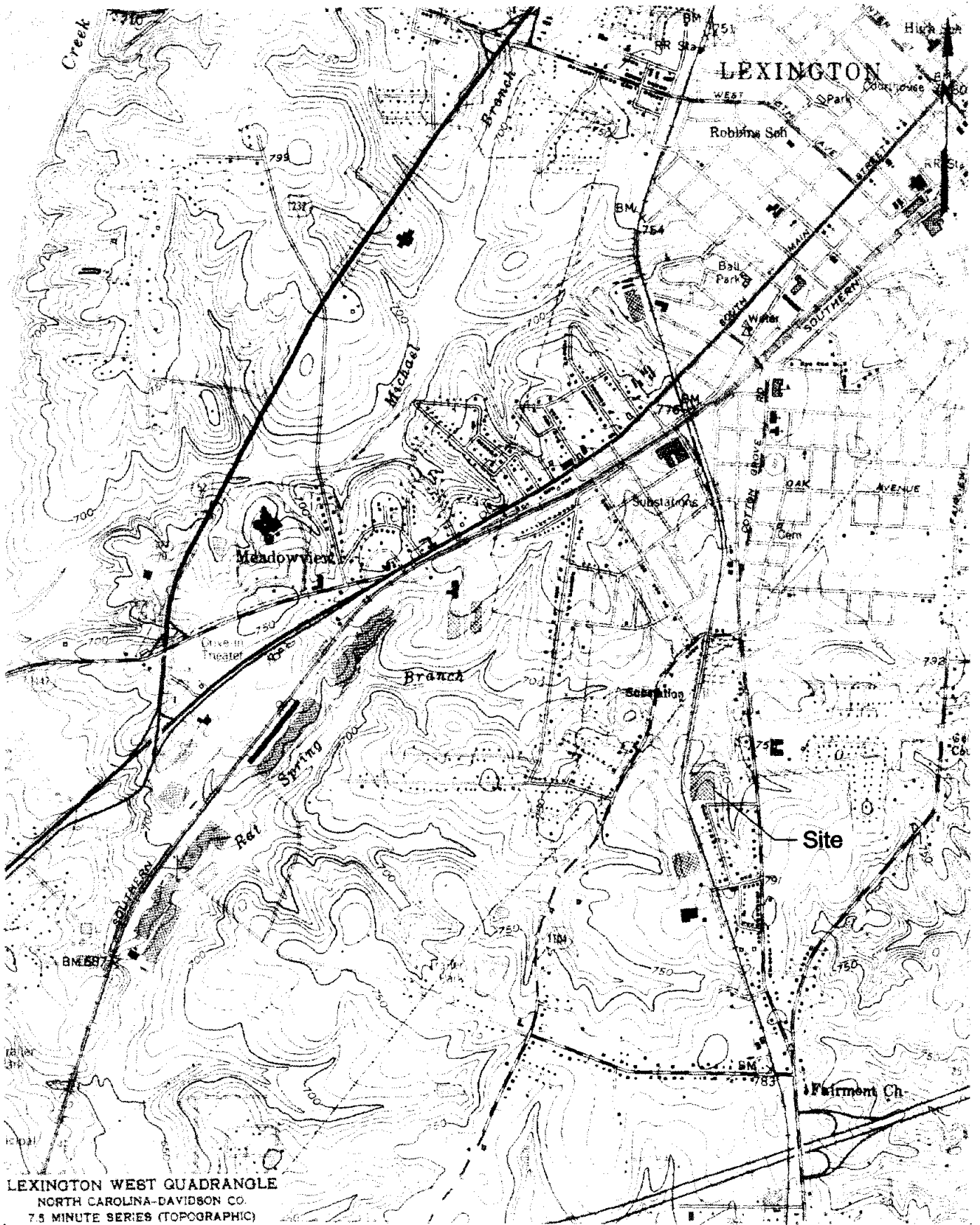
Five of the 53 investigation soil borings exceed the zinc SCS of 1,100 mg/kg. This is at SS-2 (0-1' bgs) at 2,290 mg/kg, SS-5 (0-1' bgs) at 3,680 mg/kg, SS-8 (0-1' bgs) at 5,230 mg/kg, SS-22 (0-1' bgs) at 7,020 mg/kg, and SS-24 (3' bgs) at 1,200 mg/kg. SS-36 is adjacent to SS-2 and meets the zinc SCS at 3' bgs, SS-34 is adjacent to SS-5 and meets the zinc SCS at 3' bgs, SS-8 is not considered part of the sludge pond closure process and will be handled as another area of concern in future investigation activities (e.g. broken tile roadway), SS-41 is adjacent to SS-22 and meets the zinc SCS at 3' bgs and SS-24 meets the SCS at 4' and 6' bgs (1,070 mg/kg and 710 mg/kg respectively). These zinc levels are below the industrial and residential soil ingestion levels of 610,000 mg/kg and 23,000 mg/kg respectively. Past ground water sampling indicates that zinc has been detected above NCGS standards in the adjacent monitoring well MW-12. Further investigation is not warranted and the soil will be removed and disposed in accordance with local, state and federal regulations at SS-2, SS-5, SS-22 and SS-24.

4.18 Gross Alpha

One of the 53 investigation soil borings exceeds the gross alpha SCS of 50 pCi/g. This is at SS-36 (0-1' bgs) at 64.8 pCi/g. SS-36 at 3' bgs meets the gross alpha SCS, therefore the extent appears to be very limited. There are no published industrial and residential soil ingestion levels for gross alpha. Past ground water sampling indicates that gross alpha has not exceeded NCGS standards in the adjacent monitoring wells. No further investigation or remediation is warranted due to the limited SCS exceedances.

4.19 Gross Beta

One of the 53 investigation soil borings exceeds the gross beta SCS of 50 pCi/g. This is at SS-36 (3' bgs) at 55.6 pCi/g. There is no deeper boring; however, this only exceedance is very close to the SCS. There are no published industrial and residential soil ingestion levels for any gross beta. Past ground water sampling indicates that gross beta has exceeded NCGS standards in the adjacent monitoring wells (MW-1, MW-3A, MW-9, MW-12 and MW-28). No further investigation or remediation is warranted due to the limited SCS exceedances.



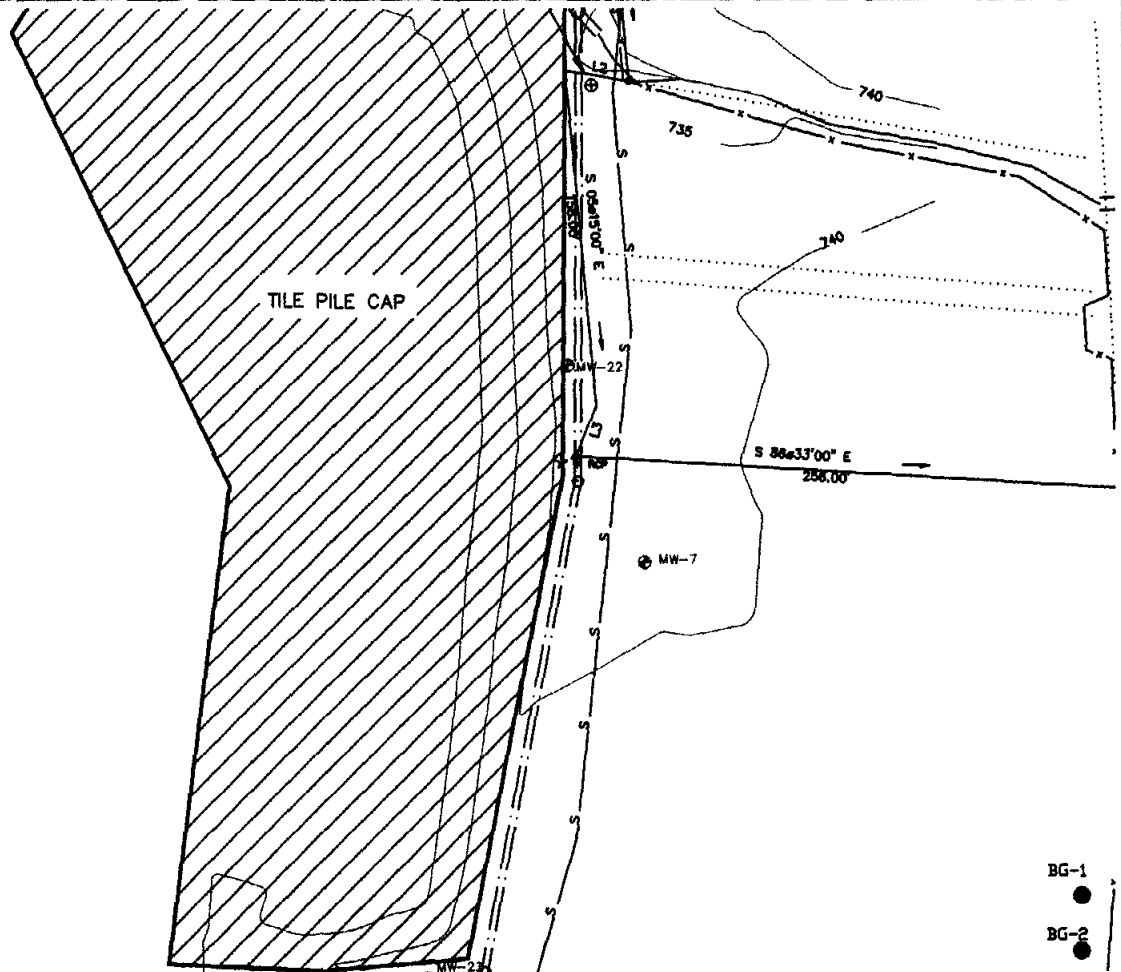
LEXINGTON WEST QUADRANGLE
 NORTH CAROLINA-DAVIDSON CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)



| Author | Drawing | Layers | Date | Title |
|---------|----------|--------|----------|--|
| jme | R1-21 | | 1-24-01 | Site Location Map |
| Job No. | Revision | Figure | Scale | |
| R1-21 | 11-1-02 | 1 | 1"=2000' | Porcelanite, Inc. Lexington, North Carolina |



EXISTING BUILDING



GS-3 GS-4

VICTOR ST. R.O.W. VARIES

EDNA ST. 30' R.O.W.

BG-1
BG-2

LEGEND



Background Soil Boring



WATERS EDGE ENVIRONMENTAL, LLC

| | | | | |
|------------------|----------------------|-------------|-------------------|---|
| Author jme | Drawing 0902-F02 | Layers | Date 09-23-96 | Title Background Boring Location Map |
| Job No. R1-21 | Revision 09-25-02 | Figure 2 | Scale 1" = 90' | Project Porcelanite Lexington, North Carolina |



CITY OF LEXINGTON CEMETERY

Sludge Ponds
Area of Concern

CAPPED AREA

EXISTING BUILDING

Concrete Pad
w/ Electrical
Transformers

Concrete
Pad

Tile Pile
Area of Concern

Broken Tile Roadway
Area of Concern

Legend

- Soil Boring Locations
- ▨ Capped Area
- Limit of Cap
- Limit of Waste
- Sanitary Sewer Line
- ▨ Sludge Pond AOC
- ▨ Tile Pile AOC
- ▨ Broken Tile Roadway AOC



WATERS EDGE ENVIRONMENTAL, LLC

| | | | | | | | | | |
|----------------|-------|-----------------|----------|---------------|---|--------------|----------|----------------|--|
| <i>Author</i> | jme | <i>Drawing</i> | 0902-F03 | <i>Layers</i> | | <i>Date</i> | 09-19-02 | <i>Title</i> | Soil Boring Location Map Adjacent to Former Lagoons |
| <i>Job No.</i> | R1-21 | <i>Revision</i> | 09-25-02 | <i>Figure</i> | 3 | <i>Scale</i> | 1" = 60' | <i>Project</i> | Porcelanite Lexington, North Carolina |



CITY OF LEXINGTON CEMETERY

Sludge Ponds
Area of Concern

CAPPED AREA

EXISTING BUILDING

Concrete Pad
w/ Electrical
Transformers

Concrete
Pad

Tile Pile
Area of Concern

Broken Tile Roadway
Area of Concern

Key

| | |
|---------------|---------------------------|
| B - Boron | Mn - Manganese |
| Ba - Barium | Pb - Lead |
| Co - Cobalt | SO ₄ - Sulfate |
| Cr - Chromium | Ti - Titanium |
| Hg - Mercury | Zn - Zinc |

Legend

| | |
|-------------------------|--------------------------------|
| ● Soil Boring Locations | SS-6 Soil Boring w/ Exceedance |
| --- Limit of Cap | ▨ Sludge Pond AOC |
| --- Limit of Waste | ▩ Tile Pile AOC |
| ▭ Capped Area | ▨ Broken Tile Roadway AOC |



| | | | | |
|-------------------------|-----------------------------|--------------------|--------------------------|---|
| <i>Author</i> jme | <i>Drawing</i> 0902-F04 | <i>Layers</i> | <i>Date</i> 09-19-02 | <i>Title</i> Soil Boring Exceedance Location Map 1-ft Depth |
| <i>Job No.</i> R1-21 | <i>Revision</i> 09-25-02 | <i>Figure</i> 4 | <i>Scale</i> 1" = 60' | <i>Project</i> Porcelanite Lexington, North Carolina |



CITY OF LEXINGTON CEMETERY

Sludge Ponds Area of Concern

CAPPED AREA

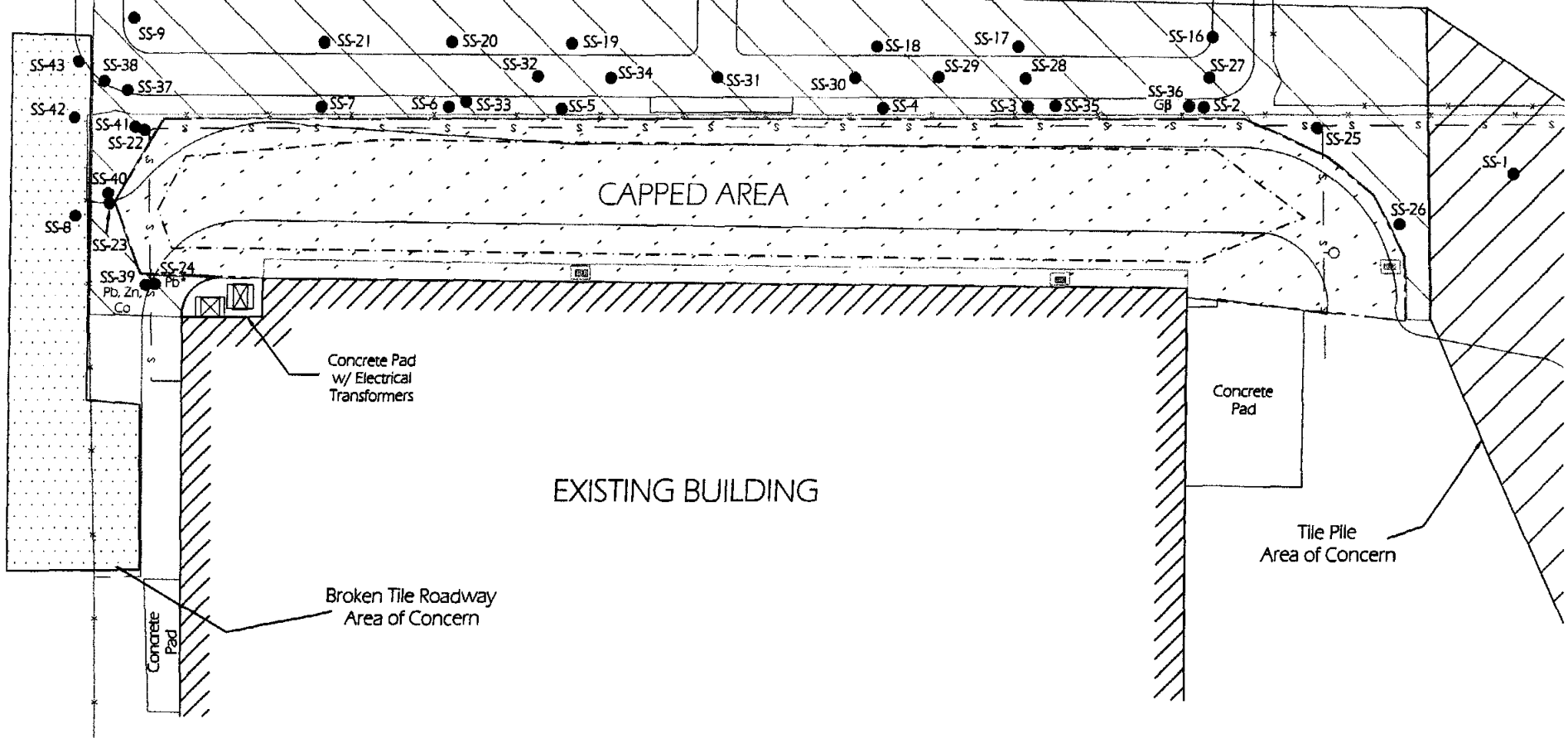
EXISTING BUILDING

Concrete Pad w/ Electrical Transformers

Concrete Pad

Tile Pile Area of Concern

Broken Tile Roadway Area of Concern



| Key | |
|-----------------|-----------|
| Co - Cobalt | Pb - Lead |
| GB - Gross Beta | Zn - Zinc |

Note - All Exceedances at 3-ft bgs, except Pb in SS-24 @ 4-ft bgs

| Legend | |
|-------------------------|--------------------------------|
| ● Soil Boring Locations | SS-6 Soil Boring w/ Exceedance |
| ~ Limit of Cap | ▨ Sludge Pond AOC |
| ~ Limit of Waste | ▩ Tile Pile AOC |
| ▨ Capped Area | ▩ Broken Tile Roadway AOC |

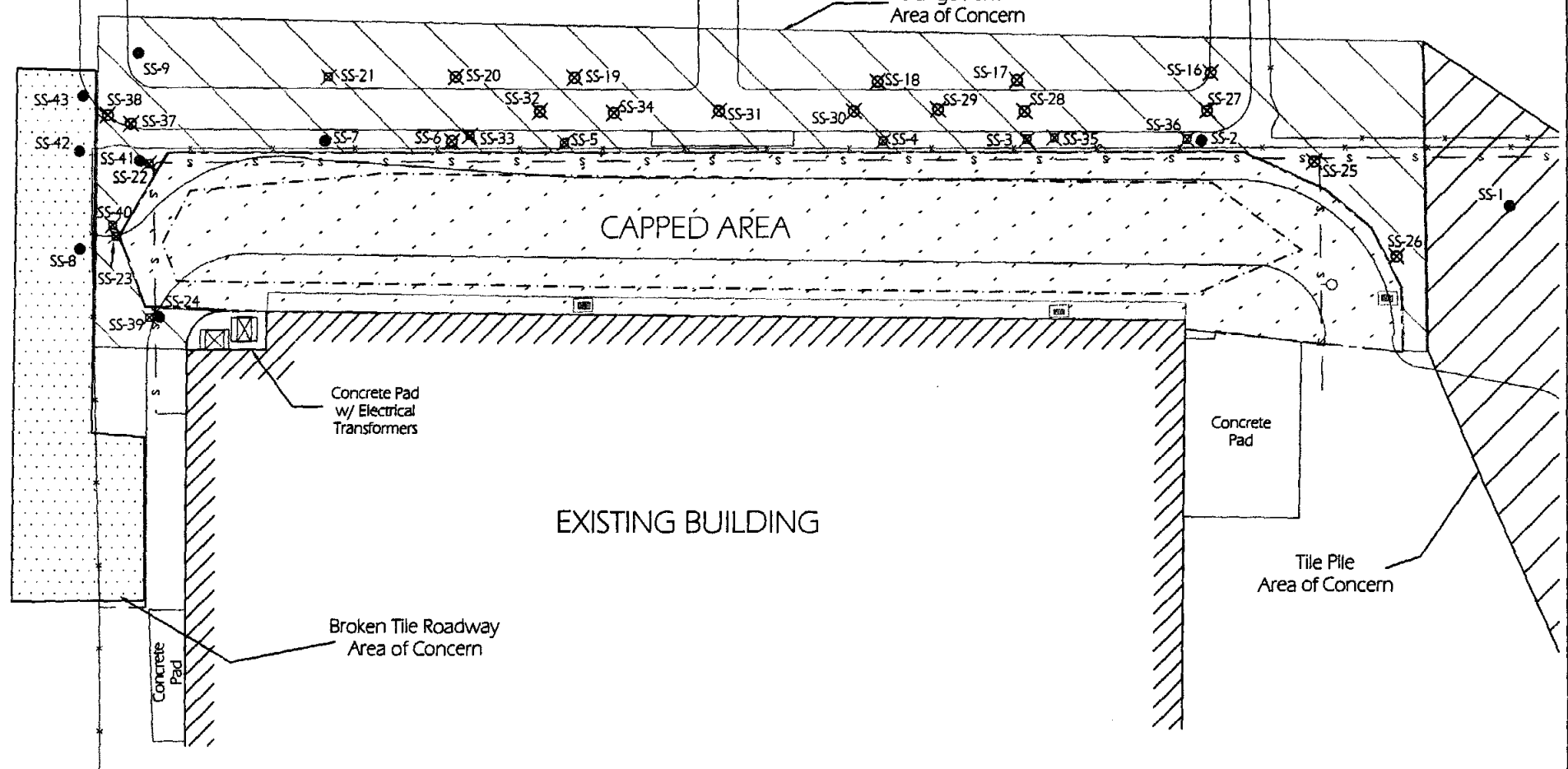


WATERS EDGE ENVIRONMENTAL, LLC

| | | | | |
|------------------|----------------------|-------------|-------------------|--|
| Author jme | Drawing 0902-F05 | Layers | Date 09-19-02 | Title Soil Boring Exceedance Location Map 3-6 ft Depth |
| Job No. R1-21 | Revision 10-28-02 | Figure 5 | Scale 1" = 60' | Project Porcelanite Lexington, North Carolina |

CITY OF LEXINGTON CEMETERY

Sludge Ponds
Area of Concern



| Legend | |
|--------------------------------------|------------------------------|
| ⊗ X-Confirmatory Sample @ 1' | ⊗ X-Confirmatory Sample @ 3' |
| --- Limit of Cap | ▨ Sludge Pond AOC |
| --- Limit of Waste | ▩ Tile Pile AOC |
| ▭ Capped Area | ⋯ Broken Tile Roadway AOC |
| ● Additional Soil Sampling Locations | |



WATERS EDGE ENVIRONMENTAL, LLC

| | | | | |
|------------------|----------------------|-------------|-------------------|---|
| Author jme | Drawing 0902-F06 | Layers | Date 09-19-02 | Title "X" Confirmatory Sampling Location Map |
| Job No. R1-21 | Revision 09-25-02 | Figure 6 | Scale 1" = 60' | Project Porcelanite Lexington, North Carolina |

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-1 | SS-2 | SS-3 | SS-4 | SS-4-2 | SS-4-2 | SS-5 | SS-6 | SS-7 | SS-7-2 | SS-7-2 | SS-8 | SS-9 | SS-16 | SS-17 |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|-----------------|-----------------|-----------------|---------------|---------------|-----------------|-----------------|-----------------|---------------|---------------|-----------------|-----------------|------------------|------------------|
| | | | | | 0-1' 5/27/94 | 0-1' 11/4/99 | 0-1' 11/4/99 | 0-1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0-1' 11/4/99 | 0-1' 11/4/99 | 0-1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0-1' 5/27/94 | 0-1' 5/27/94 | 0-1' 11/10/99 | 0-1' 11/10/99 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <3.62 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <3.73 | <3.75 | <1.13 | <1.15 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 80.1 | 246 | 149 | 47.7 | NA | NA | 373 | 64.3 | 146 | NA | NA | 186 | 31.7 | 25.3 | 21.8 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 26 | 30.9 | 61.9 | 74.2 | NA | NA | <10.5 | 31.6 | <12.7 | NA | NA | 61.2 | 11.2 | 18.2 | <11.5 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.725 | 0.712 | 0.896 | 0.623 | NA | NA | 0.335 | 0.249 | 0.329 | NA | NA | <0.746 | <0.806 | <0.113 | <1.15 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.19 | 15.4 | 33.6 | 33.3 | 8.39 | 6.74 | 4.81 | 8.58 | 13.2 | NA | NA | 8.58 | 4.04 | 8.03 | 6.71 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | <3.82 | 19.9 | 11.3 | 6.48 | NA | NA | 20.9 | 6.96 | 19.9 | NA | NA | 14 | <4.04 | 1.58 | 1.26 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 93.4 | 225 | 207 | 18.5 | NA | NA | 155 | 145 | 397 | <11.8 | 12.6 | 996 | 42.7 | 10.5 | 25.5 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 82.4 | 392 | 298 | 201 | NA | NA | 312 | 290 | 285 | NA | NA | 122 | 278 | 58.4 | 35.1 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | <0.145 | 0.901 | 1.28 | 0.855 | NA | NA | 0.855 | 0.413 | 0.662 | NA | NA | <0.149 | <0.172 | 0.476 | 0.652 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 3.12 | 13.3 | 8.77 | 6.48 | NA | NA | 7.32 | 3.73 | 10.0 | NA | NA | 7.31 | <4.04 | 2.26 | 1.72 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.45 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <1.49 | <1.50 | 2.37 | 1.72 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.725 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA | <0.746 | <0.807 | <1.13 | <1.15 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 168 | 49.9 | <25 | 97.5 | NA | NA | 48.2 | 51.8 | <25 | NA | NA | 537 | 172 | 27.6 | <250 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 92.2 | 789 | 1,040 | 948 | NA | NA | 59 | 453 | 130 | NA | NA | 118 | 36.1 | 39.3 | 43.5 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 33.8 | 66 | 151 | 173 | NA | NA | 12.2 | 56 | 37.6 | NA | NA | 33.2 | 9.62 | 28.7 | 21.6 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 183.71 | 1,100 | 388 | 2,290 | 625 | 330 | NA | NA | 3,680 | 269 | 855 | NA | NA | 6,230 | 39.6 | 62.3 | 111 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 15.4 | 7.7 | 9.3 | 10.6 | NA | NA | 10.8 | 19.5 | 7.7 | NA | NA | 16.3 | 8 | 29.1 | 28.8 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 38.6 | 13.3 | 12.9 | 8.9 | NA | NA | 27.2 | 32.1 | 20.7 | NA | NA | 29 | 33.3 | 38.1 | 47.9 |
| Praseodymium | NL | Method 1820 | MDL | MDL | <6.71 | <11.9 | <12.9 | <12.2 | NA | NA | <10.4 | <12.2 | <12.7 | NA | NA | <7.46 | <7.52 | <11.3 | <11.5 |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 0.6 | 0.7 | 1.4 | 1.5 | NA | NA | 1.2 | 1.0 | 1.6 | NA | NA | 2.2 | 1.2 | 0.7 | 1.1 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | 1.1 | <1.0 | <1.0 | <0.9 | NA | NA | <0.9 | <1.0 | <1.0 | NA | NA | 1.2 | <0.8 | <1.0 | <1.0 |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-18 | SS-19 | SS-20 | SS-21 | SS-22 | SS-23 | SS-24 | SS-24 | SS-24-2 | SS-24-2 | SS-25 | SS-25 | SS-26 | SS-27 | SS-28 |
|---------------------------|--|--------------------------------------|--|-----------------------|------------------|------------------|------------------|------------------|-----------------|------------------|------------------|----------------|---------------|---------------|-----------------|----------------|------------------|-----------------|-----------------|
| | | | | | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/10/99 | 0-1' 11/4/99 | 0-1' 11/18/99 | 0-1' 11/18/99 | 3' 11/18/99 | 4' 9/13/02 | 6' 9/13/02 | 0-1' 11/4/99 | 3' 11/18/99 | 0-1' 11/10/99 | 0-1' 1/19/00 | 0-1' 1/19/00 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.16 | <1.00 | <1.01 | <1.09 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 19.2 | 20.1 | 15.3 | 12 | 1,490 | 47 | 64.8 | 260 | NA | NA | 54.4 | 78.7 | 135 | 18.1 | 8.3 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 13.1 | <10 | <10.1 | 13.6 | 33.8 | <8.94 | 11.1 | 44.2 | NA | NA | 27.2 | 70.4 | <10.1 | 6.09 | 7.41 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.116 | <0.100 | <0.101 | <0.109 | 1.37 | 0.335 | 0.168 | 0.331 | NA | NA | 0.228 | 0.318 | <0.101 | <0.113 | <0.111 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.95 | 3.11 | 2.71 | 10.1 | 8.32 | 18.3 | 17 | 15.9 | NA | NA | 9.44 | 21 | 4.65 | 6.68 | 4.65 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 1.63 | 2.0 | 1.51 | 1.53 | 39.5 | 2,000 | 203 | 285 | 11.4 | 9.96 | 3.23 | 3.37 | 6.27 | 1.35 | <1.11 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 6.16 | 9.02 | 12.7 | 7.08 | 6,630 | 3.58 | 65.9 | 672 | 372 | 170 | 19.4 | 20.2 | 65.2 | 17.2 | 6.19 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 33.4 | 161 | 172 | 42.7 | 225 | 193 | 267 | 235 | NA | NA | 180 | 97 | 189 | 51.5 | 37.2 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 0.488 | <0.200 | <0.201 | <0.218 | 2.62 | <0.179 | <0.189 | <0.194 | NA | NA | 1.28 | 0.404 | 4.02 | 0.904 | 0.592 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.76 | <1.0 | <1.01 | 2.29 | 23.8 | 50.2 | 12.9 | 17.7 | NA | NA | 3.88 | 4.24 | 2.82 | 1.58 | 1.22 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | 1.51 | <1.0 | <1.01 | 2.51 | 1.48 | 1.52 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.16 | <1.0 | <1.01 | <1.09 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 48.1 | <100 | <100 | <25 | 34.8 | 35 | 25.8 | 53 | NA | NA | 30.9 | 62.8 | <250 | 100 | 275 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 21.9 | 15.5 | 17 | 34.4 | 46.4 | 543 | 639 | 451 | NA | NA | 317 | 398 | 23.8 | 106 | 57.5 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 27.8 | 6.91 | 4.83 | 30 | 17.9 | 51.5 | 32.7 | 31.2 | NA | NA | 44.2 | 117 | 9.2 | 26.3 | 26.9 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 34.3 | 13.1 | 21.5 | 17.2 | 7,020 | 28.7 | 131 | 1,200 | 1,070 | 710 | 40 | 417 | 885 | 13.1 | 12.3 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 23.3 | 14.8 | 11.1 | 22.8 | 11.6 | 1.9 | 2.1 | 8.9 | NA | NA | 20.2 | 22.8 | 15.4 | NA | NA |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 36.6 | 40.3 | 36 | 38.1 | 24.4 | 9.9 | 8.6 | 16.3 | NA | NA | 29.8 | 17.3 | 43.5 | NA | NA |
| Praseodymium | NL | Method 1620 | MDL | MDL | <11.6 | <10.0 | <10.1 | <10.9 | <11.4 | NA | <9.42 | <9.63 | NA | NA | <11.5 | <12.5 | <10.1 | NA | NA |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 2.4 | 1.1 | 0.9 | 0.6 | 0.9 | 1.1 | 0.5 | 0.9 | NA | NA | 1.3 | 0.5 | 0.8 | NA | NA |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | 1.0 | 1.1 | <1.0 | 1.5 | 1.0 | <1.1 | <1.0 | <1.1 | NA | NA | <1.0 | <1.1 | <1.0 | NA | NA |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

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NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-29 | SS-30 | SS-31 | SS-32 | SS-33 | SS-33 | SS-34 | SS-34 | SS-36 | SS-36 | SS-36 | SS-36-2 | SS-37 | SS-37 | |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|---------------|
| | | | | | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 1/19/00 | 3' 1/19/00 | 3' 9/13/02 |
| Inorganics (mg/Kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 63.07 | 848 | 13 | 22.9 | 30 | 25.8 | 25.5 | 25.2 | 39.9 | 29.9 | 23.1 | 17.2 | 690 | 10.2 | NA | 14.6 | 5.4 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 11.8 | 7.72 | 8.05 | <5.19 | <5.20 | 12.5 | <5.30 | 19.0 | 107 | 31.9 | 56 | 22.4 | NA | 32.3 | 22.0 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | <10 | <10 | <10 | <10 | ** | <10 | ** | <10 | ** | <10 | ** | NA | <10 | ** |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.113 | <0.107 | <0.105 | <0.104 | <0.098 | 0.159 | <0.106 | <0.105 | <0.122 | 0.228 | <0.126 | 0.162 | NA | <0.120 | <0.120 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 7.13 | 7.29 | 6.66 | 4.15 | 6.97 | 11.0 | 5.08 | 8.42 | 17.1 | 12.2 | 13.2 | 3.86 | NA | 10.2 | 3.6 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 1.92 | 1.29 | 4.23 | 2.7 | 2.26 | 2.35 | 4.45 | 3.05 | 3.42 | 1.86 | 3.42 | 1.87 | NA | 1.32 | <1.20 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 4.87 | 3.75 | 15.9 | 9.12 | 10.5 | 5.44 | 12.5 | 8.21 | 17.5 | 9.16 | 23.5 | 7.36 | NA | 7.46 | 4.2 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 87.9 | 26.5 | 298 | 305 | 408 | 73.5 | 164 | 105 | 120 | 62.7 | 91.5 | 168 | NA | 28.9 | 47.1 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 2.19 | 0.858 | 0.918 | 0.824 | 1.41 | ** | 0.425 | ** | 3.67 | ** | 1.43 | ** | NA | 2.65 | ** |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.81 | 1.29 | 1.16 | <1.04 | <0.982 | 1.71 | 1.17 | 2.63 | 5.74 | 3.01 | 4.43 | 1.64 | NA | 1.56 | <1.20 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | <25 | 43 | <250 | 43.4 | <250 | ** | <250 | ** | 67 | ** | 5,560 | ** | 101 | 36.8 | ** |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 137 | 51.3 | 61.1 | 42.8 | 34.2 | 13.3 | 81.7 | 16.4 | 339 | 150 | 187 | 47.2 | NA | 62.2 | 22.9 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 29.2 | 19 | 12.2 | 6.74 | 6.09 | 21.0 | 8.69 | 22.9 | 210 | 66.1 | 87.7 | 23.8 | NA | 34.2 | 14.7 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 25.4 | 11.7 | 9.31 | 4.15 | 21.6 | 60.3 | 15.5 | 8.1 | 21.7 | 23.7 | 37.1 | 33.0 | NA | 11.4 | 19.9 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | NA | NA | NA | NA | 12.7 | 16.8 | 17.7 | 14.1 | 18.4 | 19.0 | 64.8 | 30.4 | NA | 27.2 | 36.2 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | NA | NA | NA | NA | 39.4 | 32.5 | 42.8 | 32.6 | 15.7 | 23.7 | 48.7 | 55.6 | NA | 34.7 | 42.5 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | NA | NA | NA | NA | 0.5 | 1.2 | 1.4 | 1.0 | 1.0 | 0.9 | 0.5 | 0.8 | NA | 0.7 | 0.6 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | NA | NA | NA | NA | <1.0 | <1.1 | <1.1 | <1.0 | <1.0 | <1.1 | 1.1 | <1.0 | NA | 1.0 | <1.0 |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level

Table 1- Soil Sampling Analytical Results Versus Soil Closure Standard, Porcelanite, Inc., Lexington, NC

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Method Detection Limit (MDL) (mg/kg) | Site Specific Background Levels* + 2X S.D. (mg/kg) | Soil Closure Standard | SS-38 | SS-38 | SS-39 | SS-39 | SS-40 | SS-40 | SS-41 | SS-41 | SS-42 | SS-43 | SS-43 | BG-1 | BG-2 | GS-3 | GS-4 |
|---------------------------|--|--------------------------------------|--|-----------------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|-----------------|---------------|----------|----------|----------|
| | | | | | 0-1' 1/19/00 | 3' 1/19/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 0-1' 2/17/00 | 3' 2/17/00 | 11/10/99 | 11/10/99 | 11/18/99 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 | <1.15 | <1.12 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 25 | 4.62 | 40.2 | <4.19 | 39.5 | 63.5 | 435 | 50.6 | 140 | 34.8 | 55.1 | 19.2 | 43.12 | 67.4 | 45 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 6.55 | <9.82 | <9.53 | <10.5 | <9.39 | <11.3 | <10.8 | <10.4 | 13.0 | <10.3 | <11.1 | 24.3 | <10.9 | 42.4 | 57.3 |
| Bromide | NL | EPA Method 300 | DL (Method 300) | PQL (10) | <10 | ** | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.101 | <0.098 | <0.095 | <0.105 | <0.094 | <0.113 | <0.108 | <0.104 | <0.097 | <0.103 | <0.111 | <0.118 | <0.109 | 0.23 | 0.504 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 8.07 | 3.14 | 12.7 | <1.05 | 16.7 | 3.16 | 4.53 | 8.14 | 11.8 | 6.82 | 8.64 | 11.5 | 6.76 | 18.8 | 20.6 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 2.82 | 1.18 | 6.00 | <1.05 | 8.07 | 9.59 | 5.82 | 10.5 | 9.42 | 3.82 | 3.77 | 2.0 | 2.94 | 8.64 | 20.4 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 7.77 | 5.5 | 4.67 | <0.523 | 1.03 | 11.5 | 44.6 | 20.5 | 239 | 16.8 | 32.7 | 13.4 | 13.2 | 44.1 | 52.7 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 90.5 | 42.0 | 219 | <1.05 | 234 | 4.21 | 519 | 153 | 142 | 302 | 119 | 42.5 | 123 | 183 | 305 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 0.942 | ** | <0.191 | <0.209 | <0.186 | <0.228 | 0.307 | <0.209 | <0.194 | <0.206 | <0.221 | 5.54*** | 0.862 | <0.231 | <0.224 |
| Nickel | 56.4/1,800 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 1.72 | <0.982 | 6.96 | <1.05 | 9.95 | 3.50 | 1.94 | 2.19 | 6.31 | 1.76 | 2.66 | 2.82 | 2.73 | 6.34 | 8.28 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | 2.47 | 1.2 | <1.15 | <1.12 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 | <1.15 | <1.12 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 37.3 | ** | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <100 | <100 | 27 | 57.7 |
| Titanium | NL | Method 200.7 | 996.31 | 996.00 | 47.2 | 13.4 | 357 | <10.5 | 384 | 356 | 24.8 | 28.9 | 84.7 | 22.3 | 28.3 | 65.7 | 181 | 644 | 649 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 16.6 | 9.53 | 20.6 | 1.46 | 22.5 | 33.4 | 7.87 | 16.0 | 20.1 | 12.2 | 25.6 | 45.2 | 27.6 | 89.4 | 148 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 6.56 | 7.76 | 34.9 | 2.83 | 26.2 | 32.3 | 390 | 78.8 | 258 | 21.2 | 9.60 | 149 | 124 | 124 | 101 |
| Radionuclides | | | | | | | | | | | | | | | | | | | |
| Gross Alpha (pCi/g) | 50 | Method 9310 | 33.47 | 50 | 16.1 | 13.6 | <2.3 | <2.0 | <2.2 | 20.3 | 19.8 | 10.0 | 7.9 | 13.3 | 27.4 | 22.4 | 23.5 | 7.9 | 6.1 |
| Gross Beta (pCi/g) | 50 | Method 9310 | 48.92 | 48.92 | 40.6 | 38.9 | 9.1 | 2 | 10.8 | 29.6 | 30.0 | 16.1 | 14.0 | 37.6 | 37.6 | 31 | 33.2 | 6.2 | 6.8 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | <11.8 | <10.9 | <11.5 | <11.2 |
| Radium 226 (pCi/g) | 5 ^c | Method 9315 | 1.33 | 5 | 0.7 | 0.7 | 0.2 | <0.3 | <0.4 | 1.3 | 0.8 | 1.5 | 1.0 | 0.7 | 0.5 | 1 | 1.1 | 0.6 | 0.7 |
| Radium 228 (pCi/g) | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.1 | <1.1 | <1.1 | <1.1 | 1.0 | 1.8 | <1.0 | 0.9 | <1.1 | <1.0 |

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

*** Considered Statistical Outlier - not used

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

DL = Detection Limit

NA = Not Analyzed per December 6, 1999 & September 3, 2002 DENR Correspondence

NL = No Level



1327 Lincoln Drive
High Point, North Carolina
27260-9945

336 • 884-5600
FAX
336 • 812-1984

MANNINGTON®

MANNINGTON WOOD FLOORS

November 4, 2002

Mr. Bob Glaser
H W Facility Management Branch Manager
NC Department of Environment
& Natural Resources
401 Oberlin Road
Raleigh, NC 27605

Re: Porcelanite Tile, Inc.
20 Victor Street
Lexington, NC 27292
EPA ID No. NCD 986 181 451

Dear Mr. Glaser,

This response represents information concerning the Lagoon closure efforts underway at the Porcelanite Tile Facility (formally Mannington Ceramic Tile, Inc.) located in Lexington, Davidson County, in regards to mercury. Mercury was exhibited in soil analytical testing conducted around the Lagoon closure, as well as, background sampling conducted at this location. Research of material safety data sheets for material used during production of ceramic tile at this facility indicate that mercury appears to have never been used, nor was it a part of any material used for manufacturing ceramic tile. The presence of mercury is unknown to anyone who was involved with production at this facility.

Mannington would therefore conclude that mercury is naturally occurring and not due to any of Mannington's past manufacturing or disposal activities.

Sincerely,

Tony Shaw
Environmental/Safety Manager
Mannington Wood Division



North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor
William G. Ross Jr., Secretary

August 10, 2005

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Tony Shaw
Environmental/Safety Manager
Mannington
1327 Lincoln Drive
High Point, North Carolina 27260-9945

Re: Approval of the Settling Ponds Closure Plan
Porcelanite, Inc.
EPA ID # NCD 986 181 451

Dear Mr. Shaw:

This letter is to notify you that the modified closure plan dated November 5, 2002 for the two settling ponds has been reviewed and a public notice of closure was placed in the Lexington Dispatch on August 18, 2004. A comment period of thirty (30) days has since passed without any comments. This office now gives final approval of the modified closure plan which includes risk based cleanup levels for the soil at the site.

It is the understanding of the North Carolina Hazardous Waste Section (HWS) that all closure activities have been completed, including the removal of contaminated soil above the risk-based cleanup levels. Once Porcelanite submits a closure certification report documenting that all closure activities are complete, including the removal of contaminated soil the HWS will issue a closure certification acceptance letter. The certification of closure report must include the survey plat as required by 40 CFR 265.115 and 265.116 respectively.

If you have any questions, please contact Karim Pathan at (919) 508-8558.

Sincerely,

Bud McCarty
Facility Management Branch Head
Hazardous Waste Section

cc: Narindar Kumar, US EPA, Region 4
Alan Klimek, DWQ
Ernie Lawrence, Waste Management Specialist
Robert Hyatt, Davidson County Manager
R. Duke Whisenant Lexington City Manager
Diane Crouse, Davidson County Health Director
Phil Rahn, Water Edge Environmental, Raleigh

rc: Bud McCarty *BM*
Liz Cannon *LC*
Robert L. Glaser *RG*
Karim Pathan *KP*

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone 919-508-8400 \ FAX 919-715-3605 \ Internet <http://wastenotnc.org>

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North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor

William G. Ross Jr., Secretary

February 1, 2006

Mr. Tony Shaw
Environmental/Safety Manager
Mannington
1327 Lincoln Drive
High Point, North Carolina 27260-9945

Re: Settling Ponds Closure Certification
Porcelanite, Inc., Lexington
EPA ID # NCD 986 181 451

Dear Mr. Shaw:

The Hazardous Waste Section (HWS) has reviewed the closure report and the August 9, 2005 closure certification report for the Porcelanite site in Lexington. Because of the several modifications to the closure plan, the closure report includes several documents including: a) the June 20, 1993 Closure report for the Porcelanite settling ponds; b) the proposed modification to the Closure Plan dated November 5, 2002; c) the memo from Sandra Moore to Rosemarie Roberts dated March 17, 2003 discussing the rationale for the amended closure performance standards; d) July 14, 2004 revised Closure Plan; and e) the August 9, 2005 report documenting additional soil excavation. All of these documents together satisfy the closure and closure certification requirements for the settling ponds.

Since the closure certification was submitted Mr. Ernest Lawrence of the HWS conducted a closure inspection on January 5, 2006, and found the facility to be in compliance with the approved closure plan.

With the completion of these activities the HWS accepts the closure certification for the two settling ponds. A copy of this letter will be forwarded to our Financial Unit. They will address details concerning financial assurance for closure under a separate letter.

If you have any questions, please contact Karim Pathan at (919) 508-8558.

Sincerely,

Robert L. Glaser
Unit Supervisor
Facility Management Branch
Hazardous Waste Section

cc: Jon D. Johnston, US EPA, Region 4
Doug Holyfield
Jesse Wells
Jenny Lopp
Ernest Lawrence

rc: Bud McCarty
Robert Glaser
Mary Siedlecki
Karim Pathan

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
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**Appendix I-2- Post-Closure
Plans (SWMU-2 only since
SWMU-3 Post-Closure Plan
incorporated in Closure
Plan in Appendix I-1)**

Post-Closure Care Plan for Settling Ponds

**Mannington Ceramic Tile
Lexington, North Carolina**

Prepared for

Mannington Ceramic Tile

November 17, 1992

**ENSCI Corporation
1108 Old Thomasville Road
High Point, North Carolina 27260
(919) 883-7505**

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1. Introduction

Mannington Ceramic Tile (Mannington) operates a ceramic tile manufacturing facility located in Lexington, North Carolina (see **Figure 1**). Prior to 1990, wastewater which was used in the manufacturing process was treated in settling ponds. ENSCI Corporation developed a Revised Closure Plan for the settling ponds, which was submitted to Mannington in May 1992. This document addresses post-closure care for the settling ponds in accordance with the landfill requirements listed in the code of federal regulations, 40 CFR 265.310. The purpose of the document is to respond to a request from the North Carolina Department of Environment, Health & Natural Resources (DEHNR) for a Post-Closure Plan which is separate from the Revised Closure Plan and which contains some minor modifications.

1.1 Wastewater Treatment Process Description

Prior to January 1, 1990, Mannington discharged wastewater from its Lexington, North Carolina facility into Rat Spring Branch, located in the Yadkin-Pee Dee River Basin, pursuant to National Pollutant Discharge Elimination System (NPDES) permit #NC0006459 (reissued April 24, 1986, with expiration April 30, 1991). The wastewater treatment process under this permit consisted of passing the water through a series of holding ponds which allowed solids to settle prior to discharge into Rat Spring Branch (see **Figure 2**).

On January 1, 1990, after substantial modification of the wastewater treatment system, Mannington voluntarily stopped this discharge and commenced discharging its wastewater into the City of Lexington sewer system. The modified pretreatment process consists of an open-top solids precipitating tank with pH control. Solids generated under the system are run through a filter press and subsequently transported to the Davidson County Sanitary Landfill for disposal. The settling ponds are not used in the modified process.

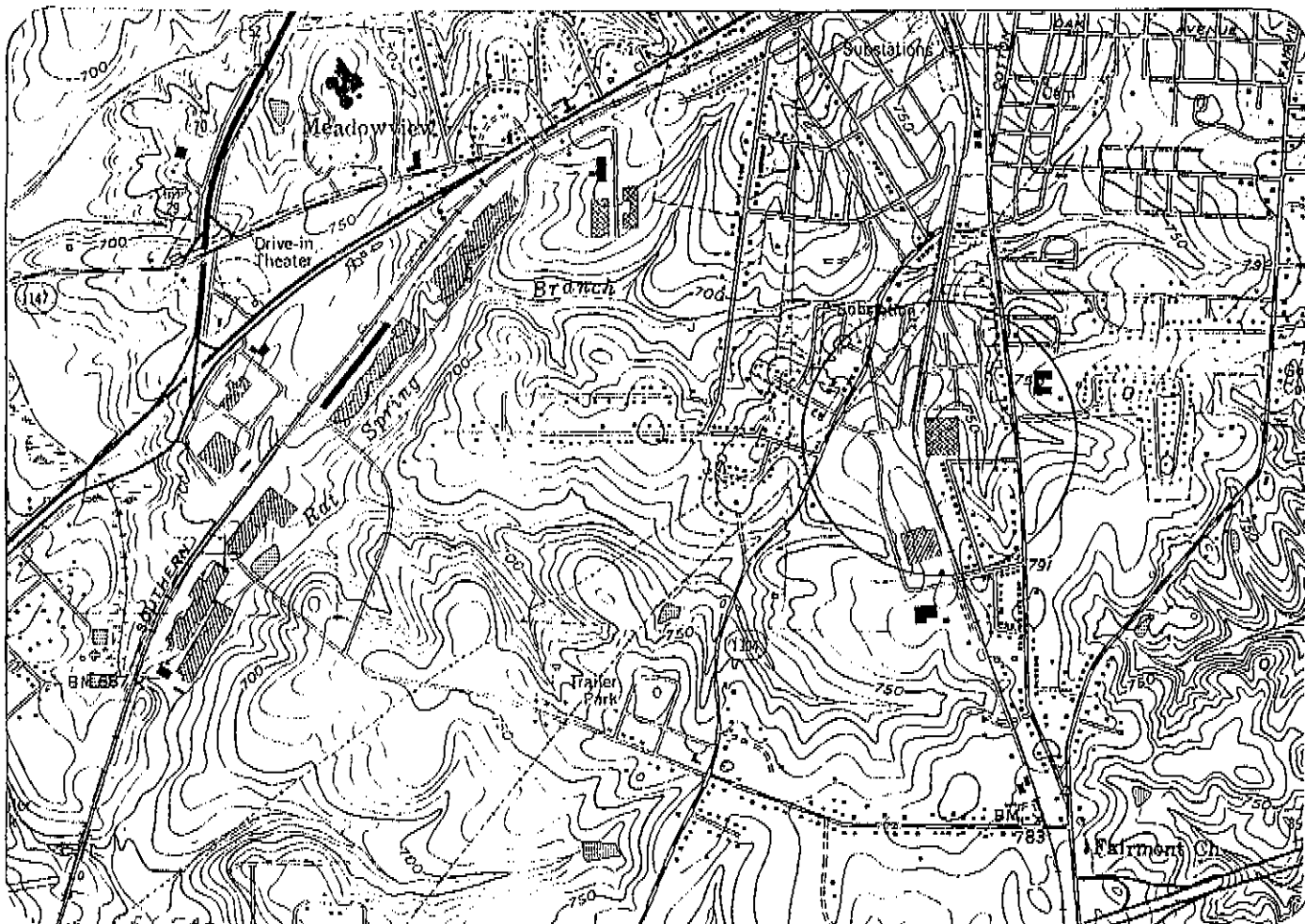
1.2 Closure Plan Development

Mannington contracted ENSCI Corporation to provide environmental consulting services concerning the closure and post-closure care of the settling ponds which were used prior to 1990. ENSCI developed a Revised Closure Plan, which was submitted to Mannington in May 1992.

In accordance with the Revised Closure Plan, ENSCI will stabilize the sludge which is present in the settling ponds and install a cover system to minimize infiltration of precipitation into stabilized sludge.

TOPOGRAPHICAL MAP

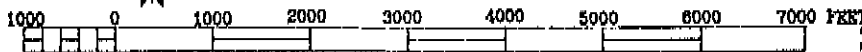
Mannington Ceramic Tile Company
Lexington, North Carolina



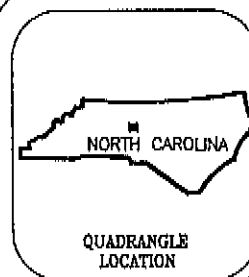
USGS LEXINGTON WEST 7.5 MINUTE QUADRANGLE

DATE OF MAP: 1950 PHOTOREVISION DATE: 1987

PHOTOREVISION DENOTED IN PURPLE (COLOR MAPS ONLY)



SCALE 1:24000



ROAD CLASSIFICATION

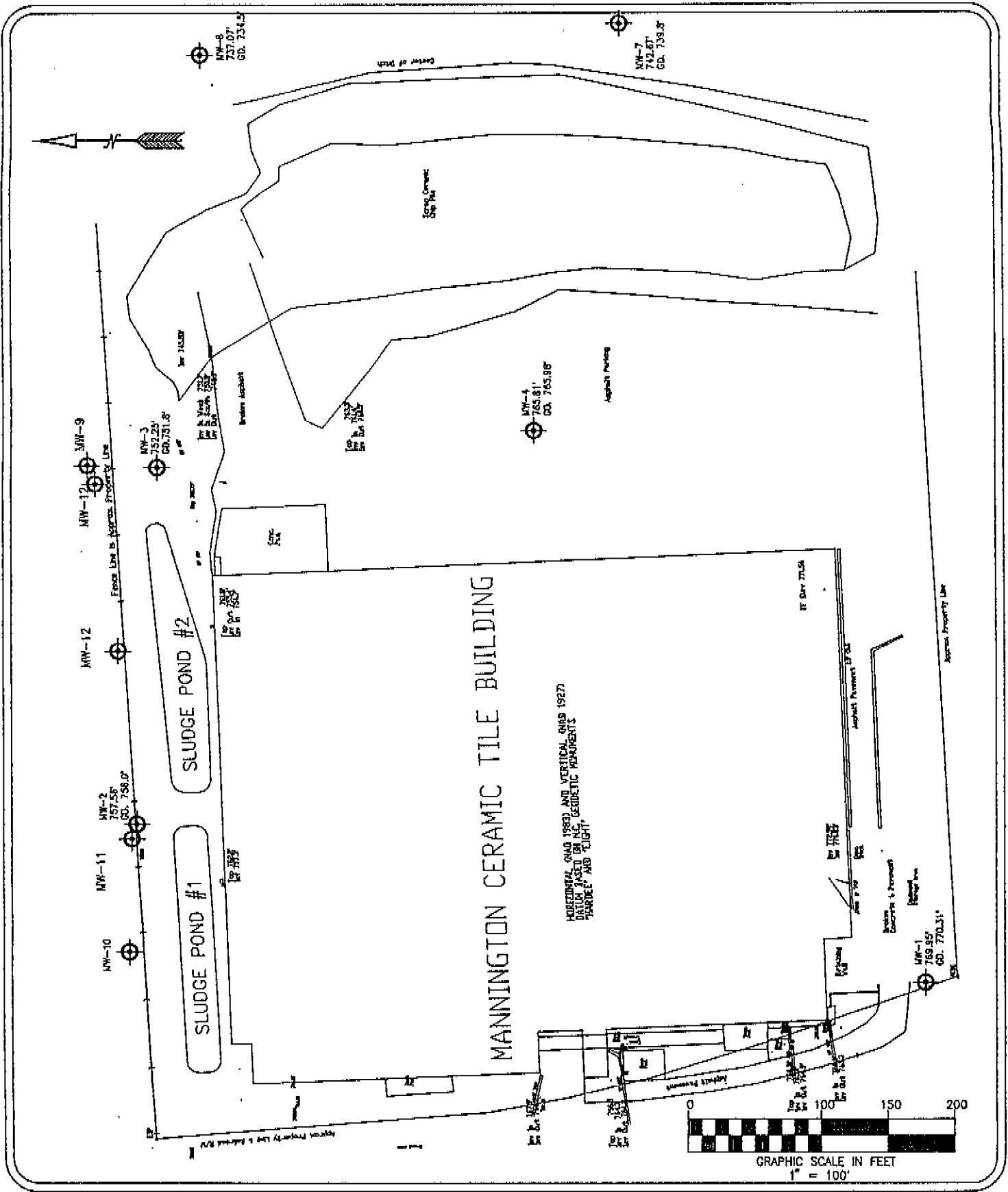
- | | | | |
|------------------|--|--|------------------|
| HEAVY-DUTY | | | U.S. ROUTE |
| MEDIUM-DUTY | | | STATE ROUTE |
| LIGHT-DUTY | | | INTERSTATE ROUTE |
| FOOT TRAIL | | | |
| WGN & JEEP TRACK | | | |
| UNIMPROVED ROAD | | | |



FOR: MANNINGTON CERAMIC TILE CITY: LEXINGTON
STATE: NORTH CAROLINA

TITLE: TOPOGRAPHIC MAP

| | | |
|-----------------|------------|---------------|
| SCALE: 1"=2000' | DWN BY: DJ | FIGURE: 1 |
| DATE: 10/14/92 | CK BY: CB | JOB #: S92032 |



MANNINGTON CERAMIC TILE COMPANY
LEXINGTON, N.C.

DRAWN BY: DJ

DRAWG NM: MAN3

CHECKED BY: AM

DATE: 5/19/92

FIGURE 2

TITLE:

FACILITY LAYOUT

2. Post-Closure Care Plan

Based upon groundwater quality information documented in recent quarterly groundwater sampling reports, the settling ponds will not be clean closed. Therefore, a Post-Closure Care Plan has been developed. The following items are included in this plan:

- The name, address, and phone number of the contact for the hazardous waste disposal unit during the post-closure care period.
- The address at which copies of the Post-Closure Care Plan will be maintained.
- A description of the planned groundwater monitoring activities and when they will be performed.
- A description of the planned inspection and maintenance activities and when they will be performed for the cover system, security fence, and monitoring wells.
- A post-closure care cost estimate for the closed unit and a description of the financial assurance mechanism adopted by Mannington.
- Recordkeeping and reporting requirements during post-closure care.

2.1 Post-Closure Care Plan Contacts and Maintenance

During the post-closure care period, the plant manager is the contact person for the hazardous waste disposal unit. The current plant manager, Mr. Mike Tkach, may be reached as follows:

Mr. Mike Tkach
Mannington Ceramic Tile
20 Victor Street
Post Office Box 1777
Lexington, North Carolina 27293-1777
Phone: (704) 249-3931

Mannington will maintain a copy of the approved Post-Closure Care Plan and all revisions onsite until the end of the post-closure care period. One copy of the Post-Closure Care Plan and all revisions will be kept in the president and general manager's office, and one copy will be kept in the plant manager's office. The president and general manager, Mr. Al Cox, may be reached as follows:

Mr. Al Cox
Mannington Ceramic Tile
20 Victor Street
Post Office Box 1777
Lexington, North Carolina 27293-1777
Phone: (704) 249-3931

The person responsible for updating the post-closure care plan will be Mr. Tkach or his designee. As the post-closure care plan is updated or amended, the date and number of the revision will be placed on the lower left corner of each revised page; the revision will be noted on the plan's title page.

2.2 Groundwater Monitoring Activities

Since some exceedances of U.S. Drinking Water Standards and North Carolina groundwater standards (15A NCAC 2L .0200) have been indicated in analysis of samples from the existing monitoring wells, a Groundwater Assessment Plan, dated May 1992, was prepared and submitted to the DEHNR under separate cover. The Groundwater Assessment Plan contains details of groundwater sampling pertaining to the sludge ponds. This plan as it pertains to the closed settling ponds will be part of the post-closure care plan by reference. It is summarized as follows:

During the post-closure care period, groundwater monitoring wells MW-1, MW-2, MW-9, MW-10, MW-11, and MW-12 will continue to be sampled quarterly to assess the potential release of hazardous waste constituents from the closed sludge ponds. November, February, May, and August are the planned sampling months. The groundwater will be analyzed for the following parameters: RCRA metals, radioactivity (gross alpha and beta), and other indicators (total organic carbon, total organic halide, pH, conductivity, and temperature). This list of parameters is based on the detection monitoring program. The list may vary depending on the findings of the ongoing groundwater assessment program. The post-closure care plan will be modified depending on the outcome of this program.

In order to report the results of these quarterly sampling events, three quarterly reports and one final report will be prepared each year.

2.3 Planned Inspection and Maintenance

To ensure that the closed settling ponds are properly maintained, Mannington will inspect the following areas monthly to determine any required maintenance:

- rip rap
- vegetative cover
- asphalt roadway
- run-on/run-off control system
- security fence
- monitoring wells.

The cover will be sloped to provide positive site drainage away from the closed settling ponds. The cover will be visually inspected monthly to ensure that the asphalt cap is maintained.

As discussed in the Closure Plan, subsidence of the compacted fill and asphalt cap is not expected since the waste will be stabilized, fill and cover system materials will be compacted, run-on will be controlled, infiltration through the cap will be minimized, and no surcharge load will be placed on the cap. Should minor cracks or erosion from runoff be discovered during inspections, they will be immediately repaired.

2.4 Cost Estimate and Financial Assurance Mechanism

2.4.1 Post-Closure Cost Estimate

The post-closure cost information is submitted in accordance with the requirements of 40 CFR 265.144. An estimated \$285,000 (based on 30 years) will be needed to perform annual post-closure care. These costs are broken down in more detail in **Appendix A**. However, the cost for post-closure care may change once the groundwater assessment has been implemented. Therefore, the post-closure care cost estimate may require an amendment once the groundwater assessment is completed.

The post-closure cost estimate will be kept on file at the Mannington facility and will be revised in the event that a change in the post-closure care plan affects the cost of post-closure care. It will be adjusted annually from the date of its original development to reflect changes caused by inflation. The Department of Commerce's Annual Implicit Price Deflator for Gross National Product will be used to make this adjustment.

2.4.2 Financial Assurance Mechanism

Financial assurance information has been submitted in accordance with the requirements of 40 CFR 265.145. Mannington has reviewed the five mechanisms for financial assurance and has chosen a mechanism for the Lexington facility.

2.4.2a Post-Closure Trust Fund

Not applicable.

2.4.2b Surety Bond

Not applicable.

2.4.2c Post-Closure Letter of Credit

Not applicable.

2.4.2d Post-Closure Insurance

Not applicable.

2.4.2e Financial Test and Corporate Guarantee for Post-Closure Care

Mannington meets the financial test criteria of 40 CFR 265.145(e). In accordance with Section 265, Mannington has provided the following items to the DEHNR:

1. The Corporate Guarantee for Closure or Post-Closure Care, using the language specified in 40 CFR 264.151(h).
2. A letter signed by Mannington's Chief Financial Officer in support of the Corporate Guarantee that is worded as specified in Section 264.151(f).
3. A copy of the report from an independent certified public accountant who examined Mannington's financial statement for the most recent fiscal year.
4. A copy of the special report from Mannington's independent certified accountant to Mannington that:
 - (a) He has compared the data which the letter from the Chief Financial Officer specified as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

- (b) In connection with that procedure, no matters came to his attention which have caused him to believe that the specified data should be adjusted.

2.5 Certification of Completion of Post-Closure Care

Within 60 days after completing the established post-closure care period for the settling ponds, Mannington will submit to the DEHNR, by registered mail, a certification that the post-closure care for the post-closure care period was performed in accordance with the specifications in the approved post-closure care plan. The certification will be signed by the owner or operator and an independent professional engineer. Documentation specified in 40 CFR 265.120 will be furnished to the DEHNR upon request.

2.6 Recordkeeping and Reporting Requirements

All records and reports from inspections, maintenance, and groundwater monitoring will be maintained onsite by the plant manager for the duration of the post-closure care period (30 years). Updates on costs of the post-closure care period, as discussed in Section 2.4.1, will also be maintained.

The groundwater monitoring reports discussed in Section 2.2 will be forwarded to the implementing agency within 90 days of completion.

Appendix A

Post-Closure Care Cost Estimate

Post-Closure Care Costs
Closed Sludge Ponds and Waste Ceramic Chip Pile

| | |
|---|----------------|
| 1. Groundwater Monitoring | |
| • semi-annual compliance monitoring | \$4,000 |
| • annual report | \$3,000 |
| | |
| 2. Inspection and Maintenance of Cover System (annual cost) | <u>\$2,500</u> |
| | |
| Subtotal | \$9,500 |
| | |
| Total Cost for 30-Year Post-Closure Care Period | \$285,000 |

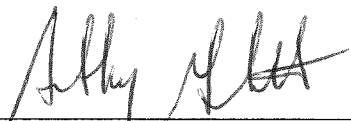
**Appendix I-3- Hazardous
Waste Facility Certification
of Liability Insurance
Policy**

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

1. Indian Harbor Insurance Company, the Insurer of Seaview House, 70 Seaview Avenue, Stamford, CT 06902-6040, hereby certifies that it has issued liability insurance covering bodily injury and property damage to Mannington Mills, Inc., the Insured, of 75 Mannington Mills Road, Salem, NJ 08079 in connection with the Insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at EPA ID#NCD986181451, Porcelanite, Inc., 20 Victor Street, Lexington, NC 27292 for sudden accidental occurrences. If coverage is for multiple facilities and the coverage is different for different facilities, indicate which facility(ies) are insured for sudden accidental occurrences, which are insured for nonsudden accidental occurrences, and which are insured for both. The limits of liability are \$1,000,000 each occurrence and \$2,000,000 annual aggregate, exclusive of legal defense costs. The coverage is provided under policy number PEC000801603 issued on December 31, 2015. The effective date of said policy is December 31, 2015.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:
 - (a) Bankruptcy or insolvency of the Insured shall not relieve the Insurer of its obligations under the policy.
 - (b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).
 - (c) Whenever requested by "Secretary" of the Department of Environment and Natural Resources (DENR), the Insurer agrees to furnish to the "Secretary" a signed duplicate original of the policy and all endorsements.
 - (d) Cancellation of the insurance, whether by the Insurer, the Insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of 60 days after a copy of such written notice is received by the Secretary.
 - (e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Secretary.

I hereby certify that the wording of this instrument is identical to the wording specified in 40 CFR 264.151(j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.



(Signature of Authorized Representative of Insurer)

Date: _____

2/21/17

Anthony Gentile, Vice President

Authorized Representative of Indian Harbor Insurance Company

c/o XL Catlin
505 Eagleview Boulevard
Exton, PA 19341-0636

**Appendix I-4- Indian
Harbor Policy
Endorsement (#31)**

ENDORSEMENT #031

This endorsement, effective 12:01 a.m., December 31, 2015 forms a part of Policy No. PEC000801603 issued to MANNINGTON MILLS, INC. by Indian Harbor Insurance Company.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

RCRA AMENDATORY ENDORSEMENT

This endorsement modifies insurance provided under the following:

POLLUTION AND REMEDIATION LEGAL LIABILITY POLICY

The INSURED and the Company agree to the following Policy change(s):

Item 3. Limits of Liability, of the Declarations, is amended by the addition of the following:

- (i) The Dedicated Annual Sublimits of Liability set forth below can only be reduced by LOSS or REMEDIATION EXPENSE required to satisfy the INSURED's Resource Conservation and Recovery Act (RCRA) Hazardous Waste financial responsibility obligations for the COVERED LOCATION listed in the Location Schedule below.
- (ii) Except as outlined in Item (i) above, the Dedicated Annual Sublimits of Liability set forth below are not available to satisfy any coverage otherwise afforded by this Policy.
- (iii) Any LOSS or REMEDIATION EXPENSE described in Item (i) above that exceed the Dedicated Annual Sublimits of Liability set forth below are subject to the Limits of Liability outlined in Items 3.a. and 3.b. of the Declarations.
- (iv) Notwithstanding the terms and conditions in Items (i), (ii), and (iii) above, the maximum Limits of Liability applicable under this Policy will not exceed the Aggregate Liability shown in Item 3.b. of the Declarations.

Dedicated Annual Sublimits of Liability:

| | |
|-------------|--|
| \$1,000,000 | LOSS or REMEDIATION EXPENSE for each POLLUTION CONDITION |
| \$2,000,000 | LOSS or REMEDIATION EXPENSE Aggregate Liability |

In consideration of the above Dedicated Annual Sublimits of Liability and the five (5) year POLICY PERIOD, the above Dedicated Annual Sublimits of Liability provides an overall POLICY PERIOD Dedicated Sublimits of Liability of \$1,000,000 each POLLUTION CONDITION / \$10,000,000 Aggregate Liability under this Policy for the INSURED's financial responsibility obligations outlined in item (i) above. This overall POLICY PERIOD Dedicated Sublimits of Liability are not available to satisfy any coverage otherwise afforded by this Policy.

Solely with regards to any POLLUTION CONDITION associated with the Ceramic Tile Pile Unit covered under this Policy for the INSURED's RCRA financial responsibility obligations for the COVERED LOCATION listed in the Location Schedule below, the INSURED and the Company agree to the following Policy change(s):

Item 4. Self-Insured Retention Amount, of the Declarations, is deleted in its entirety and replaced with the following:

4. Deductible:

\$ 100,000 each POLLUTION CONDITION

LEGAL EXPENSE, as well as LOSS and REMEDIATION EXPENSE, shall be included within the Deductible.

Section VI. LIMITS OF LIABILITY AND SELF-INSURED RETENTION, Paragraphs A. and B. are deleted in their entirety and replaced with the following:

- A. The Company will pay one hundred percent (100%) of all covered LOSS, REMEDIATION EXPENSE, LEGAL EXPENSE and any other coverages afforded by endorsement attached to this Policy subject to the Limits of Liability stated in Item 3. of the Declarations and the other terms and conditions of this Policy.
- B. The applicable Deductible stated in Item 4. of the Declarations shall apply.

It is further agreed that the term "Self-Insured Retention Amount" referenced throughout this Policy and Declarations is amended to read "Deductible". The Company is liable for the payment of amounts within the Deductible applicable to this Policy, with a right of reimbursement from any INSURED for payment made by the Company.

If the Company advances all or part of the Deductible, the INSURED will immediately reimburse the Company for all sums advanced upon the Company's request. If the INSURED does not reimburse the Company for a Deductible payment made within the time frame stated by the Company or there is the commencement of a proceeding under bankruptcy or insolvency laws by or against the INSURED, the Company reserves the right to require collateral as financial security in an amount and form acceptable to the Company for all present and future financial obligations of the INSURED to the Company. In the event of a collateral demand by the Company, the INSURED will immediately deliver such collateral to the Company.

Location Schedule:

20 Victor Street
Lexington, NC 27292

All other terms and conditions remain the same.

Part J

Other Federal Laws

Part J- Other Federal Laws

Acronym List

| | |
|-------------|---|
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality (formerly NCDENR, and renamed effective September 18, 2015). |
| USFWS | United States Fish and Wildlife Service |
| Waters Edge | Waters Edge Environmental, LLC |

Part J- Other Federal Laws

Based on the Module J Checklist provided by NCDEQ, on behalf of this Part B application, Waters Edge has contacted the following agencies to provide demonstration with applicable Federal laws or is of the opinion that some laws do not apply:

- Wild and Scenic Rivers Act- Waters Edge requested State Wild and Scenic Rivers Act information twice via email and received no response
- National Historic Preservation Act of 1966- This is not applicable at this site
- Endangered Species Act-
 1. Allen Ratzlaff, a Fish and Wildlife Biologist with the USFWS, responded electronically stating “no federally listed species or their habitats occur in the project area. Therefore, we believe the requirements under Section 7 of the of the Endangered Species Act of 1973 are fulfilled.”
 2. Mr. David Cox with the NC Wildlife Resources Commission was contacted by electronic mail on January 24, 2017 for information regarding any National or State Wildlife Refuges, State lands designated for wildlife or game management, Migratory pathways and feeding areas critical for maintenance of anadromous fish species within river reaches or Areas in lakes in which fish spend extended periods of time, or Spawning areas critical for the maintenance of fish/shellfish species within river or lake waters. Ms. Olivia Munzer, Western Piedmont Habitat Conservation Coordinator, responded electronically stating “There are no national refuges or state-owned, wildlife-designated or management lands within 1.0 mile of the site. However, lands managed by Davidson County as Open-Space are located with 1.0 mile of the site. There are no migratory or feeding grounds for anadromous fish or spawning areas critical for the maintenance of fish/shellfish species, or large lakes or reservoirs with areas that fish spend extended periods of time occur[sic] within 1.0 mile of the Facility.
- Coastal Zone Management Act- This does not apply at this site
- Fish and Wildlife Coordination Act- This does not apply at this site

Part K

Certification

Part K - Certification

Former Porcelanite Facility, Lexington, North Carolina

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with 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.



Mr. Dave Kitts
Vice-President-Environment
Mannington Mills, Inc.
75 Mannington Mills Road
Salem, NJ 08079

3/1/17
Date _____

Mr. Alejandro Sanchez
President
Condumex, Inc.
2590 114th Street, Suite 200
Grand Prairie, Texas 27505

Date

Part L
Information Requirements
for Solid Waste Management
Units

**Part L - Information Requirements
for Solid Waste Management Units**

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| | |
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|--------------|--|

References

Acronym List

| | |
|------------|---|
| ACL | Alternative Concentration Limits |
| AOC | Area of Concern |
| BGS | below ground surface |
| BQL | below quantitation limits |
| CAP | Corrective Action Plan |
| °C | Celsius |
| COCs | Constituents of Concern |
| CS | Confirmatory Sampling |
| EP | Extraction Procedure |
| Ft/ft | Foot per foot |
| HWMU | Hazardous Waste Management Unit |
| HWS | Hazardous Waste Section |
| IHSB | Inactive Hazardous Sites Branch |
| Mannington | Mannington Ceramic Tile |
| MCL | Maximum Contaminant Level |
| mg/kg | milligrams per kilograms or parts per million |
| NC | North Carolina |
| NCDEHNR | North Carolina Department of Environment, Health, and Natural Resources |
| NCDENR | North Carolina Department of Environment and Natural Resources |
| NCDEQ | North Carolina Department of Environmental Quality (formerly NCDENR, and renamed effective September 18, 2015). |
| NCGS | North Carolina Groundwater Standards |
| NFA | No Further Action |

| | |
|-------------|---|
| Porcelanite | Porcelanite, Inc. |
| PGW | Protection of Groundwater |
| POTW | Publicly-Owned Treatment Works |
| PQL | Practical Quantitation Limit |
| PPM | Priority Pollutant Metals |
| PSRG | Preliminary Soil Remediation Goal |
| PVC | Polyvinyl Chloride |
| RCRA | Resource Conservation Recovery Act |
| RFI | Recommend Further Investigation and RCRA Facility Investigation |
| SAP | Sampling and Analysis Plan |
| SIC | Standard Industrial Classification |
| SVOCs | Semivolatile Organic Compounds |
| SWMU | Solid Waste Management Units |
| TCLP | Toxicity Characteristic Leaching Procedure |
| USEPA | United States Environmental Protection Agency |
| VOCs | Volatile Organic Compounds |
| VSI | Visual Site Inspection |
| Waters Edge | Waters Edge Environmental, LLC |

**Part L - Information Requirements
for Solid Waste Management Units**

L-1 Minimum Information Requirements for Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)

An RFA report was completed on April 29, 2004 by an EPA contractor (Booz Allen, 2004) and finally submitted on February 16, 2005 (see Appendix B-1). The RFA identified eleven (11) SWMUs and three (3) AOCs as depicted on Figure L-1. Based on the 2005 RFA, Table L-1 lists the SWMUs and AOCs identified along with the recommended course of action in 2004 and after reevaluation in 2016. Portions of the following SWMU and AOC descriptions and past investigation summaries are directly referenced from the February 2005 RFA.

**Table L-1
SWMU/AOC Identification and Past and Current Status**

| Unit | Name | 2004 | 2016 |
|-------------|---|-------------|--|
| SWMU-1 | Wastewater Pretreatment System | CS | Considering Alternative Options |
| SWMU-2 | Sludge Settling Ponds (Regulated) | RFI | NFA-Certified Closed 2006 Under Assessment |
| SWMU-3 | Ceramic Tile Pile (Regulated) | RFI | NFA-Certified Closed 2005 Under Assessment |
| SWMU-4 | 20 cubic yard Sludge Roll-Off Container | NFA | NFA |
| SWMU-5 | 20 cubic yard Floor Sweeping Roll-Off Container | NFA | NFA |
| SWMU-6 | Baghouse | CS | NFA |
| SWMU-7 | Walltown Branch | RFI | Recommend Assessment |
| SWMU-8 | Off-Spec Tile Accumulation Roll-Off | NFA | NFA |
| SWMU-9 | Filter Cake Waste Pile Area | NFA | NFA |
| SWMU-10 | Maintenance Building Waste Management | NFA | NFA |
| SWMU-11 | Spray Line Area Sumps | CS | NFA |
| AOC-1 | Area of Discharge from Tile Pile | RFI | Recommend Assessment |
| AOC-2 | Broken Ceramic Tile Roadway | CS | Recommend Assessment |
| AOC-3 | Former UST and AST Area | NFA | NFA |

Notes:

CS = Confirmatory Sampling

NFA = No Further Action

RFI = Recommended Further Investigation

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Former Porcelanite Facility
Lexington, Davidson County, North Carolina
March 6, 2017*

L-1a Description of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs)

At the request of Ms. Mary Siedlecki with the NCDEQ, this Section includes a description of all eleven (11) SWMUs and three (3) AOCs that are listed in Table L-1. There are also numerous references to the previous names of the current NCDEQ including NCDENR and NCDEHNR; however, for consistency, we will use NCDEQ throughout this document. The locations of the SWMUs and AOCs are shown on Figure L-1. Four (4) SWMUs and two (2) AOCs are currently recommended for additional investigation. SWMU-1 was identified as the Wastewater Pretreatment System, SWMU-2 was identified as the two Sludge Settling Ponds, SWMU-3 was identified as the Ceramic Tile Pile (the latter two are both regulated units), and SWMU-7 was identified as Walltown Branch, a previously piped-in stream. Two AOCs were identified as an Area of Discharge from the Tile Pile (AOC-1) and the Broken Ceramic Tile Roadway (AOC-2). SWMU-2 and SWMU-3 have successfully undergone closure which has been accepted by NCDEQ. Portions of the following SWMU and AOC descriptions and past investigation summaries are directly referenced from the February 2005 RFA.

L-1a (1) SWMU-1 - Wastewater Pretreatment System Operational History

TYPE OF UNIT: Wastewater Pretreatment System comprised of holding tanks with secondary containment, precipitation tanks, a filter press, and a sump.

PERIOD OF OPERATION: January 1989 to 1999 (facility permanently shut down)

PHYSICAL DESCRIPTION AND CONDITION:

Historically, wastewater generated by the tile manufacturing operations was discharged to the Sludge Settling Ponds (“SWMU-2”). In 1988, a substantial modification of the wastewater treatment system at the Facility occurred in that all wastewater which had previously been discharged to the Sludge Settling Ponds (“SWMU-2”) was channeled to a new Wastewater Pretreatment System (“SWMU-1” - see Figure L-1) (ENSCI, 1993).

SWMU-1 was located in a 60-foot long by 30-foot wide by 25-foot high room in the northwest corner of the former Main Process Building. The floor of this room was covered in tile and a sump 6 inches wide and 12 inches deep bisected the room into eastern and western halves. According to Facility representatives, this sump collected wastewater spilled during treatment so it could be pumped back into the holding tanks. The two halves of the room formed two distinct areas with the holding tank area in the eastern half and the precipitation tank/filter press area in the western half. The holding tank area was a rectangular area surrounded by a six-foot high, concrete secondary containment wall that was 55 feet long and 25 feet wide. This area contained two 3,000-gallon fiberglass tanks that received wastewater from the process area. According to facility representatives, wastewater was primarily generated by spray lines used to cool the fired tiles that exited the kilns. The tiles were conveyed from the tile presses via a conveyor belt to the spray lines where water and glaze were applied to “green” tile before being sent to the kilns. The water from

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the spray heads was captured beneath the conveyor belt through floor grates that covered a series of subsurface trenches. This wastewater was conveyed to the holding tanks by a series of open trenches and grate-covered sumps that made up the Spray Line Area Sumps (SWMU-11) (Booz Allen, 2003).

The western portion of the wastewater treatment room contained four (4) precipitating tanks of various sizes (estimated to be between 250- and 500-gallon capacity) located in the northwestern corner of the room, and a filter press located in the west-central portion of the room. Wastewater from the holding tanks was pumped to the precipitation tanks where solids were allowed to settle. Flocculent was added to increase the rate of precipitation and pH adjusting solutions were added. At the time of the September 2003 RCRA VSI, four (4) drums of chemicals were stored near the precipitation tanks. Two (2) of the drums, labeled Selfloc and PolySep 1127, were described as flocculants by facility representatives. The other two (2) drums, one unlabeled and one labeled as caustic soda, were described as pH adjusting solutions by facility representatives. Treated wastewater from the precipitation tanks was discharged under a POTW permit to the City of Lexington sewer system. In the past, some of the treated wastewater was reclaimed and returned to the spray lines. Sludge from the precipitation tanks was pumped to the filter press, where additional water was extracted from the solids by compressing it into a filter cake. The extracted water was returned to the precipitating tanks. The filter cake left the filter press via a conveyor belt that dropped it through a hole in the western wall of the Main Process Building, into the Filter Cake Waste Pile Area (SWMU-9) (Booz Allen, 2003).

Information pertaining to releases and a detailed site assessment history of SWMU-1 are provided in Sections L-1b (1) and L-1c (1), respectively.

L-1a (2) SWMU-2 - Sludge Settling Ponds Operational History and Closure Activities

TYPE OF UNIT: Surface Impoundments

PERIOD OF OPERATION: 1972 to 1989 (capped in 1993)

PHYSICAL DESCRIPTION AND CONDITION:

SWMU-2 consisted of two surface impoundments estimated at 130' (L) x 30' (W) each (based on preliminary assessment figures) located in the northwestern corner of the Facility, between the northern property boundary and the northern wall of the former Main Building as shown on Figure L-1. Previous calculations indicated a total volume for both ponds to be approximately 8,240 cubic yards, consisting of approximately 3,625 cubic yards in the Western Pond and approximately 4,615 cubic yards in the Eastern Pond. Prior to January 1, 1989, wastewater treatment conducted at the Facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU-2), allowing solids to settle prior to discharge. After wastewater passed through the second (eastern) settling pond, Mid-State Tile and subsequently Mannington discharged wastewater directly into Rat Spring Branch of the Yadkin-Pee Dee River Basin pursuant to NPDES permit #NC0006459 (ENSCI, 1993, 1994).

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Prior to 1990, the clay and silica used at the Facility likely contained hazardous constituents such as lead and chromium. In addition, according to Facility representatives, the pH of the incoming wastewater was usually in the range of 4 to 6. A site assessment of the Facility, prepared by Mannington, and dated April 12, 1990, consisted of a field investigation in which samples were collected from the Sludge Settling Ponds. TCLP analysis results detected leachable lead levels in the sludge ranging from 230 mg/L to 1,230 mg/L, which is well above the 5.0 mg/L threshold for a characteristic hazardous waste. All VOCs and SVOCs were BDL with the exception of methylene chloride, acetone, and carbon disulfide, which are considered laboratory artifacts. As a result, the solid waste (i.e., sludge) disposed in the Sludge Settling Ponds was a characteristic hazardous waste (D008) (NCDEQ, 1990b; ENSCI, 1993, 1994).

In July 1993, Mannington completed closure of the Sludge Settling Ponds (SWMU-2) according to the NCDEQ approved Closure Plan. Mannington submitted a certified closure report to NCDEQ on November 9, 2005, which NCDEQ subsequently accepted on February 1, 2006. As a result of closure activities, sludge was removed from both sludge ponds and stabilized with Portland Cement, such that the waste passed TCLP for lead. The stabilized material was placed back into the ponds and the area was capped with a RCRA compliant cap. According to facility representatives, the cap included a 30-millimeter synthetic liner and an asphalt cap that serves as the top layer. Additionally, all piping associated with the sludge ponds was removed. Some of the surrounding soils north and west of the Sludge Settling Ponds were excavated and placed on the Ceramic Tile Pile (“SWMU-3”) prior to its closure in 1997. According to a September 1992 Consent Agreement, sludge from SWMU-2 was also deposited in SWMU-3. At the time of the September 2003 VSI, the asphalt cover appeared to be in good condition with no significant cracks, staining, or erosion identified (Booz Allen RFI, 205).

Information pertaining to releases and a detailed site assessment history of SWMU-2 are provided in Sections L-1b (2) and L-1c (2), respectively.

L-1a (3) SWMU-3 – Waste Ceramic Tile Pile Operational History

TYPE OF UNIT: Waste Ceramic Tile Pile

PERIOD OF OPERATION: 1950s or 1960s to 1990 (capped in 1995)

PHYSICAL DESCRIPTION AND CONDITION:

SWMU-3 is located east of the former Main Process Building and immediately west of the Walltown Branch (SWMU-7). The unit extends approximately 12 feet north of the southern property fence line to the Area of Discharge from the Ceramic Tile Pile (AOC-1) to Rat Springs Branch as shown on Figures L-1 and L-2. The total volume of the unit is estimated at approximately 260,000 tons (*Transmittal of Revised Closure and Post-Closure Care Plans*, July 30, 1997). The Facility used the unit to store off-specification unfired and fired glazed ceramic tile. Additionally, in the early 1990s, soil north of SWMU-2 exhibiting elevated lead and zinc

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concentrations was excavated and placed on top of the Ceramic Tile Pile prior to closure of the unit, as was material from the Broken Tile Roadway (AOC-2). In 1990, Mannington stopped depositing waste tile material in SWMU-3 (NCDEQ, 1990d, 1990e, and 1990f).

Information pertaining to releases and a detailed site assessment history of SWMU-3 are provided in Sections L-1b (3) and L-1c (3), respectively.

L-1a (4) SWMU-4 - 20 Cubic Yard Sludge Roll-off Container Operational and Site Assessment History

TYPE OF UNIT: 20 Cubic Yard Sludge Roll-off Container

PERIOD OF OPERATION: 1990-1999 (according to facility representative)

PHYSICAL DESCRIPTION AND CONDITION:

A concrete pad with no secondary containment where 20 cubic yard steel roll-off containers were placed to receive sludge filter cake from SWMU-1 was situated adjacent to the western wall of the Main Building. This unit is referred to as SWMU-4 (“SWMU-4”) and is located, approximately 40 feet south of the Filter Cake Waste Pile Area (“SWMU-9”) as shown on Figure L-1. The concrete pad was approximately 15 feet wide and 40 feet long. At the time of the September 2003 VSI, no roll-off box was present at SWMU-4 and the concrete pad was in fair condition. Some cracks in the concrete pad and some vegetation growing in the cracks were noted by Booz Allen during its September 2003 site visit (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

According to facility representatives, a small front-end loader (e.g., Bobcat®) was used to transfer the sludge from the Filter Cake Waste Pile Area (SWMU-9) to roll-off containers in SWMU-4. Once the roll-off container was full, it was sent to the Kernersville, NC landfill (Subtitle D operated by Waste Management, Inc.) for disposal.

SWMU-4 Site Assessment History

In 1990, samples were collected from the filter cake and were analyzed for RCRA primary metals in extracted leachate (EP Toxicity via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The filter cake waste stream samples contained bis(2-ethylhexyl) phthalate at a concentration of 1.5 mg/kg. All other constituents were ND. Based on these sampling results, it was determined by NCDEQ that the filter cake waste stream was a nonhazardous waste that could be disposed of in a Subtitle D landfill. According to facility representatives, the solids generated by the filter press were characterized annually to ensure that the wastes were nonhazardous (USEPA, 1993).

HISTORY AND/OR EVIDENCE OF RELEASE(S):

No evidence of a release from this unit was identified in the available file material. In addition, according to facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. Finally, at the time of the September 2003 VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS:

The 2005 RFA recommended no further action and Waters Edge concurs with this recommendation.

L-1a (5) SWMU-5 - 20 Cubic Yard Floor Sweeping Roll-Off Container Operational History

TYPE OF UNIT: 20 Cubic Yard Sludge Roll-off Container

PERIOD OF OPERATION: 1990 -1999 (facility permanently shut-down)

PHYSICAL DESCRIPTION AND CONDITION:

This unit was located adjacent to the eastern central wall of the former Main Process Building and consisted of a 20-cubic yard steel roll-off container (“SWMU-5”) placed on the asphalt parking area (see Figure L-1). Floor sweepings from the Main Process Building, containing dust, small tile pieces, and other wastes spilled on the floor during tile manufacturing operations, and were swept up daily and deposited in SWMU-5. According to facility representatives, a tarpaulin was used to cover the top of the roll-off container. At the time of the September 2003 VSI, the area where the roll-off container was formerly located appeared to be in good condition (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED

The waste stream managed by this unit consisted of daily sweepings from the floor of the process area in the former Main Process Building. According to correspondence from NCDEQ to Mannington in 1990, as much as 5,000 pounds per week of floor sweepings were generated by ceramic tile manufacturing operations.

SWMU-5 Site Assessment History

In 1990, floor sweeping samples were collected and were analyzed for RCRA primary metals using the EP Toxicity Test (EP Toxicity via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The floor sweepings samples contained 1,1,1-trichloroethane (0.087 mg/kg), bis(2-ethylhexyl) phthalate (15 mg/kg), and benzyl butyl phthalate (3.6 mg/kg). In addition, the extractable leachate from the floor sweepings sample also

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

According to facility representatives, this unit captured dust generated during production of the “green” tile, primarily from the pressing operations that molded raw materials into various sizes of tile. Facility representatives also indicated the dust collected by this unit was generated prior to addition of lead-containing glaze. Therefore, no hazardous waste was managed by this unit (Booz Allen, 2003; Mannington 1992).

No evidence of a release from this unit was identified in the available file material. In addition, according to Facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. At the time of the September 2003 VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS

The 2005 RFA recommended no further action and Waters Edge concurs with this recommendation.

L-1a (7) SWMU-7 - Walltown Branch History

TYPE OF UNIT: Surface Water Drainage Ditch

PERIOD OF OPERATION: 1960s to present

PHYSICAL DESCRIPTION AND CONDITION:

Walltown Branch (“SWMU-7”) is located immediately east of the Ceramic Tile Pile (SWMU-3) and drains to the north of the Facility approximately 0.5 miles to Rat Springs Branch, which flows to the southwest approximately 2 miles to Swearing Creek, a tributary of the Yadkin River. As of 1997, the NCDEQ Winston-Salem Regional Water Quality Office classified Rat Springs Branch as a “C” surface water designation (Aquaterra, 1997 - Tile Pile Closure Plan). The Walltown Branch was enclosed in pipe in 1992-1993 under a Nationwide 26 permit from the USACE. This permit was issued based on the determination by the USACE that no significant wetlands were present at the site (Aquaterra, 1997 - Tile Pile Closure Plan). The piping was installed to prevent surface water runoff from SWMU-3 to discharge into the creek. At the time the piping was installed at Walltown Branch, a permanent 25-foot easement was conveyed to the City of Lexington. A sanitary sewer line and storm sewer line also run parallel to SWMU-7 northward across the eastern portion of the property and a permanent 25-foot easement for these lines was also conveyed to the City of Lexington (Aquaterra, 1997b, 2000; Booz Allen, 2003; Mannington, 2004).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

This unit was not designed to manage or handle waste. This unit is a tributary that was located on the Facility property prior to the property being purchased or the Facility being operated. SWMU-3 is located west and adjacent to the Walltown Branch as shown on Figure L-1. SWMU-3 is upgradient of the Walltown Branch. Prior to its enclosure, runoff from the Ceramic Tile Pile and the Facility entered into the Walltown Branch. As a result, according to Booz Allen, SWMU-7 may have received hazardous constituents from the waste tile fragments primarily consisting of RCRA metals such as lead (Booz Allen, 2003).

Information pertaining to releases and a detailed site assessment history for SWMU-7 are provided in Sections L-1b (4) and L-1c (4), respectively.

L-1a (8) SWMU-8 - Off-Specification Tile Accumulation Roll-Off Container Operational and Site Assessment History

TYPE OF UNIT: 40 Cubic Yard Roll-off Container

PERIOD OF OPERATION: 1990-1999 (facility permanently shut-down)

PHYSICAL DESCRIPTION AND CONDITION:

A 40-cubic yard roll-off container that was situated on an asphalt surface was located on the asphalt roadway covering the area formerly occupied by the Sludge Settling Ponds (SWMU-2), adjacent to the north central wall of the Main Process Building (“SWMU-8”) (see Figure L-1). According to facility representatives, once waste tile was no longer deposited in the Ceramic Tile Pile (SWMU-3), this unit was used to store broken and off-specification tile from the manufacturing operation before it was disposed off-site. At the time of the September 2003 VSI, the roll-off container associated with this unit was no longer present at the facility; however, a metal frame structure with a corrugated metal roof was observed in the unit location. According to Booz Allen, Facility representatives indicated that the metal frame roof was installed at an unknown date to cover the roll-off container (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

According to several RCRA Inspection Reports, after closure of the Ceramic Tile Pile (SWMU-3) in 1990, ceramic tile wastes accumulated at the facility were stored in this roll off container before being transported to the Davidson County landfill (Subtitle D) for disposal. The waste stream managed by this unit consisted of unfired and fired ceramic tile and chips that were rejected during quality control inspections because they did not meet technical specifications. According to correspondence from NCDEQ to Mannington in 1990, as much as 20,000 pounds per week of unfired glaze ceramic tile and 110,000 pounds per week of fired glaze ceramic tile were generated by ceramic tile manufacturing operations (USEPA, 1991; NCDEQ, 1990d, 1990e, 1990f).

SWMU-8 Site Assessment History

In 1990, samples were collected from each of the fired and unfired tile waste streams. The samples were analyzed for RCRA primary metals in extracted leachate (EP toxicity characteristic via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The samples collected from the fired glaze ceramic tile waste stream were ND. The unfired glaze ceramic tile waste stream samples contained bis(2-ethylhexyl) phthalate at a concentration of 5.6 mg/kg. All other constituents in all of the waste stream samples were ND. Based on these sampling results, it was determined by NCDEQ that the fired and unfired glaze ceramic tile waste streams were nonhazardous waste that could be disposed of in a Subtitle D landfill. As a result, waste from SWMU-8 was sent to the Davidson County landfill for disposal (USEPA, 1991; NCDEQ, 1990d, 1990e, 1990f).

No evidence of a release from this unit was identified in the available file material. In addition, according to facility representatives, no releases of nonhazardous or hazardous waste from this unit have ever occurred. Finally, at the time of the VSI, no visual evidence of a release (i.e., staining) was observed.

RECOMMENDATION: No Further Action (X)

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS:

The 2005 RFA recommended no further action and Waters Edge concurs with this recommendation.

L-1a (9) SWMU-9 - Filter Cake Waste Pile Area Operational History

TYPE OF UNIT: Waste Pile

PERIOD OF OPERATION: 1988/89 -1999 (facility permanently shut down)

PHYSICAL DESCRIPTION AND CONDITION:

SWMU-9 is the former location of the discharged waste cake from the Facility filter press (see Figure L-1). The unit is comprised of a concrete floor, three (3) partial concrete walls with three (3) partial metal sides, and a roof. The unit dimensions are 8 feet wide by 8 feet deep by 10 feet tall. A conveyer belt extends from the filter press unit located in the Wastewater Pretreatment System (SWMU-1) room through the west wall of the former Main Process Building, which was used to convey the filter cake outside to the floor of the unit. The open western wall of SWMU-9 was used to allow a front-end loader (e.g., Bobcat®) to transfer the filter cake waste pile to the 20-Cubic Yard Sludge Roll-Off Container (SWMU-4) for disposal. At the time of its inspection, Booz Allen reported the unit contained residual solids and observed staining on the concrete floor from the filter press (Booz Allen, 2003).

SWMU-9 Site Assessment History

The filter press received wastewater from the Facility spray lines and sump pumps. In 1990, samples were collected from the filter cake and were analyzed for RCRA primary metals in extracted leachate (EP toxicity via EPA Method 1310), VOCs (EPA Method 8240), and base neutral extractable compounds (EPA Method 8270). The filter cake waste stream samples contained bis(2-ethylhexyl) phthalate at a concentration of 1.5 mg/kg. All other constituents were ND. Based on these sampling results, it was determined by NCDEQ that the filter cake waste stream was nonhazardous waste and could be disposed of in a Subtitle D landfill. According to facility representatives, the solids generated by the filter press were characterized annually to ensure that the wastes were nonhazardous (NCDEQ, 1993).

No evidence of a release from this unit was identified in the available file material. According to Booz Allen's 2003 report, facility representatives told them the conveyor deposited solids from the filter press outside of the covered unit to an area as far as the chain-link fence located parallel to the Facility's western property line. Also, runoff from rain events may have allowed the filter cake and residual materials to leach onto the surrounding soils. An asphalt cover was reportedly added to AOC-2 to inhibit impact from the solids or potential runoff. Finally, solids and residual dust were identified on the concrete floor and walls and on the soils directly in front of the unit at the time of the VSI (Booz Allen, 2003).

RECOMMENDATION: No Further Action (X)

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS:

The 2005 RFA recommended no further action other than improved storage procedures to prevent further release of the filter cake solids to the soils in front of the unit. Now that there are no longer filter cake solids remaining and the building and all structures have been demolished, Waters Edge concurs that no further action is recommended.

L-1a (10) SWMU-10 - Maintenance Building Waste Management Areas Operational History

TYPE OF UNIT:

- a. Drum Storage Area
- b. Parts Washer

PERIOD OF OPERATION: 1960s to 1999 (facility permanently shut-down)

PHYSICAL DESCRIPTION AND CONDITION:

The former Maintenance Building Waste Management Areas ("SWMU-10") were located in the southwest corner of the facility property, west of the Former UST and AST Area (AOC-3) and east of the Baghouse (SWMU-6) (see Figure L-1). The former Maintenance Building is a metal,

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS

The 2005 RFA recommended no further action and Waters Edge concurs with this recommendation.

L-1a (11) SWMU-11 - Spray Line Area Wastewater Sumps Operational History

TYPE OF UNIT: Wastewater Sumps

PERIOD OF OPERATION: 1960s or 1970s to 1999 (facility permanently shut-down)

PHYSICAL DESCRIPTION AND CONDITION:

The spray lines and associated sumps (“SWMU-11”) were previously located in one of the large process rooms in the northern portion of the former Main Process Building. According to Booz Allen, Facility representatives reported that the tiles were conveyed from the tile presses via a conveyor belt to the spray lines where water and glaze were applied to “green” tile before they were sent to the kilns. The water from the spray heads was captured beneath the conveyor belt through several floor grates, which covered a series of subsurface trenches. The wastewater was then channeled, by use of sumps, to the Wastewater Pretreatment System (SWMU-1) or, historically, to the Sludge Settling Ponds (SWMU-2) to be treated and disposed. According to Booz Allen, Facility representatives advised them that some of the wastewater from the Wastewater Pretreatment System (SWMU-1) was also looped back into the spray lines. At the time of the September 2003 VSI, the spray lines and equipment were no longer present. The equipment was reportedly removed in 2000 and transferred to another Porcelanite company facility. During the September 2003 VSI, Booz Allen reported that the area appeared to be in good condition; however, the unit was overflowing with water so the bottom and sides of the sump could not be inspected. The trenches were overflowing with water that, according to Facility representatives, originated from water leaks in the roof of the building (Booz Allen, 2003).

WASTES AND/OR HAZARDOUS CONSTITUENTS MANAGED:

SWMU-11 managed wastewater generated by the spray lines. According to Booz Allen’s report of conversations with Facility representatives, the wastewater contained high concentrations of solids, primarily clay and silica, raw materials used to make the tile, as well as glaze and stain overspray from the coloring of unfired tile. The clay, silica, and glaze formerly contained metals such as lead and chromium. In addition, the wastewater entering the Wastewater Pretreatment System (SWMU-1) from the Spray Line Area Sumps (SWMU-11) had a pH in the range of 4-6 (e.g. nonhazardous characteristic) (Booz Allen, 2003; Mannington, 2004).

SWMU-11 Site Assessment History

No evidence of a release from this unit was identified in the available file material. In addition, according to Booz Allen’s report of conversations with Facility representatives, no releases of nonhazardous or hazardous waste from this unit have occurred. Finally, at the time of the VSI, Booz Allen saw no visual evidence of a release (i.e., staining) was observed; however, the unit was overflowing with water so the bottom and sides of the sump could not be inspected (Booz Allen, 2003; Mannington, 2004).

The 2005 RFA stated that because the unit was filled with water at the time of the September 2003 VSI, a more thorough inspection of this unit was recommended. Based on this recommendation, on February 10, 2015, a Waters Edge environmental technician and vacuum truck were mobilized to the facility. Both sumps and trenches were cleaned of debris and also pumped out and then a squeegee was used to expose the floor of the sumps and trenches. The sump walls, the sumps, and the trenches were determined by Waters Edge personnel to be intact and there were no indications of cracking that would jeopardize the integrity of the unit. Photo documentation collected by Waters Edge and provided to NCDEQ included the following (see Appendix L-1):

- Photograph #5 and #6 - Surficial Condition of Spray Line Trench Area
- Photograph #7 and #8 - Spray Line Sump Walls Depicting Non-Cracked Condition
- Photograph #9, #10 and #11 - Non-Cracked Condition of Spray Line Sump Floor
- Photograph #12 and #13 - Non-Cracked Condition of Spray Line Trench Bottom

As such, Waters Edge recommended no further action required for SWMU-11. In a May 7, 2015 NCDEQ correspondence, NCDEQ concurred with this conclusion.

L-1a (12) AOC-1 Area of Discharge North of the Ceramic Tile Pile Operational History

Our first point for this Section involves a clarification of the description of this particular area. In the 2005 RFA, AOC-1 is described as an “Area of Discharge from the Sludge Settling Ponds to Rat Springs Branch”; however, the associated figure in the 2005 RFA clearly depicts an area north of the Ceramic Tile Pile. Based on a discussion with NCDEQ, it was determined that the figure depicting the area north of the Ceramic Tile Pile was correct and accurately characterized AOC-1 as discussed in this Section.

TYPE OF UNIT: Discharge Area from the Ceramic Tile Pile

PERIOD OF OPERATION: 1972 to 1990 (No wastewater discharge received after 1990)

PHYSICAL DESCRIPTION AND CONDITION:

The Area of Discharge from the Ceramic Tile Pile (“AOC-1”) is located adjacent to the northeast corner of the Facility property line (see Figure L-1) (Aquaterra, 1997b; Booz Allen, 2003). A

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description of the operational history of the Ceramic Tile Pile has been previously discussed in Section L-1a (3). AOC-1 represents an area impacted from constituents from SWMU-3 that have migrated to the north.

Information pertaining to releases and a detailed site assessment history of AOC-1 are provided in Sections L-1b (5) and L-1c (5), respectively.

L-1a (13) AOC-2 Broken Ceramic Tile Roadway Operational History

TYPE OF UNIT: Road paved with broken ceramic tile

PERIOD OF OPERATION: Unknown date prior 1992 to present

PHYSICAL DESCRIPTION AND CONDITION:

The Broken Ceramic Tile Roadway constitutes Area of Concern 2 (“AOC-2”). It consists of an eight-foot wide roadway that begins in the northwest corner of the property beneath the asphalt cap constructed as part of the Sludge Settling Ponds (SWMU-2) closure activities, extends south for approximately 500 feet and terminates in the vicinity of the Baghouse (SWMU-6) and the Maintenance Building Waste Management Areas (SWMU-10) (see Figures L-1 and L-3). AOC-2 was partially constructed of waste tile fragments that were applied to the ground in the 1980s. During Sludge Settling Pond closure activities in the early 1990s, the northern portion of the roadway was excavated and placed on the tile pile. There was reportedly a confirmatory sample collected when the excavation was halted; however, this information cannot presently be documented. This excavated portion and the remainder of AOC-2 was subsequently covered with asphalt and gravel. The asphalt portion of the roadway is located on the north and south ends of the roadway. The gravel-covered portion of this unit is located in the middle portion of the road near the Filter Cake Waste Pile Area (SWMU-9) and the 20-Cubic Yard Sludge Container (SWMU-4). At the time of the September 2003 VSI, Booz Allen reported that the roadway appeared to be in good physical condition, with little significant cracking or deterioration of the asphalt (ENSCI, 1992; Booz Allen, 2003; ENSCI, 1994).

Information pertaining to releases and a detailed site assessment history of AOC-2 are provided in Sections L-1b (6) and L-1c (6), respectively.

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS

The 2005 RFA recommended no further action and Waters Edge concurs with this recommendation.

L-1b Information Pertaining to Releases

Based on the 2005 RFA, a total of eleven (11) SWMUs and three (3) AOCs have been identified at the Facility as summarized in Table L-1 and as depicted on Figure L-1. Four (4) SWMUs and two (2) AOCs are currently under evaluation for possible additional assessment including the following:

- Waste Water Pretreatment System (SWMU-1)
- Two (2) Sludge Settling Ponds (SWMU-2)
- Ceramic Tile Pile (SWMU-3)
- Walltown Branch (SWMU-7)
- Area of Discharge from the Tile Pile (AOC-1)
- Broken Ceramic Tile Roadway(AOC-2)

L-1b (1) Wastewater Pretreatment System (SWMU-1)

Previously, SWMU-1 received wastewater that was primarily generated by spray lines associated with the tile manufacturing operation. According to facility representatives, the wastewater contained high concentrations of solids which primarily consisted of clay and silica raw materials used to manufacture the tile.

Prior to 1990, the clay and silica contained hazardous constituents such as lead and chromium; however, it is unclear if SWMU-1 received wastewater contaminated with metals. If this unit did receive wastewater contaminated with metals, there is potential that it would be characteristic for toxicity, most likely for lead (D008); however, no sampling data was available to confirm this possibility. In addition, the pH of the incoming wastewater was usually in the range of 4 to 6. As a result, caustic soda was added to neutralize the pH to a nominal range of 7 to 8 before discharge to the sanitary sewer system (ENSCI, 1993; Booz Allen, 2003; Mannington, 2004). The City of Lexington POTW sampled this discharge regularly per their permit to assure no lead was present.

L-1b (2) Two (2) Sludge Settling Ponds (SWMU-2)

SWMU-2 consisted of two surface impoundments estimated at 130' (L) x 30' (W) each (based on preliminary assessment figures) located in the northwestern corner of the Facility, between the northern property boundary and the northern wall of the former Main Building. Prior to January 1, 1989, wastewater treatment conducted at the Facility consisted of passing wastewater through a series of two Sludge Settling Ponds (SWMU-2), allowing solids to settle prior to discharge. After

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wastewater passed through the second (eastern) settling pond, the wastewater discharged directly into Rat Spring Branch of the Yadkin-Pee Dee River Basin.

Prior to 1990, the clay and silica used at the Facility likely contained hazardous constituents such as lead and chromium. In addition, according to Facility representatives, the pH of the incoming wastewater was usually in the range of 4 to 6. A site assessment of the Facility dated April 12, 1990, consisted of a field investigation in which samples were collected from the Sludge Settling Ponds. TCLP analysis results detected leachable lead levels in the sludge ranging from 230 mg/L to 1,230 mg/L, which is well above the 5.0 mg/L threshold for a characteristic hazardous waste. All VOCs and SVOCs were BDL with the exception of methylene chloride, acetone, and carbon disulfide, which are considered laboratory artifacts. As a result, the solid waste (i.e., sludge) disposed in the Sludge Settling Ponds was a characteristic hazardous waste (D008) (NCDEQ, 1990b; ENSCI, 1993, 1994).

In July 1993, Mannington completed closure of the Sludge Settling Ponds (SWMU-2) according to the NCDEQ approved Closure Plan. Mannington submitted a certified closure report to NCDEQ on November 9, 2005, which NCDEQ subsequently accepted on February 1, 2006. As a result of closure activities, sludge was removed from both sludge ponds and stabilized with Portland Cement, such that the waste passed TCLP for lead. The stabilized material was placed back into the ponds and the area was capped with a RCRA compliant cap. According to facility representatives, the cap included a 30-millimeter synthetic liner and an asphalt cap that serves as the top layer. Additionally, all piping associated with the sludge ponds was removed. Some of the surrounding soils north and west of the Sludge Settling Ponds were excavated and placed on the Ceramic Tile Pile (“SWMU-3”) prior to its closure in 1997. According to a September 1992 Consent Agreement, sludge from SWMU-2 was also deposited in SWMU-3. At the time of the September 2003 VSI, the asphalt cover appeared to be in good condition with no significant cracks, staining, or erosion identified (Booz Allen RFI, 2005).

L-1b (3) Waste Ceramic Tile Pile (SWMU-3)

There have been numerous Ceramic Tile Pile and soil assessment efforts conducted as part of the tile pile waste characterization and soil assessment in support of the closure of SWMU-3. Based on the site assessments conducted between 1991 and 1997 at the Facility, sample analysis results detected leachable lead levels in the Waste Ceramic Tile Pile considered to be a characteristic hazardous waste. Results ranged from 7.57 mg/L (sample 2HA-1) to 187 mg/L (sample Comp-1) (see Table L-7). As a result, the solid waste (i.e., ceramic tile) disposed on the Waste Ceramic Tile Pile was considered a characteristic hazardous waste (D008) in that samples from several different areas contained TCLP lead levels in excess of the regulatory limit of 5.0 mg/L (NCDEQ, 1990b).

In addition, impacted sludge/soil from SWMU-2 was also deposited in the Waste Ceramic Tile Pile prior to closure as follows:

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- An unknown quantity of partially stabilized sludge and additional impacted soil located north and west of the Sludge Settling Ponds (SWMU-2) was excavated and deposited on the Ceramic Tile Pile (SWMU-3) prior to closure. According to the Closure Report for the Sludge Settling Ponds (SWMU-2), the partially stabilized sludge exceeded the NCGS via TCLP for mercury and zinc (closure standards NCDEQ temporarily used during that period of time) and the TCLP regulatory limit for lead when it was deposited on the Ceramic Tile Pile (SWMU-3) (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This excavated area also included one soil sample location SS-2 (see Figure L-4) from the area northeast of SWMU-2 which exceeded the lead TCLP threshold of 5.0 mg/L at a concentration of 6.64 mg/L.
- Impacted soil from along former Charles Avenue north of the Ceramic Tile Pile near the northern property boundary (see Figure L-2) was excavated and placed on the Waste Ceramic Tile Pile based on the results of borings HA-9 (total lead detected at 1,370 mg/kg in excess of the 1997 lead closure standard of 49.32 mg/kg) and 4HA-48 (total lead detected at 5,140 mg/kg in excess of the lead closure standard of 49.32 mg/kg). It is our understanding that no confirmation sampling was collected subsequent to the soil removal.

After the aforementioned multiple phases of soil assessment effort, the Facility initiated closure with wastes in place of the Ceramic Tile Pile (SWMU-3) due to soils exhibiting leachable levels of lead in excess of USEPA standards that were considered a characteristic hazardous waste (D008). Consistent with the approved 1997 Closure Plan, wastes were left in place and the unit was closed with a RCRA-compliant cap. The unit is capped with a "flat top surface cap" and a "slope surface cap" using a RCRA-compliant cap including a vegetative cover, geotextile liner, HDPE liner, and another managed vegetative cap. The top portion of the unit is level with the facility parking lot and has gravel covering the majority of the top of the unit. The sloped sides of the unit are covered with native vegetation. The 1997 approved *Ceramic Tile Pile Closure Plan* also depicted an area which exceeded three (3) times background levels for the metals barium, boron, lead, manganese and zinc. These other areas that showed elevated total inorganic values in excess of three (3) times background levels were covered with the silty clay cover material used to stabilize the RCRA cap as shown on Figure L-2. The silty clay cover was two (2) or more feet thick over these elevated total inorganic areas, thus preventing dermal contact and minimizing leaching of the metals from the soils to the groundwater. (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This closure plan was approved by NCDEQ on April 26, 2004.

L-1b (4) Walltown Branch (SWMU-7), a previously piped-in stream

Walltown Branch (SWMU-7) was not designed to manage or handle waste. This unit is a tributary that was located on the Facility property prior to the property being purchased or the Facility being operated. SWMU-3 is located west and adjacent to the Walltown Branch as shown on Figure L-1. SWMU-3 is upgradient of the Walltown Branch. Prior to its enclosure, runoff from the Ceramic

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Tile Pile and the Facility entered into the Walltown Branch. As a result, according to Booz Allen, SWMU-7 may have received hazardous constituents from the waste tile fragments primarily consisting of RCRA metals such as lead (Booz Allen, 2003). This unit would no longer receive hazardous constituents as it was piped in 1992/1993 to exclude runoff from SWMU-3.

L-1b (5) Area of Discharge from the Tile Pile (AOC-1)

The Area of Discharge from the Tile Pile (AOC-1) was not designed to manage or handle waste. AOC-1 is located adjacent to the northeast corner of the Facility property line (see Figure L-1) (Aquaterra, 1997b; Booz Allen, 2003). A description of the Operational History of the Waste Ceramic Tile Pile has been previously discussed in Section L-1a (3). AOC-1 may have received hazardous constituents from the waste tile fragments primarily consisting of RCRA metals such as lead.

L-1b (6) Broken Ceramic Tile Roadway(AOC-2)

The Broken Ceramic Tile Roadway (AOC-2) was not designed to manage or handle waste. This AOC consists of an 8-foot wide roadway that begins in the northwest corner of the property beneath the asphalt cap constructed as part of the Sludge Settling Ponds (SWMU-2) closure activities, extends south for approximately 500 feet and terminates in the vicinity of the Baghouse (SWMU-6) and the Maintenance Building Waste Management Areas (SWMU-10) (see Figures L-1 and L-3). AOC-2 was partially constructed of waste tile fragments that were applied to the ground in the 1980s.

L-1c Sampling and Analysis

L-1c (1) SWMU-1 Site Assessment History

At the time of the September 2003 VSI conducted by Booz Allen, SWMU-1 was reportedly in poor condition. According to Booz Allen, numerous stains were observed both inside the secondary containment and on the tile floor beneath the precipitating tanks and the filter press. In addition, Booz Allen reported the tile floor to be cracked and deteriorating in several places and a substantial amount of an unknown white powdery residue was observed on the floor and secondary containment walls. Also, according to Booz Allen, a significant amount of liquid was observed in the sump and on the tile floor. The source of the liquid could not be determined; however, it appeared to Booz Allen that the liquid was untreated or partially treated wastewater that had spilled or leaked from the precipitating tanks. Finally, Booz Allen observed the bung on the metal drum containing PolySep 1127 was open and a significant amount of rust was observed on the top and sides of the drum. In general, Booz Allen reported observing very poor housekeeping procedures associated with the Wastewater Pretreatment System (SWMU-1) (Booz Allen, 2003).

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Because of the poor housekeeping procedures observed by Booz Allen associated with SWMU-1 during the 2003 VSI, the poor structural condition of the floor (e.g., cracks), and the extensive staining they observed, Booz Allen recommended that sampling be performed to further investigate the potential for release of hazardous constituents. The 2005 RFA prepared by Booz Allen recommended sampling to include wipe sampling of the floor and walls in the areas of staining, an investigation to determine the integrity of the sump and floor of the unit, and, if it is determined that the sump or floor integrity has been compromised, sampling of the soils beneath the unit. The RFA recommended that samples be analyzed for RCRA metals, specifically lead.

Based on this recommendation, on January 23, 2015 Waters Edge collected four (4) wipe samples from the surface of SWMU-1 using a hexane wipe and submitted the samples to a laboratory according to EPA-approved methodologies. All four (4) samples were analyzed for RCRA Primary Metals according to Method 6010 and Method 7470. The following metals were detected in at least one (1) of the four (4) wipe samples at concentrations above the method detection limit:

- arsenic (ND to 4.1 total µg)
- barium (134 to 854 total µg)
- cadmium (0.83 to 7.8 total µg)
- chromium (14.0 to 38.5 total µg)
- lead (262 to 2,000 total µg)
- selenium (2.7 to 4.0 total µg)
- silver (ND to 6.3 total µg)
- mercury (ND to 5.6 total µg)

The March 5, 2015 report documenting these activities, including photo documentation of the sample locations, is provided in Appendix L-1.

On May 7, 2015, Ms. Mary Siedlecki representing NCDEQ reviewed the above mentioned interim remediation and assessment effort and recommended in a correspondence to attempt to power wash the concrete pad, collect rinsate water, and analyze wipe samples in an attempt to demonstrate results below method detection limits. Achieving all “non-detect” sample results at such low levels would likely be a challenge on most any industrial or commercial surface. We are considering alternative options.

L-1c (2) SWMU-2 Site Assessment History

The site assessment history surrounding the closed Sludge Settling Ponds (SWMU 2) has been developed from several previous investigations as follows:

1989 Soil/Tile Material and Sludge Settling Pond Assessment

The 1989 soil assessment consisted of fourteen (14) soil test borings advanced in background native soils (B-1, B-2, and B-3), in the area of SWMU-3 (B-7 to B-14) and in the area of the Sludge Settling Ponds (B-4 to B-6). Soil sample B-4 was collected at a depth of 6.0 to 7.5 feet bgs, soil sample B-5 was collected at a depth of 1.0 to 2.5 feet and 6.0 to 7.5 feet bgs, and soil sample B-6 was collected at a depth of 2.5 to 4.0 feet and 17.5 to 19.0 feet bgs for PPM analysis. PPM were not detected in samples B-4 to B-6 above the method detection limits. A photocopy of the data tables and a figure showing location of borings is contained in the July 11, 1997 *Ceramic Tile Closure Plan*- Appendix A. Results for B-4 to B-6, related to the Sludge Settling Pond, are contained in Tables L-2 and L-3 and shown on Figure L-4.

1994-2002 Sludge Settling Pond Assessment

- **Soil Assessment**- Subsequent to the previously mentioned closure activities, numerous rounds of additional soil assessment were conducted both north of SWMU-2 and west along the Broken Ceramic Tile Roadway (AOC-2) from 1994 to 2002. The location of thirty-seven (37) soil assessment borings (SS-1 to SS-9 and SS-16 to SS-43) are depicted on Figure L-4, and five (5) background boring sample locations (B-1 to B-3, BG-1 and BG-2) are depicted on Figure L-5. Historic information regarding soil borings SS-10 through SS-15 could not be located. Initially, soil samples surrounding SWMU-2 were collected at a depth of 1 to 2 feet bgs. If sample results indicated a concentration above the risk-based standards outlined below, additional soil samples were collected at depths of 3 feet bgs and 5 feet bgs, as necessary, with the exception of sample SS-24, where additional samples were collected at depths of 3, 4 and 6 feet bgs. Soil samples associated with SWMU 2 were analyzed for PPM (both total and via TCLP) and radionuclides, with the assessment results summarized in Table L-2 (TCLP results are contained in the July 14, 2004 Revised Closure Plan for SWMU 2). The background soil samples were collected at depths of 2.5 to 4 feet bgs and 10 to 11.5 feet bgs in boring B-1, at a depth of 2.5 to 4.0 feet bgs in boring B-2, and at a depth of 3.5 to 5.0 feet bgs in boring B-3 for PPM analysis. Background soil samples BG-1 and BG-2 were collected at a depth of 0.0 to 1.0 foot bgs for PPM analysis. Native soil samples, BG-1 and BG-2, are depicted in the November 5, 2002 *Proposed Modification to the Closure Plan, Lagoon Closure Activities*, Figure 2 and Table 1.

The background samples results are summarized in Table L-4. Based on direction from representatives of NCDEQ in the 1990s, for closure purposes, soil sample results were compared to the highest of the following three risk-based standards:

- 1993 Soil Screening Level (SSL) Protective of Groundwater
- Region 9 Risk-Based Concentration (RBC)
- Site Specific Background Level plus two times (2X) the Standard Deviation

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Based on these risk-based standards, additional material exhibiting concentrations above the risk-based standards (SS-2, SS-3, SS-5 through SS-7, SS-22 through SS-24, SS-33, SS-35, and SS-36 sample locations) was removed from these areas and deposited on SWMU-3 prior to its closure in 1997 (see depicted area on Figure L-4). This included one location, SS-2 outside the northeastern fence line, where the surface soil contained 6.64 mg/L of leachable lead, which exceeds the 5 mg/L TCLP regulatory limit. With the exception of areas represented by samples SS-22 through SS-24, where confirmatory samples SS-39 through SS-41 were collected (western area of excavation), confirmatory sampling was not conducted in these areas after the removal of impacted material. These areas (SS-2, SS-3, SS-5 through SS-7, SS-33, SS-35, and SS-36) would be considered data gaps and confirmatory sampling for metals is recommended. It was also determined that the radionuclides did not exceed background levels; therefore, were considered benign. This removal action and risk evaluation is further documented in the July 14, 2004 *Revised Closure Plan for the Former Settling Ponds*.

- **Surface Water and Sediment-** There is no surface water or sediment associated with SWMU-2.
- **Groundwater Assessment-** There have been numerous groundwater assessment monitoring wells placed upgradient, side-gradient and downgradient of SWMU-2. These include groundwater monitoring wells MW-1 (upgradient), MW-3A, MW-9D, MW-10, MW-11D, MW-12, MW-13, MW-14 and MW-28D (see Part E - Groundwater Monitoring). Prior to initiating closure activities at this unit, groundwater monitoring results indicated the presence of cadmium, iron, lead, manganese, nickel, and zinc in shallow and deep groundwater monitoring wells at concentrations that exceeded the NCGS. Specifically, groundwater samples collected from monitoring wells MW-1 (upgradient), MW-3A, MW-9D, MW-10, MW-11D, MW-12, MW-13, MW-14 and MW-28D all contained exceedances of the NCGS during numerous previous groundwater sampling events in 1990, 1991, and/or 1992 (ENSCI, 1993, 1994; NCDEQ, 1999a, 1999b, 1999d). Groundwater impact is discussed as a separate site-wide media in Part E - Groundwater Monitoring.

SWMU-2 Past Soil Assessment Results versus Current Risk-Based Standards and Existing Data Gaps

In an effort to evaluate the extent of impacted soil remaining outside the area of SWMU-2 as defined by current risk-based Inactive Hazardous Site Branch (IHSB) standards, the past soil analytical results were compared to the following criteria:

Current IHSB PGW PSRGs

- Current IHSB Industrial PSRGs
- Range of background soil sample concentrations collected for closure activities for both SWMU-2 and SWMU-3 (see Table L-4 and Figure L-5).

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Comparison of PSRG exceedances versus a **range** of background sampling results has been successfully used and accepted by NCDEQ in previous investigations and is consistent with REC Guidance (*Guidelines for Assessment and Cleanup- January 2014-Section 4.1.1.1- Notes (2)*).

Based on the criteria mentioned above, soils from the following boring locations outside the closed Sludge Settling Ponds were not removed but still exceed either IHSB PGW or Industrial PSRGs **and** the range of background concentrations:

SWMU-2 Current IHSB RBC Exceedances

| <u>Boring Location</u> | <u>Above IHSB PGW PSRG and Range of Background Samples</u> | <u>Above IHSB Industrial PSRG and Range of Background Samples</u> |
|-------------------------------|---|--|
| SS-8 | Lead (996 versus 270 PSRG) Zinc (5,230 versus 1,200 PSRG) | Lead (996 versus 800 PSRG) |
| SS-21 | Selenium (2.51 versus 2.1 PSRG) | None |
| SS-26 | Mercury (4.02 versus 1.0 PSRG) | Mercury (4.02 versus 3.1 PSRG) |
| SS-29 | Mercury (2.19 versus 1.0 PSRG) | None |
| SS-37 | Mercury (2.65 versus 1.0 PSRG) | None |

Note: All concentrations in (mg/kg).

Results of data comparisons are shown in Table L-3 and soil sample locations are shown on Figure L-4.

Five (5) borings located outside the cap and area of excavation (SS-8, SS-21, SS-26, SS-29 and SS-37) exceed either current IHSB PGW or Industrial PSRGs **and** range of background samples. Deeper samples exhibiting concentrations below all current PSRGs for individual metals were not collected at these five boring locations.

A No Further Action recommendation for SWMU-2 was made by EPA contractor Booz Allen in the 2005 RFA, contingent upon continued compliance with the approved closure and post-closure plans. Based on our current assessment, five boring locations (SS-8, SS-21, SS-26, SS-29 and SS-37) outside of SWMU-2, and eight locations (SS-2, SS-3, SS-5 through SS-7, SS-33, SS-35, and SS-36) where confirmatory sampling was not conducted after the removal of impacted material, represent the existing data gaps to be considered for further assessment. Initially, we would propose that NCDEQ review RBC outlier locations SS-21, SS-29 and SS-37. Parties could then determine whether additional borings on existing cemetery property would be feasible. We would conclude that there may be issues with drilling borings in a cemetery and it may be most prudent to concur with the NFA conclusion as part of the 2005 RFA at these three locations. We would propose additional soil assessment for metals near SS-8 and SS-26, and confirmatory sampling at eight locations (SS-2, SS-3, SS-5 through SS-7, SS-33, SS-35, and SS-36) where sampling was not conducted after the removal of impacted material. We would also propose using either multiple data point averaging for Health-Based PSRGs exceedances consistent with IHSB

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REC Guidance (Appendix E) or SPLP sampling for PGW exceedances since it has been in excess of 15 years since the “release” time point.

L-1c (3) SWMU-3 Site Assessment History

The site assessment of the existing Ceramic Tile Pile material has been developed from several previous investigations as follows:

- **Soil Assessment**

- A soil assessment conducted by Aquaterra in November and December of 1989. *Soil Boring Assessment, Mannington Ceramic Tile, Lexington, North Carolina*, Aquaterra report number R835-90, dated January 31, 1990.
- A site assessment of the facility, prepared by Mannington, and dated April 12, 1990 which was previously detailed and discussed in Section 6.3 of the 2005 RFA.
- A tile pile material assessment conducted by Aquaterra in October 1991. *Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*, Aquaterra report number R1547-92, dated January 7, 1992.
- An additional tile pile material assessment conducted by Aquaterra in March 1992. *Additional Sampling of Waste Ceramic Chip Tile, Mannington Ceramic Tile, Lexington, North Carolina*, Aquaterra report number R1646-92, dated April 1, 1992.
- Additional tile pile testing and treatability study conducted by ENSCI during September 1992. *Comprehensive Tile Pile Testing Program and Treatability Study, Mannington Ceramic Tile, Lexington, North Carolina*, ENSCI report dated October 20, 1992.
- In December 1996, March, April and May 1997, Aquaterra conducted additional post-closure assessment of the soil and tile pile.

Figures showing the approximate location of all the previous sample locations through 1992 are contained in the July 11, 1997 *Ceramic Tile Closure Plan*- Appendices A, B, and C. Sample locations for the 1996 and 1997 assessments are shown on the July 11, 1997 *Ceramic Tile Closure Plan*- Figure 2-1. Based on all previous investigations, we have depicted a combined SWMU-3 and AOC-1 (Area of Discharge from the Tile Pile) past soil sample location map on Figure L-2.

- **Surface Water and Sediment-** There have been both surface water and sediment assessments conducted in Walltown Branch (SWMU-7) which borders the eastern portion of the Ceramic Tile Pile. This is further discussed as part of SWMU-7 in Section L-1c (4).
- **Groundwater Assessment-** There have been numerous groundwater assessment monitoring wells placed upgradient, side-gradient and downgradient of SWMU 3. These include groundwater monitoring wells MW-1 (upgradient), MW-7A, MW-18, MW-19D, MW-21A, MW-22A, MW-23A, MW-24, MW-25, MW-26-A-2 and MW-29 (see Part E - Groundwater Monitoring). Prior to initiating closure activities at this unit, groundwater monitoring results indicated the presence of numerous inorganic parameters exceeding the NCGS. Groundwater impact is discussed as a separate site-wide media in Part E - Groundwater Monitoring.

Results of the Past Ceramic Tile Pile and Soil Investigations

1989 Soil/Tile Material Assessment

The 1989 soil assessment consisted of fourteen (14) soil test borings advanced in background native soils (B-1, B-2, and B-3), in the area of SWMU 3 (B-7 to B-14), and in the area of the Sludge Settling Ponds (B-4 to B-6). A photocopy of the data tables and a figure showing location of borings is contained in the July 11, 1997 *Ceramic Tile Closure Plan-* Appendix A. The background boring locations (B-1 to B-3) are shown on Figure L-5 and borings B-7 to B-14 are shown on Figure L-2. Borings B-4 to B-6 were previously described in Section L-1c (1). The samples were analyzed for the eight (8) RCRA metals. Soil samples were collected at a depth of 5.0 to 6.5 feet bgs in boring B-7, at depth of 7.5 to 9.0 feet bgs and 20 to 21 feet bgs in boring B-8, and at a depth of 2.5 to 4.0 feet bgs in borings B-9 to B-14. The background sample results for borings B-1, B-2, and B-3 are summarized in Table L-4. The remaining sample results for SWMU 3 (B-7 to B-14) are summarized in Table L-5 and compared to the 1997 approved closure plan standards (three [3] times background levels) for five (5) inorganic constituents.

With the exception of B-8 at depth of 7.5 to 9.0 feet bgs, which exhibited lead above the 1997 closure standard and was required to be placed under the cap, the sample results for SWMU 3(B-7 to B-14) did not exceed three (3) times the background levels for the five (5) metals (barium, boron, lead, manganese and zinc) listed in the approved 1997 closure plan.

Table L-6 compares the sample results for SWMU 3 (B-7 to B-14) to current IHSB PGW PSRGs, IHSB Industrial Health-Based PSRGs, and the range of background concentrations for the eight (8) RCRA metals. There are no exceedances of the current IHSB PGW PSRG, IHSB Industrial Health-Based PSRG, or range of background samples, with the exception of B-8 which exhibited a lead concentration above background levels, and was located under the cap.

October 1991 Tile Pile Material Assessment

The October 1991 tile pile assessment consisted of excavating four (4) test pits approximately 16 to 18 feet deep in the middle portion of the Ceramic Tile Pile. Samples were collected every 2 feet and composited into one (1) composite sample per test pit (TP-1, TP-2, TP-3, and TP-4 – see Figure L-2). The samples were analyzed for the following total metals:

| | | |
|-----------------|-----------|-----------|
| aluminum | iron | sodium |
| antimony | lead | tin |
| barium | magnesium | titanium |
| boron | nickel | vanadium |
| calcium | potassium | zinc |
| chromium, total | silver | zirconium |
| cobalt | | |

The samples were also analyzed for the following additional inorganic and indicator parameters:

| | | |
|------------|------------|----------|
| alkalinity | fluoride | pH units |
| bromide | phosphates | |
| chloride | sulfates | |

Additionally, the samples were analyzed for the TCLP metals and the following radionuclides:

| | | |
|-------------|--------------|------------|
| gross alpha | radium 226 | radium 228 |
| gross beta | praseodymium | |

The photocopies of the analytical results and figures showing the sample locations are shown in the July 11, 1997 *Ceramic Tile Closure Plan* - Appendix A. Analytical results are summarized in Table L-5 for total metals, Table L-7 for TCLP metals, and Table L-6 for additional metals. Sample locations are shown on Figure L-2.

The conclusions gained from this investigation are summarized below:

- All four sample results exceeded the background levels for barium, lead and zinc as listed in the 1997 approved closure plan, with the exception of barium in sample TP-3, which was below the background level. Additionally, one of the samples (TP-4) exceeded the background level for boron. Sample results are summarized in Table L-5.
- Lead exceeded the regulatory level of 5 mg/L for the TCLP extract in all four samples with concentrations ranging from 47 mg/L to 130 mg/L. Sample results are summarized in Table L-7.
- All four composite sample results exceed PGW PSRGs and/or range of background sample concentrations for barium, boron, lead, silver, and zinc, except samples TP-2 and TP-3

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which do not exceed either level for barium and samples TP-1, TP-2, and TP-3 which do not exceed either level for silver. All four borings exceed the PGW PSRG, Industrial PSRG and range of background sample concentrations for lead. Sample results are summarized in Table L-6.

Per the approved closure plan, all four boring locations were placed under the cap. The remaining analytes were deemed to not exceed risk-based concentrations or to not be considered radioactive.

March 1992 Tile Pile Material Assessment

The March 1992 tile pile material assessment consisted of four soil borings (B-1, B-2, B-3, and B-4) advanced to depths of approximately 22 to 24.5 feet bgs as shown on Figure L-2. Soil samples were collected and analyzed for VOCs according to SW-846 Method 8240, SVOCs according to SW-846 Method 8270, and formaldehyde. Photocopies of the analytical data table and figure showing boring locations are contained in the July 11, 1997 *Ceramic Tile Closure Plan- Appendix A* and the laboratory results are summarized in Table L-8.

Methylene chloride, the only VOC detected, was identified in all four samples ranging in concentration from 820 µg/kg to 860 µg/kg. Bis(2-ethylhexyl) phthalate, the only SVOC detected, was identified in all four samples ranging in concentrations from 1,900 µg/kg to 5,300 µg/kg. No formaldehyde was detected. It was suspected that the methylene chloride was a laboratory artifact and that the bis(2-ethylhexyl) phthalate came from the vinyl gloves worn by the samplers and/or the laboratory personnel. These constituents were not used in the manufacturing of ceramic tile. In the 1997 closure plan, these constituents were not deemed to be constituents of concern.

Based on current RBCs, all methylene chloride sample results are above current PGW PSRGs but below Industrial PSRGs. All bis(2-ethylhexyl) phthalate sample results are below both PGW PSRGs and Industrial PSRGs (see Table L-8). We believe that these should not be considered chemicals of concern (“COCs”); however, these samples represent material situated under the cap.

September 1992 Tile Pile Material Assessment

The September 1992 tile pile material assessment consisted of four test pits (EX-1, EX-2, EX-3, and EX-4) placed as close as possible to the four test pits (TP-1, TP-2, TP-3, and TP-4) discussed in Section 2.2.2 of the *October 1991 Tile Pile Material Assessment*. The four test pits were excavated to a depth of 21 feet. Samples were collected in EX-1 at 18 feet, EX-2 at 20 feet, EX-3 at 16 feet, and EX-4 at 21 feet bgs. The samples were analyzed for VOCs (Method 8240), SVOCs (Method 8270), formaldehyde, and the radionuclides gross alpha, gross beta, radium 226, radium 228, and uranium 238. Summary data tables and a figure showing test pit locations are contained in the July 11, 1997 *Ceramic Tile Closure Plan- Appendix A*, and are depicted on Figure L-2 and summarized in Table L-8.

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No VOCs, SVOCs, or formaldehyde were detected in the four test pit samples (EX-1, EX-2, EX-3, and EX-4). The radionuclide results in pCi/g were determined to be benign.

December 1996 Tile Pile Material Assessment

Four soil borings (SB-1, SB-2, SB-3, and SB-4) were installed on the tile pile from depths of 15 to 30 feet bgs (locations contained in the July 11, 1997 *Ceramic Tile Closure Plan*- see Figure 2-1 and Figure B-1 in Appendix B), and boring locations are also depicted on Figure L-2 of this document. One sample from each boring was randomly chosen (SB-1-15', SB-2-10', SB-3-15', and SB-4-10') and then two of the four samples (SB-1-15' and SB-4-10') were submitted to the laboratory for analysis. Additionally, two soil borings (SB-5-2.5' bgs and SB-6-2.5' bgs) as shown on Figure L-2 were advanced adjacent to the tile pile and were considered background borings in the 1997 *Ceramic Tile Closure Plan*; however, we would disagree and conclude that these would be considered soil assessment borings. Samples from these borings were also submitted to the laboratory. The samples (SB-1-15' bgs, SB-4-10' bgs, SB-5-2.5' bgs and SB-6-2.5' bgs) were analyzed for the following total metals:

| | | | |
|---------|-----------------|----------|----------|
| arsenic | chromium, total | mercury | titanium |
| barium | cobalt | nickel | vanadium |
| boron | lead | selenium | zinc |
| cadmium | manganese | silver | |

The inorganics bromide, nitrates, sulfates, and phenols, and the radionuclides gross alpha and gross beta were also analyzed for each sample. One composite sample (Comp-1) of the four random samples was analyzed for the TCLP metals.

The conclusions gained from this investigation are summarized below:

- The composite sample (Comp-1) detected lead in the TCLP extract at a concentration of 187 mg/L which is in excess of the 5.0 mg/L standard and would be considered a characteristic hazardous waste (see Table L-7).
- Sample SB-1-15' exceeded the 1997 NCDEHNR approved background closure standard for barium, boron, lead and zinc. Sample SB-4-10' exceeded the 1997 NCDEHNR approved background levels for barium, lead and zinc. Samples SB-5-2.5' and SB-6-2.5' were below all 1997 NCDEHNR closure standards (see Table L-5). Sample locations SB-1-15', SB-4-10' and SB-6-2.5' were placed under the full RCRA cap while SB-5-2.5' was placed under a clay cap.
- All four soil borings exceeded both IHSB PGW PSRGs and range of background samples as follows (see Table L-6):
 - SB-1-15'- barium, boron, lead and zinc
 - SB-4-5'- lead and zinc
 - SB-5-2.5'- boron

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- SB-6-2.5' - vanadium
- Two of the four borings, SB-1-15' and SB-4-10', also exceeded the IHSB Industrial Health-Based PSRG for lead (see Table L-6).

Again, these four (4) soil boring locations are currently under either the full RCRA-cap or clay cap. The gross alpha and gross beta values were concluded to be benign.

Additional December 1996 Tile Pile Soil Assessment

In December 1996, Aquaterra personnel collected the following additional samples:

- Three (3) soil samples (HA-1, HA-2, and HA-3 along the north and east edge of the tile pile
- Two (2) native soil background samples (HA-4 and HA-5)

All samples were analyzed for the five metals (barium, boron, lead, manganese, and zinc) which were part of the approved 1997 closure plan. The sample locations are depicted in the July 11, 1997 *Ceramic Tile Closure Plan*- Figure 2-1. The borings considered background are HA-4 and HA-5, which are depicted on Figure L-5, while the remaining borings (HA-1, HA-2, and HA-3) are depicted on Figure L-2 since they are located under the SWMU-3 Ceramic Tile Pile cap. The background sample analytical results are summarized in Table L-4 and the remaining sample results are summarized in Tables L-5 and L-6 since they are part of the closure samples for SWMU-3 and are all located under the HDPE or clay cap.

Soil borings SB-5-2.5' and SB-6-2.5', collected during the initial December 1996 sampling event, and hand auger boring HA-1 were located along the toe of the tile pile and adjacent to Walltown Branch which had been piped in as of the date of the report in 1997. These samples were collected to evaluate if any metals had migrated from the tile pile into the downgradient native soils. Hand auger borings HA-2 and HA-3 were placed north and east of the tile pile along Walltown Branch. Hand auger boring HA-4 was placed downgradient and east of the tile pile adjacent to the eastern property boundary. HA-5 was placed upgradient and west of the tile pile and approximately 250 feet east of monitoring well MW-1. Hand auger borings HA-1, HA-2, and HA-3 represent assessment borings adjacent to Walltown Branch while HA-4 and HA-5 represent background borings.

The concentrations for the four samples (HA-2, HA-3, HA-4, and HA-5) were compared as an average range of background values and then compared to samples SB-5-2.5', SB-6-2.5', and HA-1. Sample HA-1 showed elevated levels of barium, lead, and zinc compared to the background samples. However, the concentrations were well below the levels of lead and zinc seen in the tile pile samples SB-1-15' and SB-4-10' (see Table L-5). Based on this data, there has not been significant migration of constituents from the tile pile into the native soils at HA-2 and HA-3.

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However, ultimately all locations (HA-1, HA-2, HA-3, SB-5-2.5', and SB-6-2.5') were placed under the ceramic tile pile cap during closure.

We also compared these past sample results versus current IHSB PGW PSRGs and Industrial Health-Based PSRGs and had the following exceedances (see Table L-6):

- SB-5-2.5' PGW PSRG exceedance for boron (127 mg/kg versus PGW PSRG at 45 mg/kg and a range of background samples of <10.5 mg/kg-123 mg/kg)
- SB-6-2.5' PGW PSRG exceedance for vanadium (736 mg/kg versus PGW PSRG at 6.0 mg/kg and a range of background samples of 5.01 mg/kg-199 mg/kg)
- HA-1 PGW PSRG exceedance for lead (501 mg/kg versus PGW PSRG at 270 mg/kg and range of background samples of <0.5-18.8 mg/kg), and zinc (1,430 mg/kg versus PGW PSRG at 1,200 mg/kg and range of background samples of 27.3 mg/kg-124 mg/kg)
- HA-2 PGW PSRG exceedance for boron (59.4 mg/kg versus PGW PSRG at 45 mg/kg), cobalt (17.1 mg/kg versus PGW PSRG at 0.9 mg/kg), manganese (589 mg/kg versus PGW PSRG at 65 mg/kg and range of background samples at 56.6 mg/kg-449 mg/kg), and vanadium (79.5 mg/kg versus PGW PSRG at 6.0 mg/kg)
- HA-3 PGW PSRG exceedance for vanadium (29.7 mg/kg versus PGW PSRG at 6.0 mg/kg)

March, April, and May 1997 Additional Tile Pile Soil Assessment

In March, April, and May 1997, Aquaterra personnel collected the following samples:

- HA-6 to HA-18 (collected from locations at the perimeter of the tile pile, no depths specified)
- TP-1A to TP-1F (collected from interior tile pile locations, no depths specified)
- 2HA-22, 2HA-23, 2HA-35, 2HA-38, 2HA-40, 2HA-42, 2HA-43, 2HA-44, 2HA-46 to 2HA-49
- MS-1 to MS-6 (collected from the northwestern side of the tile pile at depths ranging from 1.0 feet bgs to 1.66 feet bgs)

All samples were analyzed for the five metals (barium, boron, lead, manganese, and zinc) which were part of the approved closure plan. Additionally, thirteen samples (2HA-1, 2HA-2, 2HA-7, 2HA-9, 2HA-10, 2HA-23, 2TP-1C, MS-1, MS-3, MS-5, 4HA-47, 4HA-47-2, and 4HA-48) were analyzed for lead via TCLP. The sample locations are depicted in the July 11, 1997 *Ceramic Tile Closure Plan*- Figure 2-1 and on Figure 8. The analytical results are depicted in Tables L-5 and L-6 for the total metals. The lead via TCLP is summarized in Table L-7.

Conclusions from Past Waste Ceramic Tile Pile Material and Soil Assessments

Tile Pile Closure

Based on the site assessments conducted between 1991 and 1997 at the Facility, sample analysis results detected leachable lead levels in the Waste Ceramic Tile Pile considered to be a characteristic hazardous waste. Results ranged from 7.57 mg/L (sample 2HA-1) to 187 mg/L (sample Comp-1) (Table L-7). As a result, the solid waste (i.e., ceramic tile) disposed on the Waste Ceramic Tile Pile was considered a characteristic hazardous waste (D008) in that samples from several different areas contained TCLP lead levels in excess of the regulatory limit of 5.0 mg/L (NCDEQ, 1990b).

In addition, impacted sludge/soil from SWMU-2 was also deposited in the Waste Ceramic Tile Pile prior to closure as follows:

- An unknown quantity of partially stabilized sludge and additional impacted soil located north and west of the Sludge Settling Ponds (SWMU-2) was excavated and deposited on the Ceramic Tile Pile (SWMU-3) prior to closure. According to the Closure Report for the Sludge Settling Ponds (SWMU-2), the partially stabilized sludge exceeded the NCGS via TCLP for mercury and zinc (closure standards NCDEQ temporarily used during that period of time) and the TCLP regulatory limit for lead when it was deposited on the Ceramic Tile Pile (SWMU-3) (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This excavated area also included one soil sample location SS-2 (see Figure L-4) from the area northeast of SWMU-2 which exceeded the lead TCLP threshold of 5.0 mg/L at a concentration of 6.64 mg/L.
- Impacted soil from along former Charles Avenue north of the Ceramic Tile Pile near the northern property boundary (see Figure L-2) was excavated and placed on the Waste Ceramic Tile Pile based on the results of borings HA-9 (total lead detected at 1,370 mg/kg in excess of the 1997 lead closure standard of 49.32 mg/kg) and 4HA-48 (total lead detected at 5,140 mg/kg in excess of the lead closure standard of 49.32 mg/kg). It is our understanding that no confirmation sampling was collected subsequent to the soil removal.

After the aforementioned multiple phases of soil assessment effort, the Facility initiated closure with wastes in place of the Ceramic Tile Pile (SWMU-3) due to soils exhibiting leachable levels of lead in excess of USEPA standards that were considered a characteristic hazardous waste (D008). Consistent with the approved 1997 Closure Plan, wastes were left in place and the unit was closed with a RCRA-compliant cap. The unit is capped with a "flat top surface cap" and a "slope surface cap" using a RCRA-compliant cap including a vegetative cover, geotextile liner, HDPE liner, and another managed vegetative cap. The top portion of the unit is level with the facility parking lot and has gravel covering the majority of the top of the unit. The sloped sides of the unit are covered with native vegetation. The 1997 approved *Ceramic Tile Pile Closure Plan*

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also depicted an area which exceeded three (3) times background levels for the metals barium, boron, lead, manganese and zinc. These other areas that showed elevated total inorganic values in excess of three (3) times background levels were covered with the silty clay cover material used to stabilize the RCRA cap as shown on Figure L-2. The silty clay cover was two (2) or more feet thick over these elevated total inorganic areas, thus preventing dermal contact and minimizing leaching of the metals from the soils to the groundwater. (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003). This closure plan was approved by NCDEQ on April 26, 2004.

SWMU-3 Past Soil Assessment Results versus Current Risk-Based Standards and Existing Data Gaps

SOIL

There have been numerous Ceramic Tile Pile and soil assessment efforts conducted as part of the tile pile waste characterization and soil assessment in support of the closure of the RCRA unit (SWMU-3). In Table L-8 and Table L-6, we have compared all past soil sampling for inorganic constituents, VOCs, SVOCs, formaldehyde and phenols to current PGW PSRGs and Industrial PSRGs. Based on a recently completed project for a State-Owned Property (Dorothea Dix Campus), we have also compared the inorganic exceedances to a range of background samples that were collected as part of the 1993 Sludge Settling Ponds and 1997 Tile Pile Closure Assessments. Based on the entire population of soil samples, we have summarized the soil borings which exceed PGW PSRGs **and** the range of background samples as well as Industrial Health-Based PSRGs **and** the range of background samples below (locations depicted on Figure L-2):

SWMU-3 Current RBC Exceedances

| <u>Boring Location</u> | <u>Above IHSB PGW PSRGs and Range of Background Samples</u> | <u>Above IHSB Ind. PSRGs and Range of Background Samples</u> |
|-------------------------------|---|---|
| TP-1 | Lead (1,600 versus 270 PSRG) Zinc (2,400 versus 1,200 PSRG) | Lead (1,600 versus 800 PSRG) |
| TP-2 | Boron (130 versus 45 PSRG) Lead (3,100 versus 270 PSRG) Zinc (2,000 versus 1,200 PSRG) | Lead (3,100 versus 800 PSRG) |
| TP-3 | Boron (200 versus 45 PSRG) Lead (3,900 versus 270 PSRG) Zinc (2,700 versus 1,200 PSRG) | Lead (3,900 versus 800 PSRG) |
| TP-4 | Barium (820 versus 580 PSRG) Boron (240 versus 45 PSRG) Lead (4,000 versus 270 PSRG) Silver (14 versus 3.4 PSRG) Zinc (6,100 versus 1,200 PSRG) | Lead (4,000 versus 800 PSRG) |

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| <u>Boring Location</u> | <u>Above IHSB PGW PSRGs and Range of Background Samples</u> | <u>Above IHSB Ind. PSRGs and Range of Background Samples</u> |
|-------------------------------|--|---|
| SB-1 | Barium (659 versus 580 PSRG) Boron (426 versus 45 PSRG) Lead (1,090 versus 270 PSRG) Zinc (4,900 versus 1,200 PSRG) | Lead (1,090 versus 800 PSRG) |
| SB-4 | Zinc (3,080 versus 1,200 PSRG) | None |
| SB-5 | Boron (127 versus 45 PSRG) | None |
| SB-6 | Vanadium (736 versus 6.0 PSRG) | None |
| HA-1 | Lead (501 versus 270 PSRG) Zinc (1,430 versus 1,200 PSRG) | None |
| HA-2 | Manganese (589 versus 65 PSRG) | None |
| HA-6 | Zinc (1,270 versus 1,200 PSRG) | None |
| HA-7 | Lead (288 versus 270 PSRG) Zinc (1,560 versus 1,200 PSRG) | None |
| HA-8 | Boron (128 versus 45 PSRG) Lead (2,260 versus 270 PSRG) Zinc (2,350 versus 1,200 PSRG) | Lead (2,260 versus 800 PSRG) |
| HA-9 | Lead (1,370 versus 270 PSRG) Zinc (1,990 versus 1,200 PSRG) | Lead (1,370 versus 800 PSRG) |
| HA-10 | Manganese (708 versus 65 PSRG) Mercury (22.5 versus 1.0 PSRG) | Mercury (22.5 versus 3.1 PSRG) |
| HA-13 | Boron (145 versus 45 PSRG) Manganese (1,300 versus 65 PSRG) | None |
| TP-1D | Lead (711 versus 270 PSRG) | None |
| TP-1E | Boron (178 versus 45 PSRG) Lead (1,050 versus 270 PSRG) | Lead (1,050 versus 800 PSRG) |
| TP-1F | Lead (1,410 versus 270 PSRG) | Lead (1,410 versus 800 PSRG) |
| 2HA-43 | Lead (12,700 versus 270 PSRG) | Lead (12,700 versus 800 PSRG) |
| 4HA-47 | Lead (2,720 versus 270 PSRG) | Lead (2,720 versus 800 PSRG) |
| 4HA-47-2 | Lead (2,040 versus 270 PSRG) | Lead (2,040 versus 800 PSRG) |
| 4HA-48 | Lead (5,140 versus 270 PSRG) | Lead (5,140 versus 800 PSRG) |
| MS-5 | Lead (407 versus 270 PSRG) | None |

Note:

1. All concentrations in (mg/kg).
2. Methylene Chloride detected during March 1992 investigation was considered a laboratory artifact and not included in the table.

Again, all of these borings are situated under the cap which was constructed as part of the approved 1997 *Tile Pile Closure Plan*. However, we believe that one important further evaluation would be to identify any perimeter soil samples at the outer extent of either the HDPE or clay cap versus

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either PGW PSRGs exceedances and range of background readings or Industrial Health-Based PSRGs exceedances and range of background readings. Below, are the four (4) perimeter boring soil sample locations with exceedances listed (depicted on Figure L-6):

SWMU-3 Current PSRG Exceedances for Perimeter Boring Locations

| Boring Location (Ordinal Direction) | Above NCDEQ PGW PSRGs and Range of Background Samples | Above NCDEQ Ind. PSRGs and Range of Background Samples |
|--|--|---|
| HA-6 (West) | Zinc (1,270 versus 1,200 PSRG) | None |
| HA-7 (North) | Lead (288 versus 270 PSRG) Zinc (1,560 versus 1,200 PSRG) | None |
| HA-10 (East) | Manganese (708 versus 65 PSRG) Mercury (22.5 versus 1.0 PSRG) | Mercury (22.5 versus 3.1 PSRG) |
| 2HA-43 (Northeast) | Lead (12,700 versus 270 PSRG) | Lead (12,700 versus 800 PSRG) |

Note:

1. All concentrations in (mg/kg).

A No Further Action recommendation for SWMU-3 was made in the 2005 RFA contingent upon continued compliance with the approved closure and post-closure plans. Based on our current assessment, these four (4) borings listed above are considered the existing data gaps in that they are at the perimeter of the closed Ceramic Tile Pile with the remainder of the borings being located under the cap which has been closed and certified by NCDEQ. These four (4) borings at the perimeter would be considered for review and potential further assessment. We would propose using either multiple data point averaging for Health-Based PSRGs exceedances consistent with IHSB REC Guidance (Appendix E) or SPLP sampling for PGW exceedances since it has been in excess of 15 years since the “release” time point.

L-1c (4) SWMU-7 Site Assessment History

All historical surface water/sediment sampling events are described below with results tabulated in Table L-9 (Surface Water), Table L-10 (Sediment), and NCDEQ 2B or RBC exceedances depicted on Figure L-7 (with the exception of 1996 and 1999 sample results) which are described below.

March 1996 Surface Water Sampling Results

On March 26, 1996, representatives from the NCDEHNR and Mannington split surface water samples collected from the Walltown Branch for analysis of boron. One sample was collected from an onsite upstream location and one sample was collected from an onsite downstream location at

the Facility. Boron was observed in both samples, measuring 1.9 mg/L in the onsite downstream sample and 0.084 mg/L in the onsite upstream sample. Boron is not a RCRA regulated hazardous waste and is not regulated under, 15A NCAC Subtitle 2B Surface Water Standards. An ecological surface water chronic screening value of 0.75 mg/L was listed in Table 1 of the Supplemental Guidance to Risk Assessment Guidance for Superfund (RAGS): Region 4 Bulletins, Ecological Risk Assessment (US EPA 2001). The onsite downstream sample exceeded the ecological surface water chronic screening value.

March 1999 Surface Water/Sediment Sampling Results

The Facility conducted an additional surface water/sediment sampling event March 1999 in response to an NCDEQ request. The sample results for the surface water identified increases in levels of RCRA metals and other identified elements in the Downgradient (DG) sample versus the Upgradient (UG) sample as follows (results summarized in Table L-9):

- Barium at a concentration of 0.059 mg/L UG versus 0.127 mg/L DG versus a 2B Standard of 1.0 mg/L (Water Supply).
- Boron below the method detection limit UG versus 1.06 mg/L DG. There is no 2B standard for boron; however, there is an EPA ecological screening value of 0.75 mg/L.
- Copper at a concentration of 0.010 mg/L UG versus 0.110 mg/L DG versus a 2B Standard of 0.007 mg/L (Freshwater).
- Iron at a concentration of 1.34 mg/L UG versus 2.58 mg/L DG. There is no 2B Standard for iron.
- Lead below the method detection limit UG versus 0.011 mg/L DG versus a 2B Standard of 0.025 mg/L (Freshwater).
- Manganese at a concentration of 0.109 mg/L UG versus 0.23 mg/L DG versus a 2B Standard of 0.02 mg/L (Water Supply).
- Zinc at a concentration of 0.035 mg/L UG versus 0.142 mg/L DG versus a 2B Standard at 0.05 mg/L (Freshwater).

Boron exceeds its EPA ecological screening value (downgradient). Copper (upgradient and downgradient), manganese (downgradient), and zinc (downgradient) exceed their respective NCDEQ 2B Standards.

Sediment Results

The sample results for the sediment identified increases in levels of RCRA and non-RCRA metals in the Downgradient samples versus the Upgradient samples as follows (results summarized in Table L-10):

- Barium at a concentration of 49.9 mg/L UG versus 93.9 mg/L DG
- Boron at a concentration of 13.7 mg/L UG versus 33.0 mg/L DG

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- Cadmium at a concentration of 0.486 mg/L UG versus 0.716 mg/L DG
- Chromium at a concentration of 12.9 mg/L UG versus 20.7 mg/L DG
- Cobalt at a concentration of 4.46 mg/L UG versus 9.76 mg/L DG
- Lead at a concentration of 48.6 mg/L UG versus 125 mg/L DG
- Nickel at a concentration of 4.0 mg/L UG versus 5.03 mg/L DG
- Titanium at a concentration of 93.2 mg/L UG versus 163 mg/L DG
- Vanadium at a concentration of 39.4 mg/L UG versus 54.3 mg/L DG
- Zinc at a concentration of 121 mg/L UG versus 365 mg/L DG

Note: mg/L denoted in sediment sample results versus mg/kg potentially due to high water content in the sample aliquot.

Both upgradient and downgradient sediment samples exhibited concentrations of cobalt and vanadium above the current IHSB PGW PSRGs. Neither sample exceeds the Health-Based Industrial PSRG standard or the range of background concentration for either vanadium or cobalt. All other sediment sample results were below the current IHSB PGW PSRGs, Health-Based Industrial PSRGs, and the range of background concentrations.

The 2005 RFA reported that these levels of increase identify potential releases originating from the Facility that have impacted the Walltown Branch and its recipient waters (NCDEQ, 1998b, 1999c; Aquaterra, 1997b; USEPA, 2002; Mannington, 2004). However, we would also mention that the remaining analytes not reported in the 2005 RFA are suspected as either being stable or decreasing, and basing these “increases” on selected analytes while ignoring the remaining results is not considered a measured conclusion. An alternate conclusion for these results could be that they are entirely consistent with the heterogeneities in soil/sediment which are not impacted by man-made effects.

However, based on NCDEQ IHSB REC Guidance, sediment samples are compared versus PGW PSRGs, Health-Based Industrial PSRGs, and range of background samples (see results in Table L-10). All sample results were below PGW and Health-Based Industrial PSRGs **and** range of background samples. The only data gap needing attention is a trivalent chromium PSRG Standard was used for comparison. This would be corroborated by analyzing an Onsite Downgradient (worst case) sediment sample for hexavalent chromium to assure that it is not detected and the trivalent chromium PSRG standard can be used for the Facility.

December 2004 Surface Water/Sediment Sampling Results

On December 29, 2004 Waters Edge mobilized a sampling technician to the site to collect four surface water (S-1 to S-4) and four sediment samples (S-1 to S-4) along an on-site east to west trending tributary, which feeds into Walltown Branch (see Figure L-7). At each location, a surface water sample and sediment sample were collected and submitted to the laboratory according to EPA-accepted procedures. Both the surface water and sediment samples were analyzed for total boron only with the following results:

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| <u>Sampling Location</u> | <u>Surface Water (mg/L)</u> | <u>Sediment (mg/kg)</u> |
|--------------------------|-----------------------------|-------------------------|
| S-1 | BDL | 87.8 |
| S-2 | BDL | 104 |
| S-3 | BDL | 89.6 |
| S-4 | 0.223 | 78.9 |

These results indicate the following:

- The surface water samples indicate little contribution of boron from off site; however, the last sample prior to the confluence with Walltown Branch did detect boron at a concentration of 0.223 mg/L which is below the EPA screening value of 0.75 mg/L. This could represent contribution from a former Laundromat, which operated on a tract east of the Ceramic Tile Pile and west of SR 8.
- The four sediment samples collected exhibit elevated concentration of boron when compared to previous sediment samples collected at locations closer to the closed RCRA units. We would conclude the potential impact from the former Laundromat may have been the source of these elevated boron readings. All four sediment samples are above the IHSB PGW PSRG of 45 mg/kg, but below the range of boron background sample concentrations (<10.5 mg/kg-123 mg/kg). The results are also below the health-based Industrial PSRG at 46,000 mg/kg. While this technically represents an exceedance of one PSRG, no further assessment is warranted since the Upgradient or background concentration of boron exceeds the Downgradient sample concentration, which is consistent with REC Assessment and Cleanup Guidance- Section 4.1.1.1- Note 2 which states:

“Some of the remediation goals shown in the PSRG Table may be more stringent than natural background concentrations or practical quantitation limits. Cleanup to below site-specific natural background concentrations (metals only) or practical quantitation limits (using the analytical methods specified in Section A.7.1.2) is not required.”

February 2005 Surface Water/Sediment Sampling Results

Waters Edge mobilized a sampling technician to the site on February 8, 2005 to collect several surface water and sediment samples as follows:

- S-5 represents an upgradient sampling location south of Victor Street in a drainage swale that migrates onto the site from the south.
- S-6 represents a second upgradient sampling location east of Highway 8 in a drainage swale that migrates onto the site from the east.

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- S-7 represents a downgradient sampling location immediately north of the culvert, which drains surface water from the Facility.

These locations are shown on Figure L-7 and the results are summarized in Table L-9 and Table L-10. At each location, a surface water and sediment sample was collected and submitted to the laboratory according to EPA-accepted procedures. Both the surface water samples and sediment samples were analyzed for total boron with the following results:

| <u>Sampling Location</u> | <u>Surface Water (mg/L)</u> | <u>Sediment (mg/kg)</u> |
|------------------------------|-----------------------------|-------------------------|
| S-5 South of Victor Street | 0.104 | BDL |
| S-6 West of SR 8 | BDL | BDL |
| S-7 Downgradient of Facility | 2.89 | BDL |

These results indicate the following:

- The surface water sample (S-5) collected at the upgradient southern portion of the Facility detected 0.104 mg/L of boron, indications that there is an upgradient source of boron migrating onto the site from the south; however, the concentration is below the EPA screening value of 0.75 mg/L.
- There appears to be an additional contribution of boron from on site in that the S-7/Onsite Downgradient sample detected boron at a concentration of 2.89 mg/L which exceeds the EPA screening value of 0.75 mg/L.
- Downward migration of boron from the surface water to sediment is not substantiated in that the sediment samples taken below the surface water samples were all BDL.

Other Potential Sources of Impact to Walltown Branch

The 2005 RFA mentions results of a 1997 surface soil sampling investigation that detected lead at a maximum concentration of 12,700 mg/kg in soils in the northern edge of SWMU-7 (2HA-43-see Tables L-5 and L-6). The location of this maximum detected concentration is in the northeastern corner of the property and is discussed later as part of AOC-1 in Section L-1c (5) (Aquaterra, 1997b; Mannington, 2004; NCDEQ, 1997a, 1997b; Booz Allen 2003).

SWMU-7 Past Surface Water/Sediment Results versus Current Risk Based Standards and Existing Data Gaps

Surface Water

Based on the results of the surface water sampling, we would conclude that while there is potential off-site contribution of boron into the surface water entering the Facility (upgradient boron concentrations detected include 0.084 mg/L [March 1996], BDL [March 1999], and BDL/0.104 mg/L [two upgradient locations analyzed, west of SR 8 and south of Victor Street, respectively, February 2005]), there are increases in the boron concentration in the downgradient samples

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collected at the property line (downgradient boron concentrations detected include 1.93 mg/L [March 1996], 1.06 mg/L [March 1999], 0.223 mg/L [December 2004], and 2.89 mg/L [February 2005]). The downgradient March 1996, March 1999, and February 2005 boron concentrations exceed the EPA screening value of 0.75 mg/L. We would add that the levels of copper, manganese (upgradient and downgradient), and zinc (downgradient only) also exceeded the 2B Standard in the March 1999 sampling event. The 2005 RFA recommends determination of the downgradient extent of the potential surface water impact. Based on the above sample results, we would concur that a data gap exists relating to why the surface water exceeds the NCDEQ 2B Standards for copper, manganese, and zinc, and the EPA screening value for boron at the onsite downstream sampling locations, and copper and manganese exceed the NCDEQ 2B Standards at the onsite upstream sampling location. These sampling locations as well as the remainder of Walltown Branch to the confluence of Rat Springs Branch should be considered for further review and potential assessment (see Figure L-8).

Sediment

Based on the historic sediment sample results, while there may be increases of individual constituents, there are no Health-based Industrial PSRG exceedances in all past sampling results. There are individual PGW PSRG exceedances in the March 1999 investigation for cobalt and vanadium (both upgradient and downgradient); however, sample results for cobalt and vanadium are well below the range of background samples (2.02-47.2 mg/kg for cobalt and 5.01-199 mg/kg for vanadium). There are individual PGW PSRG exceedances in the December 2004 investigation for boron; however, upgradient background levels (S-1, S-2, and S-3) are higher than downgradient levels. Also, results for boron are below the range of background samples (<10.5-123 mg/kg). As such, we do not believe that further sediment assessment is warranted other than one sample at the former onsite downgradient sample location which would be analyzed for hexavalent chromium sample to assure that we can use trivalent chromium PSRGs.

L-1c (5) AOC-1 Site Assessment History

In conjunction with the closure of SWMU-3, additional soil sampling was conducted in AOC-1, north of SWMU-3.

March, April, and May 1997 Additional Tile Pile Soil Assessment

In March, April, and May 1997, Aquaterra personnel collected the following samples:

- HA-7 and HA-9, collected north of SWMU-3 (March 25, 1997), and analyzed for arsenic, barium, boron, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, selenium, silver titanium, vanadium, and zinc.
- 2-HA-23, 2-HA-24, 2HA-25, 2-HA-26, 2-HA-33, 2-HA-34, 2-HA-44 (April 24, 1997) with all samples analyzed for barium and lead. Sample 2-HA-44 was analyzed for boron, cadmium, chromium, cobalt, manganese, and zinc.

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- 4HA-48 and 4-HA-49 (May 30, 1997) were analyzed for lead only.

The sample locations are depicted in the July 11, 1997 *Ceramic Tile Closure Plan*- Figure 2-1 and are shown on Figure L-2. The analytical results are depicted in Table L-11. While no depth interval is specified for these borings in past reports, based on past information provided by Dr. Bryson Trexler of Aquaterra, these were described as hand auger borings conducted between 0-2' bgs.

Soil samples collected from this area during the 1996 and 1997 site investigations also identified several areas containing elevated metals concentrations. Specifically, hand auger soil samples collected north of the Ceramic Tile Pile in AOC-1 contained significantly elevated concentrations of lead, barium, and boron. Lead concentrations in sampling locations 2-HA-23 and 4-HA-48, were 458 mg/kg and 5,140 mg/kg, respectively. In addition, the TCLP results for lead from soil samples from 4HA-48 was 60.8 mg/L. Sample locations 4HA-48 and 2HA-23 are located on the vegetated bank in the southern portion of this unit in an area depicted as Former Charles Avenue. Sampling from locations 2-HA-24, 2-HA-25, and 2-HA-26 were collected north of sampling locations 4HA-48 and 2HA-23. This sampling detected lead concentrations similar to background levels; thereby establishing delineation in that direction. Based on these past investigations, the soils in the Former Charles Avenue area (HA-9 and 4-HA-48) were removed and placed on the waste Ceramic Tile Pile prior to closure in 1997. A soil boring location map is depicted on Figure L-2 and the analytical results are depicted in Table L-11 (NCDEQ, 1990a, 1998b, 1999c; Aquaterra, 1997b; Booz Allen, 2003).

Surface Water

There is also existing surface water impact above NCDEQ 2B standards in Walltown Branch which transects AOC-1 and was previously discussed in Sections L-1a (3), L-1 b (3) and L-1 c (3).

Groundwater

There are also several groundwater monitoring wells in this area (e.g. MW-9D, MW-12, MW-19D, MW24, MW-25, MW-26-A-2 and MW-28D) which have impacts above NCGS with the main constituent being boron. Groundwater impact is discussed as a separate site-wide media in Part E - Groundwater Monitoring.

Past Sampling Results Versus Current Risk-Based Standards and Existing Data Gaps

We have compared the past sampling results versus current risk based standards in Table 6. Borings with current PGW or Industrial PSRG exceedances and above range of background sampling results that were not removed and placed on the Ceramic Tile Pile (e.g. soils along former Charles Avenue) are the following (locations depicted on L-9):

AOC-1 Current PSRG Exceedances

| <u>Boring Location</u> | <u>Above NCDEQ PGW PSRGs and Range of Background Samples</u> | <u>Above NCDEQ Ind. PSRGs and Range of Background Samples</u> |
|------------------------|--|---|
| HA-7 | Lead (288 versus 270 PSRG) Zinc (1,560 versus 1,200 PSRG) | None |
| 2-HA-23 | Lead (458 versus 270 PSRG) | None |
| 2-HA-44 | Cobalt (217 versus 0.9 PSRG) | Cobalt (217 versus 70 PSRG) |

Note:

1. All concentrations in (mg/kg).

Based on the current PSRGs exceedances, there are three (3) boring locations (HA-7, 2-HA-23 and 2-HA-44), and the area of excavation at Former Charles Avenue, which would be considered data gaps, in that after the soils were removed at HA-9 and 4-HA-48 sample locations, there were no confirmatory samples collected. These areas should be considered for review and potential additional assessment.

L-1c (6) AOC-2 Site Assessment History

Past Site Assessment Results Versus Current Risk-Based Standards and Existing Data Gaps

As part of the site assessment associated with the Sludge Settling Ponds (SWMU-2), three soil borings (SS-8, SS-42, and SS-43) were advanced in what was later designated in the 2005 RFA as AOC-2. Sample SS-8 was collected on May 27, 1994, and samples SS-42 and SS-43 were collected on February 17, 2000. Soil samples were collected at depths of 0 to 1 foot bgs at each boring location, and at a depth of 3 feet bgs at the SS-43 boring location for analysis of priority pollutant metals. The boring locations are shown on Figures L-4 and L-3 and the sample results are summarized in Table L-12. Based on current PGW and Industrial PSRGs, and range of background concentrations, the following exceedances were noted:

AOC-2 Current PSRG Exceedances

| <u>Boring Location</u> | <u>Above NCDEQ PGW PSRGs and Range of Background Samples</u> | <u>Above NCDEQ Ind. PSRGs and Range of Background Samples</u> |
|------------------------|--|---|
| SS-8 (0-1') | Lead (996 versus 270 PSRG) Zinc (5,230 versus 1,200 PSRG) | Lead (996 versus 800 PSRG) |

Note: All concentrations in (mg/kg).

While there were some exceedances of PSRGs for lead at the SS-8 location (0-1'), the sample was also tested for lead via TCLP, and sample results detected 6.31 mg/L TCLP lead, which exceeds the 5.0 mg/L level considered a characteristic hazardous waste.

*RCRA Part B Post-Closure Permit Application
Part L-Information Requirements for Solid Waste Management Units
Former Porcelanite Facility
Lexington, Davidson County, North Carolina
March 6, 2017*

Based upon the results of the confirmatory sampling and a risk evaluation of the COCs remaining in the soil outside SWMU-2 (Sludge Settling Ponds), additional material was removed from north and west of the former Sludge Settling Ponds and in the northern extent of AOC-2 as depicted on Figures L-4 and L-3. This impacted soil was deposited on the Ceramic Tile Pile (SWMU-3) prior to its closure in 1997. The removal action and risk evaluation north and west of the Sludge Ponds is documented in the July 14, 2004 Revised Closure Plan for the Former Settling Ponds (Aquaterra, 1997c; NCDEQ, 1990a; ENSCI, 1992; Booz Allen, 2003; ENSCI, 1994). We were unable to find any documentation for removal of the northern portion of AOC-2; therefore, this would be considered a data gap.

2005 RFA COMMENTS AND PROPOSED ASSESSMENT WORK TASKS:

The 2005 RFA stated that confirmatory sampling was recommended to fully characterize the horizontal and vertical extent of the lead contamination located in the entire extent of AOC-2. Based on the current evaluation versus current PSRG Standards, both lead and zinc were above PGW PSRGs and lead, which was subsequently removed with no confirmatory sampling, was above Industrial PSRGs at the SS-8 location. We could not locate any additional assessment or confirmatory sampling information for the remainder of AOC-2, which extends south of SS-8 for approximately 500 feet (see Figure L-3). Therefore, we conclude that the entire AOC-2 area should be considered for review and potential future assessment.

L-1-d Additional Requirements

L-1d (1) Ongoing Sampling

Current ongoing sampling at the Facility includes semiannual sampling of monitoring wells MW-1 (upgradient well for the Facility), MW-9D, MW-12, MW-22A, MW-26A-2, and MW-28D in accordance with the most recently approved October 2007 SAP. Analysis of groundwater samples collected from the wells includes six metals (boron, cadmium, chromium, cobalt, lead, manganese, and zinc) which are analyzed according to EPA Method 200.7. Detailed information regarding ongoing sampling is discussed in Part E - Groundwater Monitoring.

L-1d (2) Cost Estimate for Assessment and Remediation of SWMUs and AOCs

As previously discussed, four (4) SWMUs and two (2) AOCs are currently recommended for additional investigation: Wastewater Pretreatment System (SWMU-1), Sludge Settling Ponds (SWMU-2), Ceramic Tile Pile (SWMU-3), Walltown Branch (SWMU-7), an Area of Discharge from the Tile Pile (AOC-1) and the Broken Ceramic Tile Roadway (AOC-2). While costs for additional assessment are estimated to range from \$60,000 to \$70,000, which includes additional groundwater assessment efforts, remediation costs, if necessary, will be determined when assessment activities have been completed. It should be noted that SWMU-2 and SWMU-3 have successfully undergone closure which has been accepted by NCDEQ.

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References *(continued)*

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Part L Figures



| | | | | |
|---------|----------------|--------|---------|--|
| Author | Drawing | Layers | Date | Title |
| | 15-006 Fig L-1 | | 2.21.17 | SWMU and AOC Location Map |
| Job No. | Image Date | Figure | Scale | Project |
| R1-21 | 7.10.2010 | L-1 | unknown | Former Porcelanite Facility Lexington, North Carolina |

PROJECT NUMBER: 2017.0008.WATR
 DRAFTER: KTS
 CHECKED BY: JME
 PROJECT MANAGER: M.TERRY
 DATE: 2/28/2017
 FILE: Part L Fig L-2 SWMU 3 AOC 1 Past Soil Boring.dwg

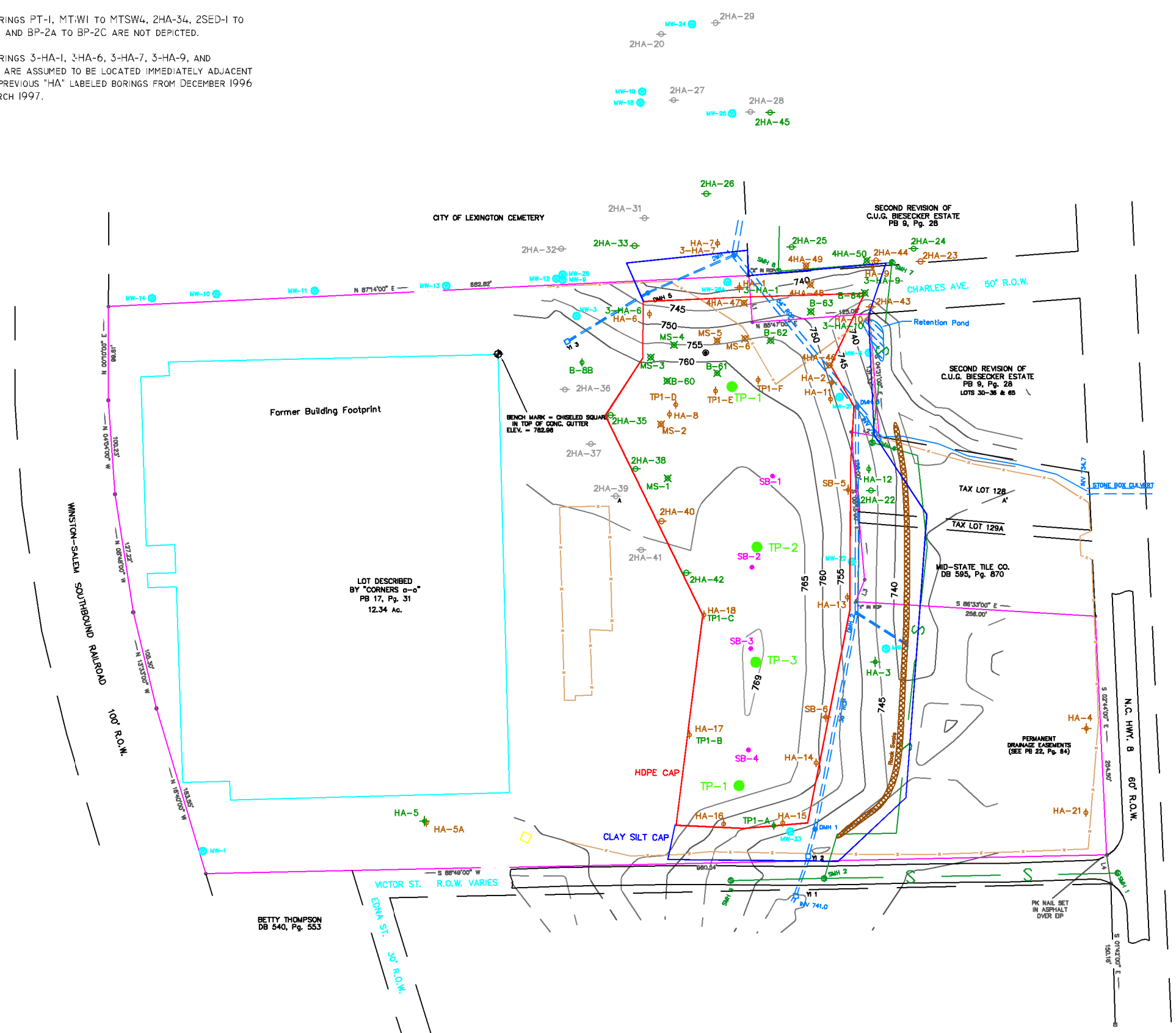
- SOIL SAMPLE LEGEND**
- JANUARY 1992 INVESTIGATION
 - INITIAL SOIL SAMPLES (PRE-1996)
 - ⊕ DECEMBER 1996 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MARCH 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ APRIL 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MAY 1997 SOIL SAMPLE SCS EXCEEDANCES
 - GREEN TEXT INDICATES SOIL SAMPLES BELOW SCS
 - LT GY TEXT INDICATES SOIL SAMPLE NOT ANALYZED (APR 97)
 - SCS SOIL CLEANUP STANDARD

NOTES:
 SOIL BORINGS PT-1, MT-W1 TO MTSW4, 2HA-34, 2SED-1 TO 2SED-4, AND BP-2A TO BP-2C ARE NOT DEPICTED.
 SOIL BORINGS 3-HA-1, 3-HA-6, 3-HA-7, 3-HA-9, AND 3-HA-10 ARE ASSUMED TO BE LOCATED IMMEDIATELY ADJACENT TO THE PREVIOUS "HA" LABELED BORINGS FROM DECEMBER 1996 AND MARCH 1997.

LEGEND:

- = EXISTING IRON PIN
- = NEW IRON PIN
- ⊕ = COMPUTED POINT
- ⊕ = UTILITY POLE
- R.O.W. = RIGHT-OF-WAY
- PB = PLAT BOOK REFERENCE
- DB = DEED BOOK REFERENCE
- = STORM SEWER MANHOLE
- = SANITARY SEWER MANHOLE
- S- = SANITARY SEWER LINE
- ⊕ = MONITORING WELL LOCATION
- = STORM INLET
- X- = FENCE LINE

SCALE IN FEET



FORMER PORCELANITE FACILITY
 LEXINGTON, NORTH CAROLINA

SWMU-3 AND AOC-1 PAST SOIL SAMPLE
 LOCATION AND RCRA CLOSURE
 CAP DELINEATION MAP

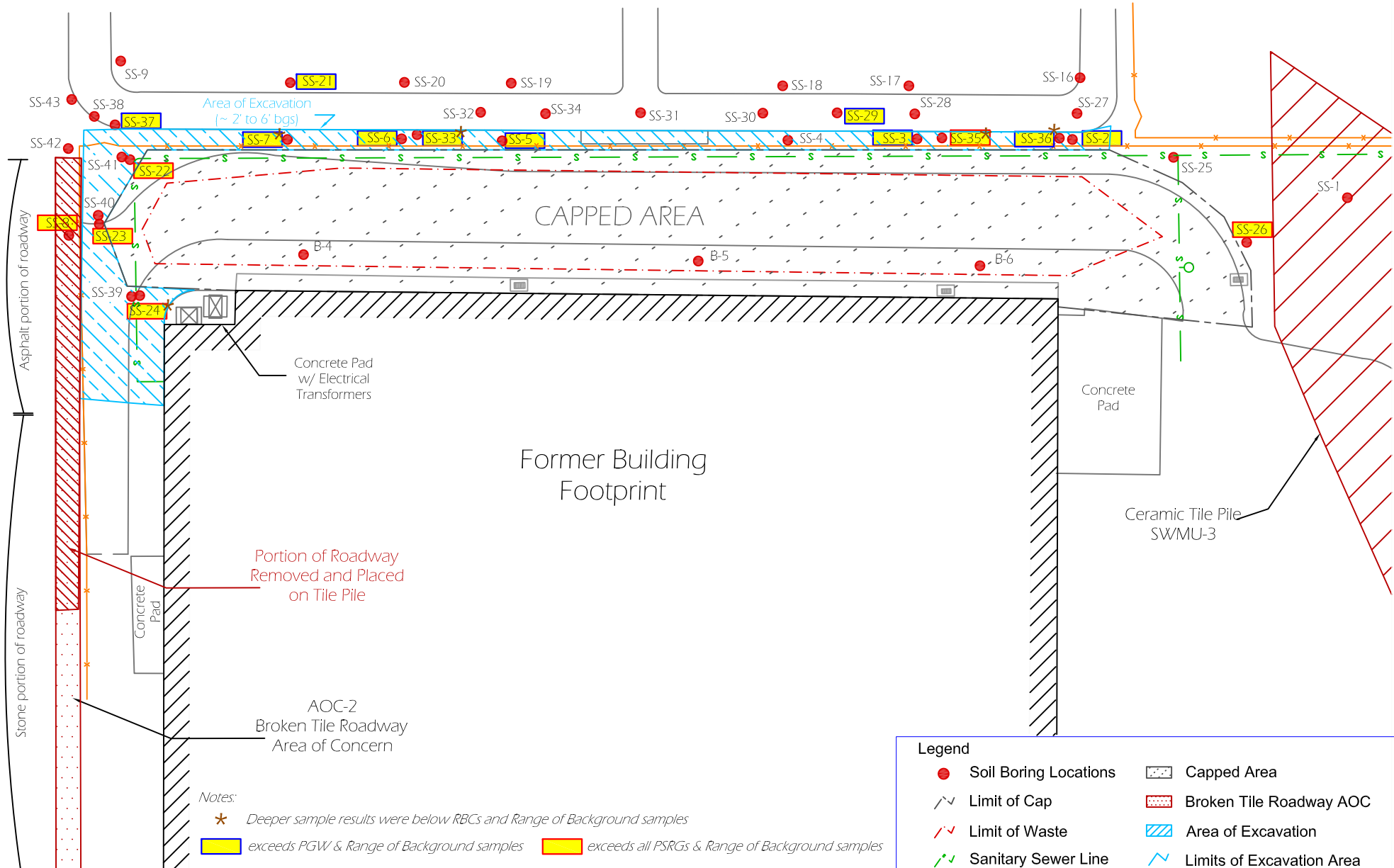
FIGURE:
 L-2



| | | | |
|-------------------------|----------------------------------|---------------------------|--|
| <i>Author</i> | <i>Drawing</i> Part L Fig L-3 | <i>Date</i> 10.18.2016 | <i>Title</i> AOC-2 Proposed Soil Boring Location Map |
| <i>Job No.</i> R1-21 | <i>Figure</i> L-3 | <i>Scale</i> 1" = 100' | <i>Project</i> Former Porcelanite Facility Lexington, North Carolina |



CITY OF LEXINGTON CEMETERY



| | | | | |
|------------------|---------------------------|---------------|-------------------|--|
| Author jme | Drawing Part L Fig L-4 | Layers | Date 1.21.15 | Title SWMU-2 / AOC-2 Past Sample and Current RBC Exceedance Map |
| Job No. R1-21 | Revision 10.18.2016 | Figure L-4 | Scale 1" = 60' | Project Former Porcelanite Facility Lexington, North Carolina |



| | | | |
|------------------------------------|---|---------------------------|--|
| <i>Job No.</i> R1-21 | <i>Image/Photo</i> Google Earth 2013 | <i>Date</i> 10.17.2016 | <i>Title</i> Background Soil Sample Location Map |
| <i>File Name</i> Part L Fig L-5 | <i>Figure</i> L-5 | <i>Scale</i> unknown | <i>Project</i> Former Procelanite Facility Lexington, North Carolina |

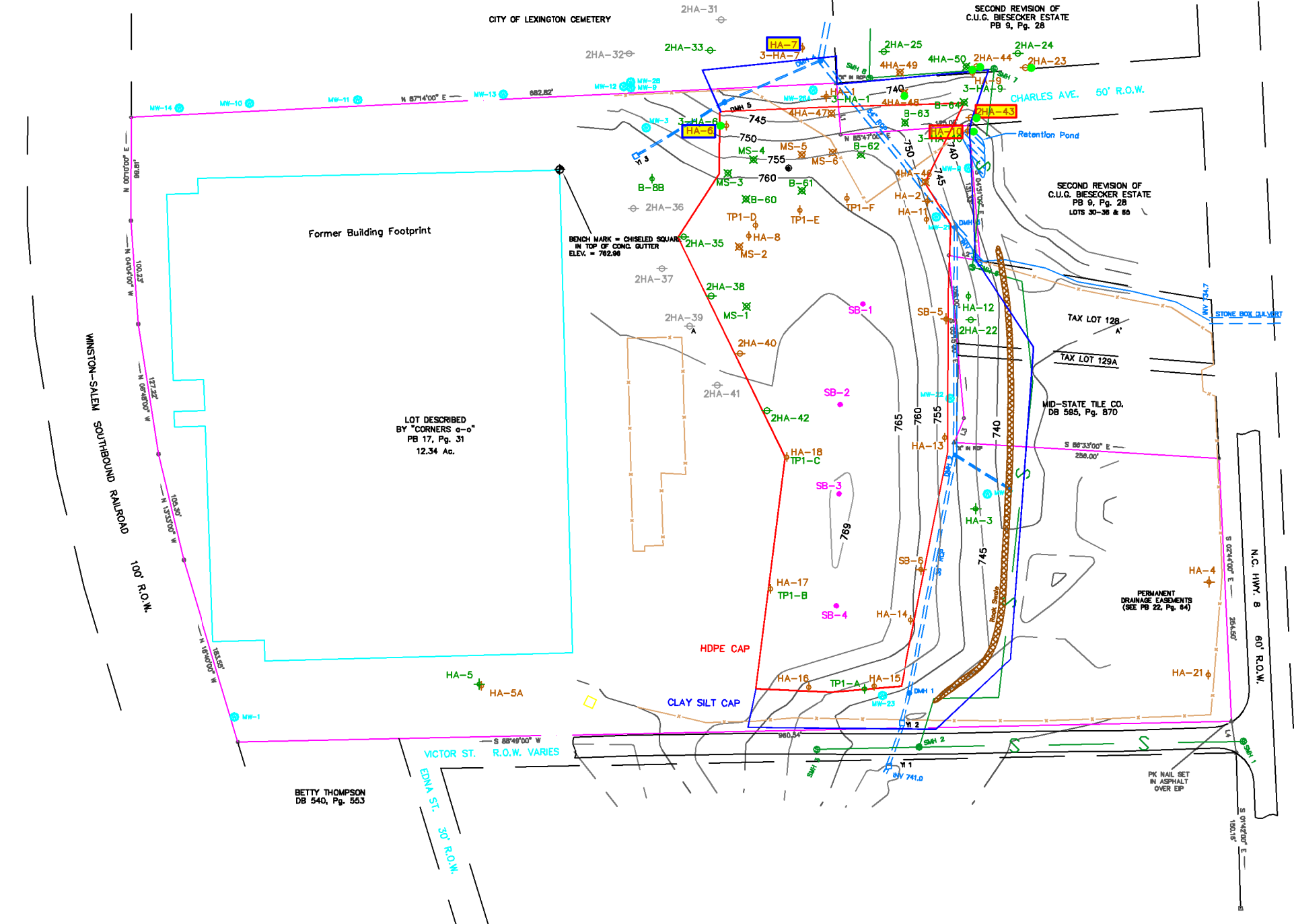
PROJECT NUMBER: 2017.0008.WATR
 DRAFTER: KTS
 CHECKED BY: JME
 PROJECT MANAGER: M.TERRY
 DATE: 2/28/2017
 FILE: Part L Fig L-2 SWMU 3 AOC 1 Past Soil Boring.dwg

- SOIL SAMPLE LEGEND**
- PROPOSED AOC I SOIL BORING LOCATIONS
 - INITIAL SOIL SAMPLES (PRE-1996)
 - ⊕ DECEMBER 1996 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MARCH 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ APRIL 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MAY 1997 SOIL SAMPLE SCS EXCEEDANCES
 - GREEN TEXT INDICATES SOIL SAMPLES BELOW SCS
 - LT GY TEXT INDICATES SOIL SAMPLE NOT ANALYZED (APR 97)
 - SCS SOIL CLEANUP STANDARD
 - HA-10 EXCEEDS PGW AND INDUSTRIAL PSRG FOR H6
 - HA-13 EXCEEDS PGW FOR B AND MG
 - HA-6 EXCEEDS PGW FOR ZN

- exceeds PGW PSRG
- exceeds PGW and industrial PSRG

NOTES:
 SOIL BORINGS PT-1, MTSW1 TO MTSW4, 2HA-34, 2SED-1 TO 2SED-4, AND BP-2A TO BP-2C ARE NOT DEPICTED.
 SOIL BORINGS 3-HA-1, 3-HA-6, 3-HI-7, 3-HA-9, AND 3-HA-10 ARE ASSUMED TO BE LOCATED IMMEDIATELY ADJACENT TO THE PREVIOUS "HA" LABELED BORINGS FROM DECEMBER 1996 AND MARCH 1997.

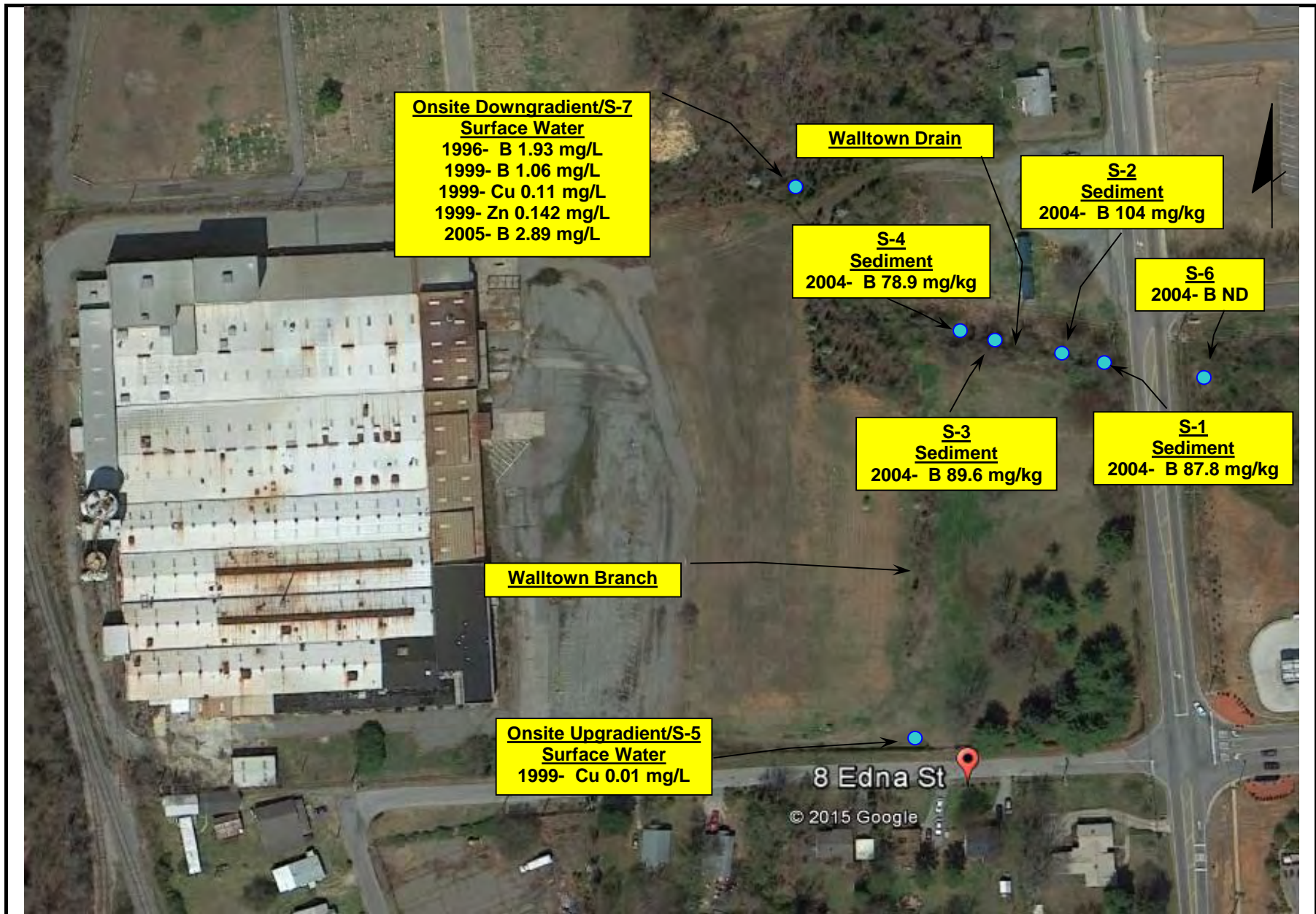
- LEGEND:**
- = EXISTING IRON PIN
 - = NEW IRON PIN
 - ⊙ = COMPUTED POINT
 - ⊕ = UTILITY POLE
 - R.O.W. = RIGHT-OF-WAY
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 - s- = SANITARY SEWER LINE
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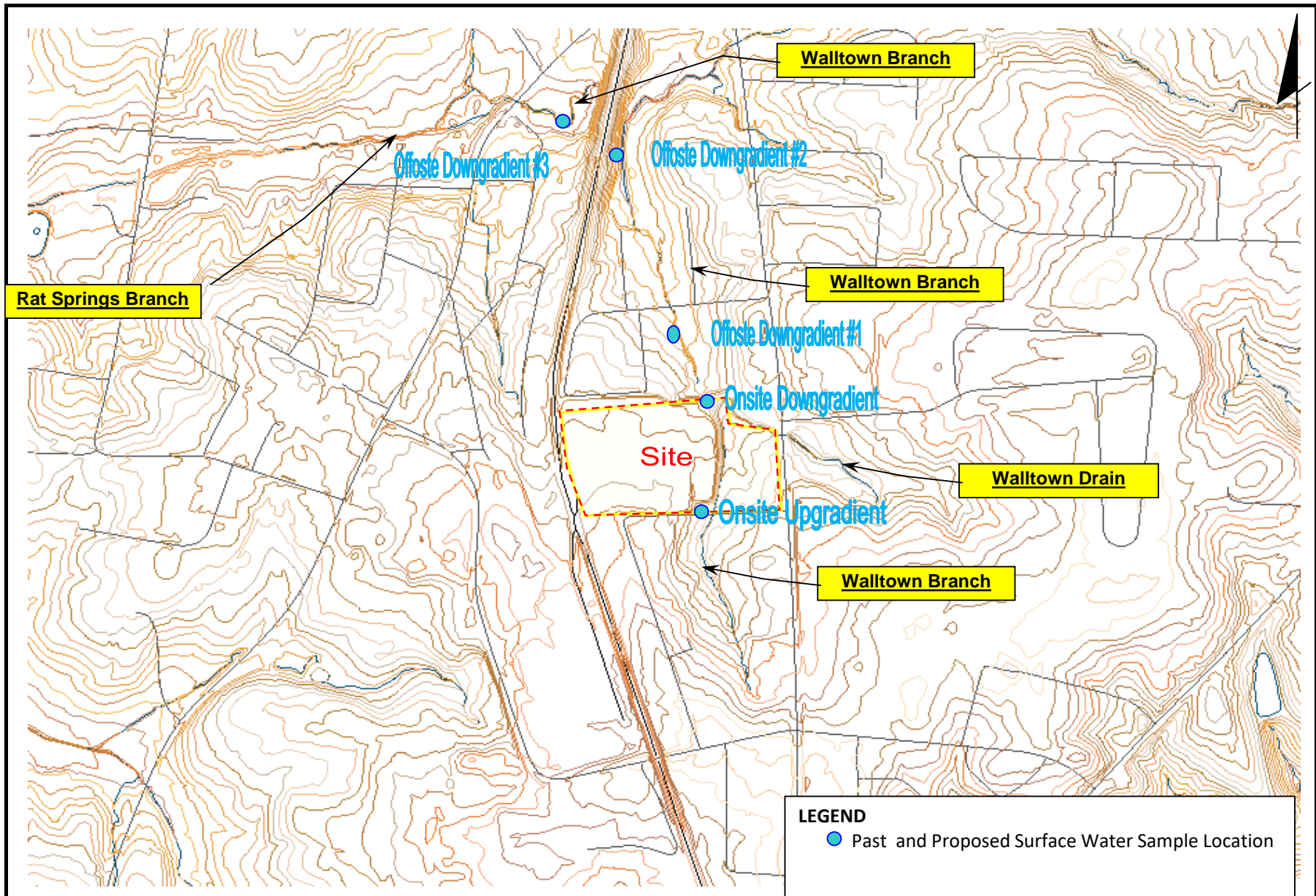
FORMER PORCELANITE FACILITY
 LEXINGTON, NORTH CAROLINA

SWMU-3 PSRG EXCEEDANCE MAP AT
 PERIMETER OF CAP

FIGURE:
 L-6



| | | | |
|--------------------------------|--|--------------------------|--|
| <i>Job No.</i> R1-21 | <i>Image/Photo</i> Davidson Co. GIS | <i>Date</i> 2/21/2017 | <i>Title</i> Past Surface Water Sample/Sediment 2B/RBC Exceedances |
| <i>File Name</i> 15-006.xls | <i>Figure</i> L-7 | <i>Scale</i> unknown | <i>Project</i> Former Porcelanite Facility Lexington, North Carolina |



| | | | | | | | |
|------------------|------------|--------------------|------------------|--------------|-----------|----------------|--|
| <i>Job No.</i> | R1-21 | <i>Image/Photo</i> | Davidson Co. GIS | <i>Date</i> | 2/21/2017 | <i>Title</i> | Proposed Surface Water Sample Location Map |
| <i>File Name</i> | 15-006.xls | <i>Figure</i> | L-8 | <i>Scale</i> | unknown | <i>Project</i> | Former Porcelanite Facility Lexington, North Carolina |

FILE Part L Fig L-9 SWMU 3 AOC 1 Proposed Soil Boring Location Map at CAP.dwg
 DATE 2/28/2017
 PROJECT MANAGER M.TERRY
 CHECKED BY JME
 DRAFTER KTS
 PROJECT NUMBER 2017.0008.WATR

- SOIL SAMPLE LEGEND**
- INITIAL SOIL SAMPLES (PRE-1996)
 - ⊕ DECEMBER 1996 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MARCH 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ APRIL 1997 SOIL SAMPLE SCS EXCEEDANCES
 - ⊕ MAY 1997 SOIL SAMPLE SCS EXCEEDANCES
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 - SCS SOIL CLEANUP STANDARD
 - HA-10 EXCEEDS PGW AND INDUSTRIAL PSRG FOR HG
 - HA-13 EXCEEDS PGW FOR B AND MG
 - HA-6 EXCEEDS PGW FOR ZN

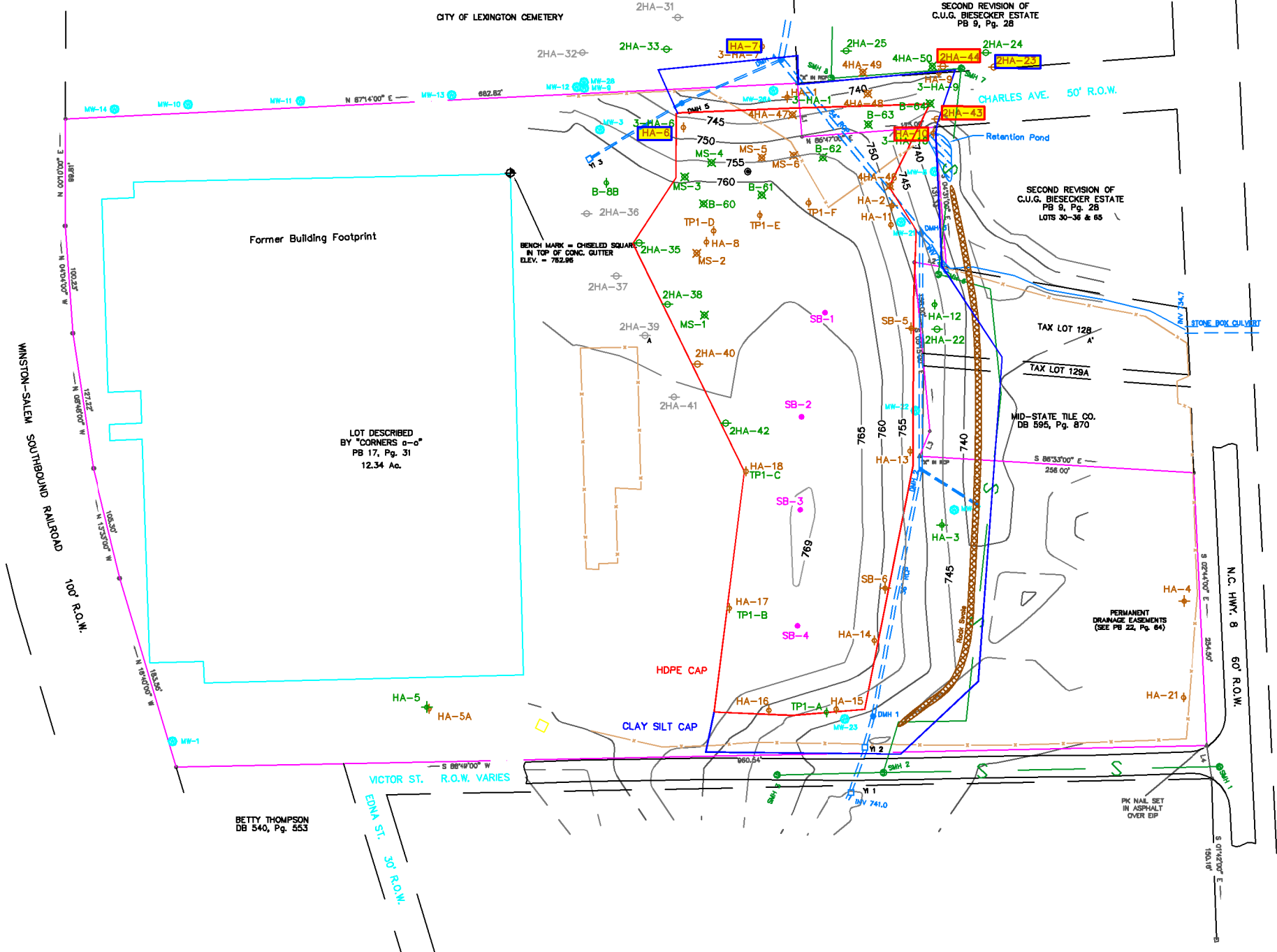
- exceeds PGW PSRG
- exceeds PGW and industrial PSRG

NOTES:
 SOIL BORINGS PT-1, MTSWI TO MTS14, 2HA-34, 2SED-1 TO 2SED-4, AND BP-2A TO BP-2C ARE NOT DEPICTED.
 SOIL BORINGS 3-HA-1, 3-HA-6, 3-HA-7, 3-HA-9, AND 3-HA-10 ARE ASSUMED TO BE LOCATED IMMEDIATELY ADJACENT TO THE PREVIOUS "HA" LABELED BORINGS FROM DECEMBER 1996 AND MARCH 1997.

LEGEND:

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- S- = SANITARY SEWER LINE
- ⊕ = MONITORING WELL LOCATION
- = STORM INLET
- X- = FENCE LINE

0 125 250
 SCALE IN FEET



FORMER PORCELANITE FACILITY
 LEXINGTON, NORTH CAROLINA

SWMU-3 / AOC-1 CURRENT PSRG
 EXCEEDANCE MAP

FIGURE:
 L-9

Part L Tables

Table L-1
SWMU/AOC Identification and Past and Current Status
Former Porcelanite Facility
Lexington, North Carolina

| Unit | Name | 2004 | 2016 |
|-------------|---------------------------------------|-------------|--|
| SWMU 1 | Wastewater Pretreatment System | CS | Considering Alternative Options |
| SWMU 2 | Sludge Settling Ponds (Regulated) | RFI | NFA-Certified Closed 2006 Under Assessment |
| SWMU 3 | Ceramic Tile Pile (Regulated) | RFI | NFA-Certified Closed 2005 Under Assessment |
| SWMU 4 | 20 cubic yd Sludge Roll-Off Container | NFA | NFA |
| SWMU 5 | 20 cubic yd Floor Sweeping Roll-Off | NFA | NFA |
| SWMU 6 | Baghouse | CS | NFA |
| SWMU 7 | Walltown Drain | RFI | Recommend Assessment |
| SWMU 8 | Off-Spec Tile Accumulation Roll-Off | NFA | NFA |
| SWMU 9 | Filter Cake Waste Pile Area | NFA | NFA |
| SWMU 10 | Maintenance Building Waste Management | NFA | NFA |
| SWMU 11 | Spray Line Area Sumps | CS | NFA |
| AOC 1 | Area of Discharge from Tile Pile | RFI | Recommend Assessment |
| AOC 2 | Broken Ceramic Tile Roadway | CS | Recommend Assessment |
| AOC 3 | Former UST and AST Area | NFA | NFA |

Notes:

CS = Confirmatory Sampling

NFA = No Further Action

RFI = Recommended Further Investigation

Table L-2
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus 1993 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Analytical Method | Site Specific Background Levels* + 2X S.D. (mg/kg) | 1993 Soil Closure Standard (mg/kg) | B-4 6-7.5' 11/22/89 | B-5 1-2.5' 11/24/89 | B-5 6-7.5' 11/24/89 | B-6 2.5-4' 11/24/89 | B-6 17.5-19' 11/24/89 | SS-1 0 - 1' 5/27/94 | SS-2 0 - 1' 11/4/99 | SS-3 0 - 1' 11/4/99 | SS-4 0 - 1' 11/4/99 | SS-4-2 3' 9/13/02 | SS-4-2 5' 9/13/02 | SS-5 0 - 1' 11/4/99 | SS-6 0 - 1' 11/4/99 |
|------------------------------|--|-------------------|--|------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|-------------------------|---------------------------|---------------------------|
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <3.62 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | <10 | <10 | <10 | <10 | <10 | 80.1 | 246 | 149 | 47.7 | NA | NA | 373 | 64.3 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | NA | NA | NA | NA | NA | 26 | 30.9 | 61.9 | 74.2 | NA | NA | <10.5 | 31.6 |
| Bromide | NL | EPA Method 300 | MDL | PQL (10) | NA | NA | NA | NA | NA | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.725 | 0.712 | 0.696 | 0.623 | NA | NA | 0.335 | 0.249 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 8.19 | 15.4 | 33.6 | 33.3 | 8.39 | 6.74 | 4.81 | 8.58 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | NA | NA | NA | NA | NA | <3.62 | 19.9 | 11.3 | 6.48 | NA | NA | 20.9 | 6.96 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 93.4 | 225 | 207 | 18.5 | NA | NA | 155 | 145 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | NA | NA | NA | NA | NA | 82.4 | 392 | 298 | 201 | NA | NA | 312 | 290 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.145 | 0.901 | 1.28 | 0.855 | NA | NA | 0.855 | 0.413 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | NA | NA | NA | NA | NA | 3.12 | 13.3 | 8.77 | 6.48 | NA | NA | 7.32 | 3.73 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1.45 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.725 | <1.19 | <1.29 | <1.25 | NA | NA | <1.05 | <1.24 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | NA | NA | NA | NA | NA | 168 | 49.9 | <25 | 97.5 | NA | NA | 48.2 | 51.8 |
| Titanium | NL | Method 200.7 | 996.31 | 996 | NA | NA | NA | NA | NA | 92.2 | 789 | 1,040 | 948 | NA | NA | 59 | 453 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | NA | NA | NA | NA | NA | 33.8 | 66 | 151 | 173 | NA | NA | 12.2 | 56 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | NA | NA | NA | NA | NA | 388 | 2,290 | 625 | 330 | NA | NA | 3,680 | 269 |
| Radionuclides (pCi/g) | | | | | | | | | | | | | | | | | |
| Gross Alpha | 50 | Method 9310 | 33.47 | 50 | NA | NA | NA | NA | NA | 15.4 | 7.7 | 9.3 | 10.6 | NA | NA | 10.8 | 19.5 |
| Gross Beta | 50 | Method 9310 | 48.92 | 48.92 | NA | NA | NA | NA | NA | 38.6 | 13.3 | 12.9 | 8.9 | NA | NA | 27.2 | 32.1 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | <6.71 | <11.9 | <12.9 | <12.2 | NA | NA | <10.4 | <12.2 |
| Radium 226 | 5 ^c | Method 9315 | 1.33 | 5 | NA | NA | NA | NA | NA | 0.6 | 0.7 | 1.4 | 1.5 | NA | NA | 1.2 | 1.0 |
| Radium 228 | 5 ^c | Method 9315 | 1.09 | 5 | NA | NA | NA | NA | NA | 1.1 | <1.0 | <1.0 | <0.9 | NA | NA | <0.9 | <1.0 |

Notes:

Result Exceeds 1993 Soil Closure Standard

* = EPA Engineering Forum Issue, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites, December 1995.

** = past holding time for analysis

a = NC Hazardous Waste Section Target Remediation Guidelines

b = NC GW Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

MDL = Method Detection Limit

NA = Not Analyzed per December 6, 1999 and September 3, 2002 DENR Correspondence

NL = No Level

Table L-2
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus 1993 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Analytical Method | Site Specific Background Levels* + 2X S.D. (mg/kg) | 1993 Soil Closure Standard (mg/kg) | SS-7 | SS-7-2 | SS-7-2 | SS-8 | SS-9 | SS-16 | SS-17 | SS-18 | SS-19 | SS-20 | SS-21 | SS-22 | SS-23 |
|------------------------------|--|-------------------|--|------------------------------------|-------------------|---------------|---------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|
| | | | | | 0 - 1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0 - 1' 5/27/94 | 0 - 1' 5/27/94 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/10/99 | 0 - 1' 11/4/99 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.28 | NA | NA | <3.73 | <3.75 | <1.13 | <1.15 | <1.16 | <1.00 | <1.01 | <1.09 | <1.14 | <0.894 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 146 | NA | NA | 186 | 31.7 | 25.3 | 21.8 | 19.2 | 20.1 | 15.3 | 12 | 1,490 | 47 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | <12.7 | NA | NA | 61.2 | 11.2 | 18.2 | <11.5 | 13.1 | <10 | <10.1 | 13.6 | 33.8 | <8.94 |
| Bromide | NL | EPA Method 300 | MDL | PQL (10) | <10 | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | 0.329 | NA | NA | <0.746 | <0.806 | <0.113 | <1.15 | <0.116 | <0.100 | <0.101 | <0.109 | 1.37 | 0.335 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 13.2 | NA | NA | 8.58 | 4.04 | 8.03 | 6.71 | 8.95 | 3.11 | 2.71 | 10.1 | 8.32 | 18.3 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 19.9 | NA | NA | 14 | <4.04 | 1.58 | 1.26 | 1.63 | 2.0 | 1.51 | 1.53 | 39.5 | 2,000 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 397 | <11.8 | 12.6 | 996 | 42.7 | 10.5 | 25.5 | 6.16 | 9.02 | 12.7 | 7.08 | 6,830 | 3.58 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 285 | NA | NA | 122 | 278 | 58.4 | 35.1 | 33.4 | 161 | 172 | 42.7 | 225 | 193 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 0.662 | NA | NA | <0.149 | <0.172 | 0.476 | 0.652 | 0.488 | <0.200 | <0.201 | <0.218 | 2.62 | <0.179 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 10.0 | NA | NA | 7.31 | <4.04 | 2.26 | 1.72 | 1.76 | <1.0 | <1.01 | 2.29 | 23.8 | 50.2 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <1.28 | NA | NA | <1.49 | <1.50 | 2.37 | 1.72 | 1.51 | <1.0 | <1.01 | 2.51 | 1.48 | 1.52 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <1.28 | NA | NA | <0.746 | <0.807 | <1.13 | <1.15 | <1.16 | <1.0 | <1.01 | <1.09 | <1.14 | <0.894 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | <25 | NA | NA | 537 | 172 | 27.6 | <250 | 48.1 | <100 | <100 | <25 | 34.8 | 35 |
| Titanium | NL | Method 200.7 | 996.31 | 996 | 130 | NA | NA | 118 | 36.1 | 39.3 | 43.5 | 21.9 | 15.5 | 17 | 34.4 | 46.4 | 543 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 37.6 | NA | NA | 33.2 | 9.62 | 28.7 | 21.6 | 27.8 | 6.91 | 4.83 | 30 | 17.9 | 51.5 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 855 | NA | NA | 5,230 | 39.6 | 62.3 | 111 | 34.3 | 13.1 | 21.5 | 17.2 | 7,020 | 28.7 |
| Radionuclides (pCi/g) | | | | | | | | | | | | | | | | | |
| Gross Alpha | 50 | Method 9310 | 33.47 | 50 | 7.7 | NA | NA | 16.3 | 8 | 29.1 | 28.8 | 23.3 | 14.8 | 11.1 | 22.8 | 11.6 | 1.9 |
| Gross Beta | 50 | Method 9310 | 48.92 | 48.92 | 20.7 | NA | NA | 29 | 33.3 | 38.1 | 47.9 | 36.6 | 40.3 | 36 | 38.1 | 24.4 | 9.9 |
| Praseodymium | NL | Method 1620 | MDL | MDL | <12.7 | NA | NA | <7.46 | <7.52 | <11.3 | <11.5 | <11.6 | <10.0 | <10.1 | <10.9 | <11.4 | NA |
| Radium 226 | 5 ^c | Method 9315 | 1.33 | 5 | 1.6 | NA | NA | 2.2 | 1.2 | 0.7 | 1.1 | 2.4 | 1.1 | 0.9 | 0.6 | 0.9 | 1.1 |
| Radium 228 | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | NA | NA | 1.2 | <0.8 | <1.0 | <1.0 | 1.0 | 1.1 | <1.0 | 1.5 | 1.0 | <1.1 |

Notes:

Result Exceeds 1993 Soil Closure Standard

* = EPA Engineering Forum Issue, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites, December 1995.

** = past holding time for analysis

a = NC Hazardous Waste Section Target Remediation Guidelines

b = NC GW Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

MDL = Method Detection Limit

NA = Not Analyzed per December 6, 1999 and September 3, 2002 DENR Correspondence

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Table L-2
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus 1993 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Analytical Method | Site Specific Background Levels* + 2X S.D. (mg/kg) | 1993 Soil Closure Standard (mg/kg) | SS-24 | SS-24 | SS-24-2 | SS-24-2 | SS-25 | SS-25 | SS-26 | SS-27 | SS-28 | SS-29 | SS-30 | SS-31 | SS-32 |
|------------------------------|--|-------------------|--|------------------------------------|--------------------|----------------|---------------|---------------|-------------------|----------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | | | | 0 - 1' 11/18/99 | 3' 11/18/99 | 4' 9/13/02 | 6' 9/13/02 | 0 - 1' 11/4/99 | 3' 11/18/99 | 0 - 1' 11/10/99 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 64.8 | 260 | NA | NA | 54.4 | 78.7 | 135 | 18.1 | 8.3 | 13 | 22.9 | 30 | 25.8 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | 11.1 | 44.2 | NA | NA | 27.2 | 70.4 | <10.1 | 6.09 | 7.41 | 11.8 | 7.72 | 8.05 | <5.19 |
| Bromide | NL | EPA Method 300 | MDL | PQL (10) | <10 | <10 | NA | NA | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | 0.168 | 0.331 | NA | NA | 0.228 | 0.318 | <0.101 | <0.113 | <0.111 | <0.113 | <0.107 | <0.105 | <0.104 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 17 | 15.9 | NA | NA | 9.44 | 21 | 4.65 | 6.66 | 4.65 | 7.13 | 7.29 | 6.66 | 4.15 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 203 | 285 | 11.4 | 9.96 | 3.23 | 3.37 | 6.27 | 1.35 | <1.11 | 1.92 | 1.29 | 4.23 | 2.7 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 65.9 | 972 | 372 | 170 | 19.4 | 20.2 | 65.2 | 17.2 | 6.19 | 4.87 | 3.75 | 15.9 | 9.12 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 267 | 235 | NA | NA | 180 | 97 | 189 | 51.5 | 37.2 | 87.9 | 26.5 | 298 | 305 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | <0.189 | <0.194 | NA | NA | 1.28 | 0.404 | 4.02 | 0.904 | 0.592 | 2.19 | 0.858 | 0.918 | 0.624 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 12.9 | 17.7 | NA | NA | 3.68 | 4.24 | 2.82 | 1.58 | 1.22 | 1.81 | 1.29 | 1.16 | <1.04 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | 25.8 | 53 | NA | NA | 30.9 | 62.8 | <250 | 100 | 275 | <25 | 43 | <250 | 43.4 |
| Titanium | NL | Method 200.7 | 996.31 | 996 | 639 | 451 | NA | NA | 317 | 398 | 23.8 | 106 | 57.5 | 137 | 51.3 | 61.1 | 42.8 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 32.7 | 31.2 | NA | NA | 44.2 | 117 | 9.2 | 26.3 | 26.9 | 29.2 | 19 | 12.2 | 6.74 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 131 | 1,200 | 1,070 | 710 | 40 | 417 | 885 | 13.1 | 12.3 | 25.4 | 11.7 | 9.31 | 4.15 |
| Radionuclides (pCi/g) | | | | | | | | | | | | | | | | | |
| Gross Alpha | 50 | Method 9310 | 33.47 | 50 | 2.1 | 8.9 | NA | NA | 20.2 | 22.8 | 15.4 | NA | NA | NA | NA | NA | NA |
| Gross Beta | 50 | Method 9310 | 48.92 | 48.92 | 8.6 | 16.3 | NA | NA | 29.8 | 17.3 | 43.5 | NA | NA | NA | NA | NA | NA |
| Praseodymium | NL | Method 1620 | MDL | MDL | <9.42 | <9.63 | NA | NA | <11.5 | <12.5 | <10.1 | NA | NA | NA | NA | NA | NA |
| Radium 226 | 5 ^c | Method 9315 | 1.33 | 5 | 0.5 | 0.9 | NA | NA | 1.3 | 0.5 | 0.8 | NA | NA | NA | NA | NA | NA |
| Radium 228 | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | <1.1 | NA | NA | <1.0 | <1.1 | <1.0 | NA | NA | NA | NA | NA | NA |

Notes:

Result Exceeds 1993 Soil Closure Standard

* = EPA Engineering Forum Issue, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites, December 1995.

** = past holding time for analysis

a = NC Hazardous Waste Section Target Remediation Guidelines

b = NC GW Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

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Table L-2
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus 1993 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Analytical Method | Site Specific Background Levels* + 2X S.D. (mg/kg) | 1993 Soil Closure Standard (mg/kg) | SS-33 | SS-33 | SS-34 | SS-34 | SS-35 | SS-35 | SS-36 | SS-36 | SS-36-2 | SS-37 | SS-37 | SS-38 | SS-38 |
|------------------------------|--|-------------------|--|------------------------------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|
| | | | | | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 9/13/02 | 3' 1/19/00 | 0 - 1' 1/19/00 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 | <1.01 | <0.982 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 25.5 | 25.2 | 39.9 | 29.9 | 23.1 | 17.2 | 690 | 10.2 | NA | 14.6 | 5.4 | 25 | 4.62 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | <5.20 | 12.5 | <5.30 | 19.0 | 107 | 31.9 | 56 | 22.4 | NA | 32.3 | 22.0 | 6.55 | <9.82 |
| Bromide | NL | EPA Method 300 | MDL | PQL (10) | <10 | ** | <10 | ** | <10 | ** | <10 | ** | NA | <10 | ** | <10 | ** |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.098 | 0.159 | <0.106 | <0.105 | <0.122 | 0.226 | <0.126 | 0.162 | NA | <0.120 | <0.120 | <0.101 | <0.098 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 6.97 | 11.0 | 5.08 | 8.42 | 17.1 | 12.2 | 13.2 | 3.86 | NA | 10.2 | 3.6 | 8.07 | 3.14 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 2.26 | 2.35 | 4.45 | 3.05 | 3.42 | 1.86 | 3.42 | 1.87 | NA | 1.32 | <1.20 | 2.82 | 1.18 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 10.5 | 5.44 | 12.5 | 8.21 | 17.5 | 9.16 | 23.5 | 7.36 | NA | 7.46 | 4.2 | 7.77 | 5.5 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 408 | 73.5 | 164 | 105 | 120 | 62.7 | 91.5 | 168 | NA | 28.9 | 47.1 | 90.5 | 42.0 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | 1.41 | ** | 0.425 | ** | 3.67 | ** | 1.43 | ** | NA | 2.65 | ** | 0.942 | ** |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | <0.982 | 1.71 | 1.17 | 2.63 | 5.74 | 3.01 | 4.43 | 1.64 | NA | 1.56 | <1.20 | 1.72 | <0.982 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 | <1.01 | <0.982 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.982 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA | <1.20 | <1.20 | <1.01 | <0.982 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | <250 | ** | <250 | ** | 67 | ** | 5,560 | ** | 101 | 36.8 | ** | 37.3 | ** |
| Titanium | NL | Method 200.7 | 996.31 | 996 | 34.2 | 13.3 | 81.7 | 16.4 | 339 | 150 | 187 | 47.2 | NA | 62.2 | 22.9 | 47.2 | 13.4 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 6.09 | 21.0 | 8.69 | 22.9 | 210 | 66.1 | 87.7 | 23.8 | NA | 34.2 | 14.7 | 16.6 | 9.53 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 21.6 | 60.3 | 15.5 | 8.1 | 21.7 | 23.7 | 37.1 | 33.0 | NA | 11.4 | 19.9 | 6.56 | 7.76 |
| Radionuclides (pCi/g) | | | | | | | | | | | | | | | | | |
| Gross Alpha | 50 | Method 9310 | 33.47 | 50 | 12.7 | 16.8 | 17.7 | 14.1 | 18.4 | 19.0 | 64.8 | 30.4 | NA | 27.2 | 38.2 | 16.1 | 13.6 |
| Gross Beta | 50 | Method 9310 | 48.92 | 48.92 | 39.4 | 32.5 | 42.8 | 32.6 | 15.7 | 23.7 | 48.7 | 55.6 | NA | 34.7 | 42.5 | 40.6 | 38.9 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Radium 226 | 5 ^c | Method 9315 | 1.33 | 5 | 0.5 | 1.2 | 1.4 | 1.0 | 1.0 | 0.9 | 0.5 | 0.8 | NA | 0.7 | 0.6 | 0.7 | 0.7 |
| Radium 228 | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | <1.1 | <1.1 | <1.0 | <1.0 | <1.1 | 1.1 | <1.0 | NA | 1.0 | <1.0 | <1.0 | <1.0 |

Notes:

Result Exceeds 1993 Soil Closure Standard

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Former Porcelanite Facility
Lexington, North Carolina

| Parameter | SSL Protective of Ground Water/Region 9 Risk-Based Concentration (RBC) | Analytical Method | Site Specific Background Levels* + 2X S.D. (mg/kg) | 1993 Soil Closure Standard (mg/kg) | SS-39 | SS-39 | SS-40 | SS-40 | SS-41 | SS-41 | SS-42 | SS-43 | SS-43 | BG-1 | BG-2 |
|------------------------------|--|-------------------|--|------------------------------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|-------------------|---------------|------------------|------------------|
| | | | | | 0 - 1' 2/17/00 | 3' 2/17/00 | 0 - 1' 2/17/00 | 3' 2/17/00 | 0 - 1' 2/17/00 | 3' 2/17/00 | 0 - 1' 2/17/00 | 0 - 1' 2/17/00 | 3' 2/17/00 | 0-1' 11/10/99 | 0-1' 11/10/99 |
| Inorganics (mg/kg) | | | | | | | | | | | | | | | |
| Arsenic | 5.24/0.39 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 |
| Barium | 848/5,400 mg/kg ^a | Method 200.7 | 83.07 | 848 | 40.2 | <4.19 | 39.5 | 63.5 | 435 | 50.6 | 140 | 34.8 | 55.1 | 19.2 | 43.12 |
| Boron | 20.5/5,500 mg/kg ^a | Method 200.7 | 77.26 | 77.24 | <9.53 | <10.5 | <9.39 | <11.3 | <10.8 | <10.4 | 13.0 | <10.3 | <11.1 | 24.3 | <10.9 |
| Bromide | NL | EPA Method 300 | MDL | PQL (10) | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 2.72/39 mg/kg ^a | Method 200.7 | 0.796 | 2.72 | <0.095 | <0.105 | <0.094 | <0.113 | <0.108 | <0.104 | <0.097 | <0.103 | <0.111 | <0.118 | <0.109 |
| Chromium | 27.2/30 mg/kg ^a | Method 200.7 | 27.3 | 27.2 | 12.7 | <1.05 | 16.7 | 3.16 | 4.53 | 8.14 | 11.8 | 6.82 | 8.64 | 11.5 | 6.76 |
| Cobalt | 22/4,700 mg/kg ^a | Method 200.7 | 39.49 | 39.50 | 6.00 | <1.05 | 8.07 | 9.59 | 5.82 | 10.5 | 9.42 | 3.82 | 3.77 | 2.0 | 2.94 |
| Lead | 270/400 mg/kg ^a | Method 200.7 | 71.98 | 270 | 4.67 | <0.523 | 1.03 | 11.5 | 44.6 | 20.5 | 239 | 16.8 | 32.7 | 13.4 | 13.2 |
| Manganese | 65.2/NL mg/kg ^a | Method 200.7 | 384.53 | 384.5 | 219 | <1.05 | 234 | 4.21 | 519 | 153 | 142 | 302 | 119 | 42.5 | 123 |
| Mercury | 0.0154/23 mg/kg ^a | Method 200.7 | 1.22 | 1.23 | <0.191 | <0.209 | <0.188 | <0.226 | 0.307 | <0.209 | <0.194 | <0.206 | <0.221 | 5.54*** | 0.862 |
| Nickel | 56.4/1,600 mg/kg ^a | Method 200.7 | 10.51 | 56.4 | 6.96 | <1.05 | 9.95 | 3.50 | 1.94 | 2.19 | 6.31 | 1.76 | 2.66 | 2.82 | 2.73 |
| Selenium | 12.2/390 mg/kg ^a | Method 200.7 | 2.99 | 12.2 | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | 2.47 | 1.2 |
| Silver | 0.223/390 mg/kg ^a | Method 200.7 | 0.61 | PQL | <0.953 | <1.05 | <0.939 | <1.13 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 | <1.18 | <1.09 |
| Sulfate | 2,500 mg/kg ^b | Method 9038 | 72.75 | 2,500 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <25 | <100 | <100 |
| Titanium | NL | Method 200.7 | 996.31 | 996 | 357 | <10.5 | 384 | 356 | 24.8 | 26.9 | 84.7 | 22.3 | 26.3 | 65.7 | 181 |
| Vanadium | NL/550 | Method 200.7 | 184.91 | 550 | 20.6 | 1.46 | 22.5 | 33.4 | 7.87 | 16.0 | 20.1 | 12.2 | 25.6 | 45.2 | 27.6 |
| Zinc | 1,100/23,000 mg/kg | Method 200.7 | 163.71 | 1,100 | 34.9 | 2.83 | 26.2 | 32.3 | 390 | 78.8 | 258 | 21.2 | 9.60 | 149 | 124 |
| Radionuclides (pCi/g) | | | | | | | | | | | | | | | |
| Gross Alpha | 50 | Method 9310 | 33.47 | 50 | <2.3 | <2.0 | <2.2 | 20.3 | 19.8 | 10.0 | 7.9 | 13.3 | 27.4 | 22.4 | 23.5 |
| Gross Beta | 50 | Method 9310 | 48.92 | 48.92 | 9.1 | 2 | 10.8 | 29.6 | 30.0 | 16.1 | 14.0 | 37.6 | 37.6 | 31 | 33.2 |
| Praseodymium | NL | Method 1620 | MDL | MDL | NA | NA | NA | NA | NA | NA | NA | NA | NA | <11.8 | <10.9 |
| Radium 226 | 5 ^c | Method 9315 | 1.33 | 5 | 0.2 | <0.3 | <0.4 | 1.3 | 0.8 | 1.5 | 1.0 | 0.7 | 0.5 | 1 | 1.1 |
| Radium 228 | 5 ^c | Method 9315 | 1.09 | 5 | <1.0 | <1.0 | <1.0 | <1.1 | <1.1 | <1.1 | <1.1 | 1.0 | 1.8 | <1.0 | 0.9 |

Notes:

[Redacted] Result Exceeds 1993 Soil Closure Standard

* = EPA Engineering Forum Issue, Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites, December 1995.

** = past holding time for analysis

a = NC Hazardous Waste Section Target Remediation Guidelines

b = NC GW Quality Standard for Sulfate of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = reference September 3, 2002 DENR Correspondence

MDL = Method Detection Limit






NA = Not Analyzed per December 6, 1999 and September 3, 2002 DENR Correspondence

NL = No Level

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | B-4 | B-5 | B-5 | B-6 | B-6 | SS-1 | SS-2 | SS-3 |
|---------------------------|--|----------------------------|--|--------------------|--------------------|--------------------|--------------------|----------------------|-------------------|-------------------|-------------------|
| | | | | 6-7.5' 11/22/89 | 1-2.5' 11/24/89 | 6-7.5' 11/24/89 | 2.5-4' 11/24/89 | 17.5-19' 11/24/89 | 0 - 1' 5/27/94 | 0 - 1' 11/4/99 | 0 - 1' 11/4/99 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <3.62 | <1.19 | <1.29 |
| Barium | 580 | 44,000 | <10-413 | <10 | <10 | <10 | <10 | <10 | 80.1 | 246 | 149 |
| Boron | 45 | 46,000 | <10.5-123 | NA | NA | NA | NA | NA | 26 | 30.9 | 61.9 |
| Bromide | NS | NS | <10-<10 | NA | NA | NA | NA | NA | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.725 | 0.712 | 0.696 |
| Chromium | 360,000 | 100,000 | <0.5-123 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 8.19 | 15.4 | 33.6 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | NA | <3.62 | 19.9 | 11.3 |
| Lead | 270 | 800 | <0.5-18.8 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 93.4 | 225 | 207 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | 82.4 | 392 | 298 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.145 | 0.901 | 1.28 |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | 3.12 | 13.3 | 8.77 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <1.45 | <1.19 | <1.29 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.725 | <1.19 | <1.29 |
| Sulfate | NS | NS | <100-<100 | NA | NA | NA | NA | NA | 168 | 49.9 | <25 |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | 92.2 | 789 | 1,040 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | 33.8 | 66 | 151 |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | NA | 388 | 2,290 | 625 |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-4 | SS-4-2 | SS-4-2 | SS-5 | SS-6 | SS-7 | SS-7-2 | SS-7-2 |
|---------------------------|--|----------------------------|--|-------------------|---------------|---------------|-------------------|-------------------|-------------------|---------------|---------------|
| | | | | 0 - 1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 | 0 - 1' 11/4/99 | 0 - 1' 11/4/99 | 0 - 1' 11/4/99 | 3' 9/13/02 | 5' 9/13/02 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA |
| Barium | 580 | 44,000 | <10-413 | 47.7 | NA | NA | 373 | 64.3 | 146 | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 74.2 | NA | NA | <10.5 | 31.6 | <12.7 | NA | NA |
| Bromide | NS | NS | <10-<10 | <10 | NA | NA | <10 | <10 | <10 | NA | NA |
| Cadmium | 3.0 | 200 | <0.1-12.7 | 0.623 | NA | NA | 0.335 | 0.249 | 0.329 | NA | NA |
| Chromium | 360,000 | 100,000 | <0.5-123 | 33.3 | 8.39 | 6.74 | 4.81 | 8.58 | 13.2 | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 6.48 | NA | NA | 20.9 | 6.96 | 19.9 | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 18.5 | NA | NA | 155 | 145 | 397 | <11.8 | 12.6 |
| Manganese | 65 | 5,200 | 56.6-449 | 201 | NA | NA | 312 | 290 | 285 | NA | NA |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | 0.855 | NA | NA | 0.855 | 0.413 | 0.662 | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | 6.48 | NA | NA | 7.32 | 3.73 | 10.0 | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.25 | NA | NA | <1.05 | <1.24 | <1.28 | NA | NA |
| Sulfate | NS | NS | <100-<100 | 97.5 | NA | NA | 48.2 | 51.8 | <25 | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 948 | NA | NA | 59 | 453 | 130 | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 173 | NA | NA | 12.2 | 56 | 37.6 | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 330 | NA | NA | 3,680 | 269 | 855 | NA | NA |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-8 0 - 1' 5/27/94 | SS-9 0 - 1' 5/27/94 | SS-16 0 - 1' 11/10/99 | SS-17 0 - 1' 11/10/99 | SS-18 0 - 1' 11/10/99 | SS-19 0 - 1' 11/10/99 | SS-20 0 - 1' 11/10/99 | SS-21 0 - 1' 11/10/99 |
|---------------------------|-------------------------------------|----------------------|------------------------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <3.73 | <3.75 | <1.13 | <1.15 | <1.16 | <1.00 | <1.01 | <1.09 |
| Barium | 580 | 44,000 | <10-413 | 186 | 31.7 | 25.3 | 21.8 | 19.2 | 20.1 | 15.3 | 12 |
| Boron | 45 | 46,000 | <10.5-123 | 61.2 | 11.2 | 18.2 | <11.5 | 13.1 | <10 | <10.1 | 13.6 |
| Bromide | NS | NS | <10-<10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.746 | <0.806 | <0.113 | <1.15 | <0.116 | <0.100 | <0.101 | <0.109 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 8.58 | 4.04 | 8.03 | 6.71 | 8.95 | 3.11 | 2.71 | 10.1 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 14 | <4.04 | 1.58 | 1.26 | 1.63 | 2.0 | 1.51 | 1.53 |
| Lead | 270 | 800 | <0.5-18.8 | 996 | 42.7 | 10.5 | 25.5 | 6.16 | 9.02 | 12.7 | 7.08 |
| Manganese | 65 | 5,200 | 56.6-449 | 122 | 278 | 58.4 | 35.1 | 33.4 | 161 | 172 | 42.7 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | <0.149 | <0.172 | 0.476 | 0.652 | 0.488 | <0.200 | <0.201 | <0.218 |
| Nickel | 130 | 4,400 | 2.77-12 | 7.31 | <4.04 | 2.26 | 1.72 | 1.76 | <1.0 | <1.01 | 2.29 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.49 | <1.50 | 2.37 | 1.72 | 1.51 | <1.0 | <1.01 | 2.51 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <0.746 | <0.807 | <1.13 | <1.15 | <1.16 | <1.0 | <1.01 | <1.09 |
| Sulfate | NS | NS | <100-<100 | 537 | 172 | 27.6 | <250 | 48.1 | <100 | <100 | <25 |
| Titanium | NS | NS | 46.1-1,020 | 118 | 36.1 | 39.3 | 43.5 | 21.9 | 15.5 | 17 | 34.4 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 33.2 | 9.62 | 28.7 | 21.6 | 27.8 | 6.91 | 4.83 | 30 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 5,230 | 39.6 | 62.3 | 111 | 34.3 | 13.1 | 21.5 | 17.2 |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-22 0 - 1' 11/4/99 | SS-23 0 - 1' 11/18/99 | SS-24 0 - 1' 11/18/99 | SS-24 3' 11/18/99 | SS-24-2 4' 9/13/02 | SS-24-2 6' 9/13/02 | SS-25 0 - 1' 11/4/99 | SS-25 3' 11/18/99 |
|---------------------------|-------------------------------------|----------------------|------------------------------------|----------------------------|-----------------------------|-----------------------------|-------------------------|--------------------------|--------------------------|----------------------------|-------------------------|
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 |
| Barium | 580 | 44,000 | <10-413 | 1,490 | 47 | 64.8 | 260 | NA | NA | 54.4 | 78.7 |
| Boron | 45 | 46,000 | <10.5-123 | 33.8 | <8.94 | 11.1 | 44.2 | NA | NA | 27.2 | 70.4 |
| Bromide | NS | NS | <10-<10 | <10 | <10 | <10 | <10 | NA | NA | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | 1.37 | 0.335 | 0.168 | 0.331 | NA | NA | 0.228 | 0.318 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 8.32 | 18.3 | 17 | 15.9 | NA | NA | 9.44 | 21 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 39.5 | 2,000 | 203 | 285 | 11.4 | 9.96 | 3.23 | 3.37 |
| Lead | 270 | 800 | <0.5-18.8 | 6,830 | 3.58 | 65.9 | 972 | 372 | 170 | 19.4 | 20.2 |
| Manganese | 65 | 5,200 | 56.6-449 | 225 | 193 | 267 | 235 | NA | NA | 180 | 97 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | 2.62 | <0.179 | <0.189 | <0.194 | NA | NA | 1.28 | 0.404 |
| Nickel | 130 | 4,400 | 2.77-12 | 23.8 | 50.2 | 12.9 | 17.7 | NA | NA | 3.68 | 4.24 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | 1.48 | 1.52 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.14 | <0.894 | <0.942 | <0.972 | NA | NA | <1.15 | <1.25 |
| Sulfate | NS | NS | <100-<100 | 34.8 | 35 | 25.8 | 53 | NA | NA | 30.9 | 62.8 |
| Titanium | NS | NS | 46.1-1,020 | 46.4 | 543 | 639 | 451 | NA | NA | 317 | 398 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 17.9 | 51.5 | 32.7 | 31.2 | NA | NA | 44.2 | 117 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 7,020 | 28.7 | 131 | 1,200 | 1,070 | 710 | 40 | 417 |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-26 | SS-27 | SS-28 | SS-29 | SS-30 | SS-31 | SS-32 | SS-33 |
|---------------------------|--|----------------------------|--|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | | | | 0 - 1' 11/10/99 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 | 0 - 1' 1/19/00 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 |
| Barium | 580 | 44,000 | <10-413 | 135 | 18.1 | 8.3 | 13 | 22.9 | 30 | 25.8 | 25.5 |
| Boron | 45 | 46,000 | <10.5-123 | <10.1 | 6.09 | 7.41 | 11.8 | 7.72 | 8.05 | <5.19 | <5.20 |
| Bromide | NS | NS | <10-<10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.101 | <0.113 | <0.111 | <0.113 | <0.107 | <0.105 | <0.104 | <0.098 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 4.65 | 6.66 | 4.65 | 7.13 | 7.29 | 6.66 | 4.15 | 6.97 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 6.27 | 1.35 | <1.11 | 1.92 | 1.29 | 4.23 | 2.7 | 2.26 |
| Lead | 270 | 800 | <0.5-18.8 | 65.2 | 17.2 | 6.19 | 4.87 | 3.75 | 15.9 | 9.12 | 10.5 |
| Manganese | 65 | 5,200 | 56.6-449 | 189 | 51.5 | 37.2 | 87.9 | 26.5 | 298 | 305 | 408 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | 4.02 | 0.904 | 0.592 | 2.19 | 0.858 | 0.918 | 0.624 | 1.41 |
| Nickel | 130 | 4,400 | 2.77-12 | 2.82 | 1.58 | 1.22 | 1.81 | 1.29 | 1.16 | <1.04 | <0.982 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.01 | <1.13 | <1.11 | <1.13 | <1.07 | <1.05 | <1.04 | <0.982 |
| Sulfate | NS | NS | <100-<100 | <250 | 100 | 275 | <25 | 43 | <250 | 43.4 | <250 |
| Titanium | NS | NS | 46.1-1,020 | 23.8 | 106 | 57.5 | 137 | 51.3 | 61.1 | 42.8 | 34.2 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 9.2 | 26.3 | 26.9 | 29.2 | 19 | 12.2 | 6.74 | 6.09 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 885 | 13.1 | 12.3 | 25.4 | 11.7 | 9.31 | 4.15 | 21.6 |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-33 3' 1/19/00 | SS-34 0 - 1' 1/19/00 | SS-34 3' 1/19/00 | SS-35 0 - 1' 1/19/00 | SS-35 3' 1/19/00 | SS-36 0 - 1' 1/19/00 | SS-36 3' 1/19/00 | SS-36-2 3' 9/13/02 |
|---------------------------|--|----------------------------|--|------------------------|----------------------------|------------------------|----------------------------|------------------------|----------------------------|------------------------|--------------------------|
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA |
| Barium | 580 | 44,000 | <10-413 | 25.2 | 39.9 | 29.9 | 23.1 | 17.2 | 690 | 10.2 | NA |
| Boron | 45 | 46,000 | <10.5-123 | 12.5 | <5.30 | 19.0 | 107 | 31.9 | 56 | 22.4 | NA |
| Bromide | NS | NS | <10-<10 | ** | <10 | ** | <10 | ** | <10 | ** | NA |
| Cadmium | 3.0 | 200 | <0.1-12.7 | 0.159 | <0.106 | <0.105 | <0.122 | 0.226 | <0.126 | 0.162 | NA |
| Chromium | 360,000 | 100,000 | <0.5-123 | 11.0 | 5.08 | 8.42 | 17.1 | 12.2 | 13.2 | 3.86 | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 2.35 | 4.45 | 3.05 | 3.42 | 1.86 | 3.42 | 1.87 | NA |
| Lead | 270 | 800 | <0.5-18.8 | 5.44 | 12.5 | 8.21 | 17.5 | 9.16 | 23.5 | 7.36 | NA |
| Manganese | 65 | 5,200 | 56.6-449 | 73.5 | 164 | 105 | 120 | 62.7 | 91.5 | 168 | NA |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | ** | 0.425 | ** | 3.67 | ** | 1.43 | ** | NA |
| Nickel | 130 | 4,400 | 2.77-12 | 1.71 | 1.17 | 2.63 | 5.74 | 3.01 | 4.43 | 1.64 | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.07 | <1.06 | <1.05 | <1.22 | <1.16 | <1.26 | <1.17 | NA |
| Sulfate | NS | NS | <100-<100 | ** | <250 | ** | 67 | ** | 5,560 | ** | 101 |
| Titanium | NS | NS | 46.1-1,020 | 13.3 | 81.7 | 16.4 | 339 | 150 | 187 | 47.2 | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 21.0 | 8.69 | 22.9 | 210 | 66.1 | 87.7 | 23.8 | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 60.3 | 15.5 | 8.1 | 21.7 | 23.7 | 37.1 | 33.0 | NA |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-37 | SS-37 | SS-38 | SS-38 | SS-39 | SS-39 | SS-40 | SS-40 |
|---------------------------|--|----------------------------|--|-------------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|
| | | | | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 1/19/00 | 3' 1/19/00 | 0 - 1' 2/17/00 | 3' 2/17/00 | 0 - 1' 2/17/00 | 3' 2/17/00 |
| Inorganics (mg/kg) | | | | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.20 | <1.20 | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 |
| Barium | 580 | 44,000 | <10-413 | 14.6 | 5.4 | 25 | 4.62 | 40.2 | <4.19 | 39.5 | 63.5 |
| Boron | 45 | 46,000 | <10.5-123 | 32.3 | 22.0 | 6.55 | <9.82 | <9.53 | <10.5 | <9.39 | <11.3 |
| Bromide | NS | NS | <10-<10 | <10 | ** | <10 | ** | <10 | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.120 | <0.120 | <0.101 | <0.098 | <0.095 | <0.105 | <0.094 | <0.113 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 10.2 | 3.6 | 8.07 | 3.14 | 12.7 | <1.05 | 16.7 | 3.16 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 1.32 | <1.20 | 2.82 | 1.18 | 6.00 | <1.05 | 8.07 | 9.59 |
| Lead | 270 | 800 | <0.5-18.8 | 7.46 | 4.2 | 7.77 | 5.5 | 4.67 | <0.523 | 1.03 | 11.5 |
| Manganese | 65 | 5,200 | 56.6-449 | 28.9 | 47.1 | 90.5 | 42.0 | 219 | <1.05 | 234 | 4.21 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | 2.65 | ** | 0.942 | ** | <0.191 | <0.209 | <0.188 | <0.226 |
| Nickel | 130 | 4,400 | 2.77-12 | 1.56 | <1.20 | 1.72 | <0.982 | 6.96 | <1.05 | 9.95 | 3.50 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.20 | <1.20 | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.20 | <1.20 | <1.01 | <0.982 | <0.953 | <1.05 | <0.939 | <1.13 |
| Sulfate | NS | NS | <100-<100 | 36.8 | ** | 37.3 | ** | <25 | <25 | <25 | <25 |
| Titanium | NS | NS | 46.1-1,020 | 62.2 | 22.9 | 47.2 | 13.4 | 357 | <10.5 | 384 | 356 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 34.2 | 14.7 | 16.6 | 9.53 | 20.6 | 1.46 | 22.5 | 33.4 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 11.4 | 19.9 | 6.56 | 7.76 | 34.9 | 2.83 | 26.2 | 32.3 |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

Table L-3
SWMU-2 Past Inorganic Soil Sampling Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Parameter | IHSB Protection of Groundwater PSRG | IHSB Industrial PSRG | Range of Background Concentrations | SS-41 | SS-41 | SS-42 | SS-43 | SS-43 |
|---------------------------|--|----------------------------|--|-------------------|---------------|-------------------|-------------------|---------------|
| | | | | 0 - 1' 2/17/00 | 3' 2/17/00 | 0 - 1' 2/17/00 | 0 - 1' 2/17/00 | 3' 2/17/00 |
| Inorganics (mg/kg) | | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 |
| Barium | 580 | 44,000 | <10-413 | 435 | 50.6 | 140 | 34.8 | 55.1 |
| Boron | 45 | 46,000 | <10.5-123 | <10.8 | <10.4 | 13.0 | <10.3 | <11.1 |
| Bromide | NS | NS | <10-<10 | <10 | <10 | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.108 | <0.104 | <0.097 | <0.103 | <0.111 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 4.53 | 8.14 | 11.8 | 6.82 | 8.64 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 5.82 | 10.5 | 9.42 | 3.82 | 3.77 |
| Lead | 270 | 800 | <0.5-18.8 | 44.6 | 20.5 | 239 | 16.8 | 32.7 |
| Manganese | 65 | 5,200 | 56.6-449 | 519 | 153 | 142 | 302 | 119 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | 0.307 | <0.209 | <0.194 | <0.206 | <0.221 |
| Nickel | 130 | 4,400 | 2.77-12 | 1.94 | 2.19 | 6.31 | 1.76 | 2.66 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.08 | <1.04 | <0.971 | <1.03 | <1.11 |
| Sulfate | NS | NS | <100-<100 | <25 | <25 | <25 | <25 | <25 |
| Titanium | NS | NS | 46.1-1,020 | 24.8 | 26.9 | 84.7 | 22.3 | 26.3 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 7.87 | 16.0 | 20.1 | 12.2 | 25.6 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 390 | 78.8 | 258 | 21.2 | 9.60 |

Notes:



Exceeds PGW PSRG



Exceeds Industrial PSRG



Exceeds Range of Background Samples



Exceeds PGW PSRG and Range of Background Samples



Exceeds All PSRGs

** = past holding time for analysis

*** = Considered Statistical Outlier - not used

NA = Not Analyzed

NS = No Standard

**Table L-4
Background Soil Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina**

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Com/Ind PSRG | Range of Background Concentrations | B-1 | B-1 | B-2 | B-3 | HA-4 | HA-5 | HA-5A | HA-21 | BG-1 | BG-2 |
|---|--------------------------------------|--------------|--|----------|----------|----------|----------|-------------|-------------|-------------|-------------|----------------|-------------|
| | | | | 11/29/89 | 11/29/89 | 11/29/89 | 11/22/89 | 12/11/96 | 12/11/96 | 3/24/97 | 3/24/97 | 11/10/99 | 11/10/99 |
| | | | | 2.5-4.0' | 10-11.5' | 2.5-4.0' | 3.5-5.0' | NDS | NDS | NDS | NDS | 0-1' | 0-1' |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | | | |
| Arsenic | 5.8 | 3 | <0.5-4.38 | <0.5 | <0.5 | <0.5 | <1.0 | <1.134 | <1.05 | 1.61 | 4.38 | <1.18 | <1.09 |
| Barium | 580 | 44,000 | <10-413 | <10 | <10 | <10 | <10 | 163 | 48.4 | 52.4 | 413 | 19.2 | 43.12 |
| Boron | 45 | 46,000 | <10.5-123 | NA | NA | NA | NA | 51.5 | <10.5 | <8.15 | 123 | 24.3 | <10.9 |
| Cadmium | 3 | 200 | <0.1-12.7 | <0.1 | <0.1 | <0.1 | <0.5 | 1.67 | 0.283 | 0.883 | 12.7 | <0.118 | <0.109 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | <0.5 | <0.5 | <0.5 | <1.0 | 122 | 1.08 | <0.815 | 123 | 11.5 | 6.76 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | 8.6 | 4.22 | 2.02 | 47.2 | 2 | 2.94 |
| Lead | 270 | 800 | <0.5-18.8 | <0.5 | <0.5 | <0.5 | <1.0 | 12.1 | 18.8 | 10.9 | 11.8 | 13.4 | 13.2 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | 56.6 | 353 | 118 | 449 | 42.5 | 123 |
| Mercury | 1 | 3.1 | <0.0005-0.862 | <0.0005 | <0.0005 | <0.0005 | <0.2 | 0.338 | <0.211 | <0.163 | <0.202 | 5.54*** | 0.862 |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | 12 | 3.27 | 2.77 | 137 | 2.82 | 2.73 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <0.1 | <0.1 | <0.1 | <0.5 | <1.34 | <1.05 | <0.463 | <0.556 | 2.47 | 1.2 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <0.5 | <0.5 | <0.5 | <1.0 | <1.34 | <1.05 | <0.815 | <2.02 | <1.18 | <1.09 |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | 738 | 67.7 | 46.1 | 1,020 | 65.7 | 181 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | 187 | 7.03 | 5.01 | 199 | 45.2 | 27.6 |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | 42.7 | 27.3 | 16.5 | 80.8 | 149 | 124 |

Notes:

Result Exceeds Protection of Groundwater (PGW) PSRG

Result Exceeds Industrial PSRG

Result Exceeds PGW and Industrial PSRG

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

*** - Considered Statistical Outlier and not used in Sludge Pond Closure

Metals analysis via Method 6010C and 7471B

Table L-4 Soil Sampling Analytical Results, Porcelanite, Inc., Lexington, NC

Soil Sampling Analytical Notes

* = EPA Engineering Forum Issue. Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites. December 1995.

** = past holding time for analysis

a = NC Hazardous Waste Section Target Remediation Guidelines

b = North Carolina Groundwater Quality Standard of 250 mg/L x 10 (dilution/attenuation factor) = 2,500 mg/kg

c = $4.0 \text{ mg/kg-dyd} \times 70 \text{ kg} \times 1 \text{ dy}/2\text{L} \times 0.10$ (relative source contribution)C = 14 mg/L x 10 (dilution/attenuation factor) = 140 mg/L or 140 mg/kg (1 kilogram is the mass of 1 liter of water)

d = reference January 4, 1999 DENR Correspondence

e =

f = 40 CFR Part 136 which is sample specific

DL = Detection Limit

NA = Praseodymium not analyzed per 12-6-99 DENR Correspondence

NL = No Level

*** Considered Statistical Outlier - not used


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | B-7 | B-8 | B-8 | B-9 | B-10 | B-11 | B-12 | B-13 | B-14 |
|---|-----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | | 11/24/89 | 11/27/89 | 11/27/89 | 11/27/89 | 11/28/89 | 11/28/89 | 11/28/89 | 11/28/89 | 11/28/89 |
| | | 5.0-6.5' | 7.5-9.0' | 20-21' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | |
| Barium | 276.42 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Boron | 227.61 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 49.32 | <1.0 | 74 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Manganese | 545.67 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 96.8 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Under Cap | | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes** |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | TP-1 | TP-2 | TP-3 | TP-4 | SB-1 | SB-4 | SB-5 | SB-6 | HA-1 |
|---|-----------------------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| | | 10/1/91 | 10/1/91 | 10/1/91 | 10/1/91 | 12/10/96 | 12/10/96 | 12/10/96 | 12/10/96 | 12/11/96 |
| | | 0-18' | 0-18' | 0-18' | 0-18' | 15' | 10' | 2.5' | 2.5' | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | |
| Barium | 276.42 | 490 | 310 | 220 | 820 | 659 | 401 | 27.4 | 155 | 294 |
| Boron | 227.61 | 53 | 130 | 200 | 240 | 426 | 90.8 | 127 | 104 | 60.8 |
| Lead | 49.32 | 1,600 | 3,100 | 3,900 | 4,000 | 1,090 | 17,400 | 20.1 | 19.7 | 501 |
| Manganese | 545.67 | NA | NA | NA | NA | 44.5 | 43.5 | 273 | 29.2 | 307 |
| Zinc | 96.8 | 2,400 | 2,000 | 2,700 | 6,100 | 4,900 | 3,080 | 45.5 | 33.7 | 1,430 |
| Under Cap | | Yes | Yes | Yes | Yes | Yes | Yes | Yes** | Yes | Yes** |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina


| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | HA-2 | HA-3 | HA-6 | HA-7 | HA-8 | HA-9* | HA-10* | HA-11 | HA-12 |
|---|-----------------------------|----------|----------|---------|---------|---------|---------|---------|---------|---------|
| | | 12/10/96 | 12/11/96 | 3/25/97 | 3/25/97 | 3/24/97 | 3/25/97 | 3/24/97 | 3/24/97 | 3/24/97 |
| | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | |
| Barium | 276.42 | 67.7 | 176 | 107 | 329 | 415 | 402 | 72.8 | 69.3 | 34.9 |
| Boron | 227.61 | 59.4 | <11 | 25.9 | 43.6 | 128 | 44.4 | 73.2 | 44.6 | 51.6 |
| Lead | 49.32 | 55 | 7.54 | 86.2 | 288 | 2,260 | 1,370 | 31.4 | 16.5 | 5.58 |
| Manganese | 545.67 | 589 | 15.4 | 143 | 388 | 58 | 313 | 708 | 265 | 58.2 |
| Zinc | 96.8 | 104 | 22.5 | 1,270 | 1,560 | 2,350 | 1,990 | 78.8 | 74.0 | 13.1 |
| Under Cap | | Yes | Yes** | Yes | No | Yes | Yes | Yes | Yes | Yes |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina


| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | HA-13 | HA-14 | HA-15 | HA-16 | HA-17 | HA-18 | TP-1A | TP-1B | TP-1C |
|---|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 3/24/97 | 3/24/97 | 3/24/97 | 3/24/97 | 3/25/97 | 3/24/97 | 3/25/97 | 3/25/97 | 3/25/97 |
| | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | |
| Barium | 276.42 | 54 | 32.8 | 40.3 | 66.9 | 14.9 | 34.4 | NA | NA | NA |
| Boron | 227.61 | 145 | 29 | 20 | 70 | 19.6 | 25.9 | 10.3 | 35.9 | 37.9 |
| Lead | 49.32 | 13.3 | 26.4 | 23.2 | 11.2 | 14.8 | 12.7 | 8.1 | 15.9 | 33.6 |
| Manganese | 545.67 | 1,300 | 109 | 114 | 437 | 89.4 | 65.2 | NA | NA | NA |
| Zinc | 96.8 | 29.1 | 45.2 | 84.0 | 27.6 | 23.1 | 6.1 | NA | NA | NA |
| Under Cap | | Yes** | Yes** | Yes** | Yes | Yes | Yes | Yes** | Yes | Yes |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina


| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | TP-1D | TP-1E | TP-1F | 2HA-22 | 2HA-23 | 2HA-35 | 2HA-38 | 2HA-40 | 2HA-42 |
|---|-----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| | | 3/25/97 | 3/25/97 | 3/25/97 | 4/24/97 | 4/24/97 | 4/23/97 | 4/23/97 | 4/23/97 | 4/23/97 |
| | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | |
| Barium | 276.42 | NA | NA | NA | NA | 231 | NA | 24.8 | 25.2 | 23.9 |
| Boron | 227.61 | 92.5 | 178 | 118 | 53.9 | NA | 51.8 | 10.8 | 33.2 | 25.2 |
| Lead | 49.32 | 711 | 1,050 | 1,410 | NA | 458 | NA | 11.5 | 11.5 | 9.98 |
| Manganese | 545.67 | NA | NA | NA | NA | NA | 91 | NA | 133 | NA |
| Zinc | 96.8 | NA | NA | NA | NA | NA | 30.7 | NA | 31.2 | NA |
| Under Cap | | Yes | Yes | Yes | Yes** | No | Yes | Yes | Yes | Yes |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels


Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | 2HA-43 | 2-HA-44 | 2HA-46 | 4HA-46 | 4HA-46-2 | 4HA-47 | 4HA-47-2 | 4HA-48* | 4-HA-49 | |
|---|-----------------------------|---------|---------|---------|---------|----------|---------|----------|---------|---------|---------|
| | | 4/24/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 |
| | | NDS | NDS | NDS | NDS | 2' | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Barium | 276.42 | 2,810 | 86.8 | 22.5 | NA | NA | NA | NA | NA | 88.7 | |
| Boron | 227.61 | 42.6 | 87 | 48 | NA | NA | NA | NA | NA | 24.4 | |
| Lead | 49.32 | 12,700 | 8.26 | NA | 49.2 | 49.2 | 2,720 | 2,040 | 5,140 | 180 | |
| Manganese | 545.67 | NA | 281 | 260 | NA | NA | NA | NA | NA | 409 | |
| Zinc | 96.8 | NA | 56 | 34.9 | NA | NA | NA | NA | NA | 9.8 | |
| Under Cap | | Yes** | No | Yes | Yes | Yes | Yes | Yes | Yes | No | |


Notes:


 Exceeds 1997 Closure Standard

 Exceeds Industrial PSRG

 Exceeds Range of Background Samples

 Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG

 Exceeds PGW PSRG and Range of Background Samples

 Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure

** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels

Table L-5
SWMU-3 Past Inorganic Soil Analytical Results Versus 1997 Soil Closure Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | 1997 Closure Standard*** | MS-1 | MS-2 | MS-3 | MS-4 | MS-5 | MS-6 |
|---|-----------------------------|--------|--------|--------|--------|--------|--------|
| | | 5/2/97 | 5/2/97 | 5/2/97 | 5/2/97 | 5/2/97 | 5/2/97 |
| | | 1.66' | 1.0' | 1.0' | 1.2' | 1.33' | 1.33' |
| Priority Pollutant Metals (mg/kg) | | | | | | | |
| Barium | 276.42 | NA | NA | NA | NA | NA | NA |
| Boron | 227.61 | 31.6 | 115 | 47.8 | 37 | 98.7 | 115 |
| Lead | 49.32 | 179 | 10 | 46.3 | 7.6 | 407 | 22 |
| Manganese | 545.67 | NA | NA | NA | NA | NA | NA |
| Zinc | 96.8 | NA | NA | NA | NA | NA | NA |
| Under Cap | | Yes | Yes | Yes | Yes | Yes | Yes |

Notes:

- Exceeds 1997 Closure Standard
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds 1997 Closure Standard and 1997 SCS Industrial PSRG
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

NA = Not Analyzed

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9, HA-10 and 4-HA-48 was removed and placed on tile pile prior to closure






** - This area capped with soil cap only

*** - 1997 Closure Standard was 3 times average of detected background levels

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | B-7 | B-8 | B-8 | B-9 | B-10 | B-11 | B-12 | B-13 | B-14 |
|---|--------------------------------------|--------------------|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | | | | 11/24/89 | 11/27/89 | 11/27/89 | 11/27/89 | 11/28/89 | 11/28/89 | 11/28/89 | 11/28/89 | 11/28/89 |
| | | | | 5.0-6.5' | 7.5-9.0' | 20-21' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' | 2.5-4.0' |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Barium | 580 | 44,000 | <10-413 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Boron | 45 | 46,000 | <10.5-123 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 3 | 200 | <0.1-12.7 | <0.5 | 0.2 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | <1.0 | 74 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | <0.2 | <0.2 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | <1.1 | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | <1.2 | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | <1.3 | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | NA | <1.4 | NA | NA | NA |
| Under Cap | | | | Yes | Yes | Yes | Yes | Yes | <1.5 | No | Yes | Yes** |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified






Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | TP-1 | TP-2 | TP-3 | TP-4 | SB-1 | SB-4 | SB-5 | SB-6 |
|---|--------------------------------------|--------------------|--|---------|---------|---------|---------|----------|----------|----------|----------|
| | | | | 10/1/91 | 10/1/91 | 10/1/91 | 10/1/91 | 12/10/96 | 12/10/96 | 12/10/96 | 12/10/96 |
| | | | | 0-18 | 0-18 | 0-18 | 0-18 | 15' | 10' | 2.5 | 2.5 |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | 17,000 | 19,000 | 18,000 | 22,000 | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | <2 | <2 | <2 | <2 | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | <1.03 | <1.1 | <1.16 | <1.34 |
| Barium | 580 | 44,000 | <10-413 | 490 | 310 | 220 | 820 | 659 | 401 | 27.4 | 155 |
| Boron | 45 | 46,000 | <10.5-123 | 53 | 130 | 200 | 240 | 426 | 90.8 | 127 | 104 |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | NA | NA | NA | 0.905 | 1.84 | 4.6 | 4.18 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 4.9 | 6.4 | 5.9 | 4.2 | 4.46 | 4.5 | 20.8 | 29 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 12 | 26 | 13 | 23 | 14.5 | 9.84 | 7.9 | 1.88 |
| Iron | 150 | 100,000 | NA | 3,900 | 2,000 | 1,300 | 1,200 | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 1,600 | 3,100 | 3,900 | 4,000 | 1,090 | 17,400 | 20.1 | 19.7 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | 44.5 | 43.5 | 273 | 29.2 |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | <0.206 | <0.221 | <0.232 | <0.268 |
| Nickel | 130 | 4,400 | 2.77-12 | 8.3 | 18 | <4.0 | 12 | 14.3 | 2.1 | 6.14 | 2.95 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | <1.03 | <1.1 | <1.16 | <1.134 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <4.0 | <4.0 | <4.0 | 14 | <1.03 | <1.1 | <1.16 | <1.134 |
| Tin | 10,000 | 100,000 | NA | <5.0 | <5.0 | <5.0 | <5.0 | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 100 | 110 | 110 | 100 | 120 | 77.2 | 418 | 19.1 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 10 | 7.3 | 8.5 | 9.7 | 15.8 | 11.2 | 131 | 736 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 2,400 | 2,000 | 2,700 | 6,100 | 4,900 | 3,080 | 45.5 | 33.7 |
| Under Cap | | | | Yes | Yes | Yes | Yes | Yes | Yes | Yes** | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | HA-1 | HA-2 | HA-3 | HA-6 | HA-7 | HA-8 | HA-9* | HA-10 |
|---|--------------------------------------|--------------------|--|----------|----------|----------|---------|---------|---------|---------|---------|
| | | | | 12/11/96 | 12/10/96 | 12/11/96 | 3/25/97 | 3/25/97 | 3/24/97 | 3/25/97 | 3/24/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | <1.48 | <1.12 | <1.10 | 2.54 | 3.2 | 3.04 | 2.53 | 3.61 |
| Barium | 580 | 44,000 | <10-413 | 294 | 67.7 | 176 | 107 | 329 | 415 | 402 | 72.8 |
| Boron | 45 | 46,000 | <10.5-123 | 60.8 | 59.4 | <11 | 25.9 | 43.6 | 128 | 44.4 | 73.2 |
| Cadmium | 3 | 200 | <0.1-12.7 | 2.32 | 2.71 | <0.221 | 3.44 | 5.75 | 1.6 | 6.99 | 10.6 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 31.2 | 55.1 | 9.12 | 4.66 | 13.1 | 3.48 | 31.6 | 76.6 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 17.7 | 17.1 | 5.5 | 4.76 | 16.4 | 9.13 | 20.2 | 22.3 |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 501 | 55 | 7.54 | 86.2 | 288 | 2,260 | 1,370 | 31.4 |
| Manganese | 65 | 5,200 | 56.6-449 | 307 | 589 | 15.4 | 143 | 388 | 58 | 313 | 708 |
| Mercury | 1 | 3 | <0.0005-0.862 | <0.296 | <0.224 | <0.221 | <0.157 | <0.191 | <0.173 | <0.191 | 22.5 |
| Nickel | 130 | 4,400 | 2.77-12 | 7.98 | 5.94 | 2.64 | 3.93 | 8.3 | 4.67 | 20.4 | 6.42 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.148 | <1.112 | <1.10 | <0.504 | <0.444 | <0.540 | <0.564 | <0.489 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.148 | <1.112 | <1.10 | <0.787 | <0.954 | <0.865 | <0.921 | <0.880 |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 312 | 232 | 33.8 | 93.3 | 254 | 164 | 613 | 315 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 59.3 | 79.5 | 29.7 | 15.2 | 40.6 | 15.1 | 56.9 | 94.6 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 1,430 | 104 | 22.5 | 1,270 | 1,560 | 2,350 | 1,990 | 78.8 |
| Under Cap | | | | Yes** | Yes | Yes** | Yes | No | Yes | Yes | Yes |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | HA-11 | HA-12 | HA-13 | HA-14 | HA-15 | HA-16 | HA-17 | HA-18 |
|---|--------------------------------------|--------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | | | | 3/24/97 | 3/24/97 | 3/24/97 | 3/24/97 | 3/24/97 | 3/24/97 | 3/25/97 | 3/24/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | 2.01 | <0.91 | 1.73 | 1.29 | 2.23 | 3.42 | 1.5 | 2.84 |
| Barium | 580 | 44,000 | <10-413 | 69.3 | 34.9 | 54 | 32.8 | 40.3 | 66.9 | 14.9 | 34.4 |
| Boron | 45 | 46,000 | <10.5-123 | 44.6 | 51.6 | 145 | 29 | 20 | 70 | 19.6 | 25.9 |
| Cadmium | 3 | 200 | <0.1-12.7 | 6.52 | 0.839 | 6.1 | 1.16 | 1.88 | 9.46 | 1.96 | 2.42 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 23.2 | 3.95 | 19.5 | 5.06 | 5.63 | 13.7 | 5.27 | 11.6 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 17.1 | 1.42 | 9.54 | 2.0 | 2.19 | 6.86 | 1.68 | 2.67 |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 16.5 | 5.58 | 13.3 | 26.4 | 23.2 | 11.2 | 14.8 | 12.7 |
| Manganese | 65 | 5,200 | 56.6-449 | 265 | 58.2 | 1,300 | 109 | 114 | 437 | 89.4 | 65.2 |
| Mercury | 1 | 3 | <0.0005-0.862 | <0.171 | <0.182 | <0.189 | <0.162 | <0.175 | <0.181 | <0.179 | <0.172 |
| Nickel | 130 | 4,400 | 2.77-12 | 7.85 | <0.910 | 4.4 | 1.22 | 1.4 | 4.53 | <0.894 | 1.38 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <0.535 | <0.465 | <0.585 | <0.429 | <0.468 | <0.539 | <0.552 | <0.426 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <0.853 | <0.910 | <1.02 | <0.811 | <0.873 | <0.904 | <0.894 | <0.858 |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 266 | 59.7 | 258 | 77.4 | 49.9 | 233 | 101 | 78.3 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 60 | 14.2 | 77.2 | 10.8 | 17.5 | 56.4 | 15.9 | 21.6 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 74.0 | 13.1 | 29.1 | 45.2 | 84.0 | 27.6 | 23.1 | 6.1 |
| Under Cap | | | | Yes | Yes | Yes** | Yes** | Yes** | Yes | Yes | Yes |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified






Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | TP-1A | TP-1B | TP-1C | TP-1D | TP-1E | TP-1F | 2HA-22 | 2HA-35 |
|---|--------------------------------------|--------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | | | | 3/25/97 | 3/25/97 | 3/25/97 | 3/25/97 | 3/25/97 | 3/25/97 | 4/24/97 | 4/23/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | NA | NA | NA | NA | NA | NA | NA | 22.8 |
| Boron | 45 | 46,000 | <10.5-123 | 10.3 | 35.9 | 37.9 | 92.5 | 178 | 118 | 53.9 | 51.8 |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | NA | NA | NA | NA | NA | NA | 2.13 |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | NA | NA | NA | NA | NA | NA | NA | 5.43 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | NA | NA | NA | <0.975 |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 8.1 | 15.9 | 33.6 | 711 | 1,050 | 1,410 | NA | 16.8 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | NA | NA | 90.6 |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | NA | NA | NA | 30.7 |
| Under Cap | | | | Yes** | Yes | Yes | Yes | Yes | Yes | Yes** | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified






Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | 2HA-38 | 2HA-40 | 2HA-42 | 2HA-43 | 2-HA-44 | 2HA-46 | 3-B60-1 | 3-B61-1 |
|---|--------------------------------------|--------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | | | | 4/23/97 | 4/23/97 | 4/23/97 | 4/24/97 | 5/30/97 | 5/30/97 | 5/14/97 | 5/14/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | 1' | 1' |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | 24.8 | 25.2 | 23.9 | 2,810 | 86.8 | 22.5 | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 10.8 | 33.2 | 25.2 | 42.6 | 87 | 48 | NA | NA |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | 3.72 | NA | NA | 5.58 | 5.13 | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | NA | 10.4 | NA | NA | 3.07 | 3.07 | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | <0.844 | NA | NA | 5.51 | 5.51 | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 11.5 | 11.5 | 9.98 | 12,700 | 8.26 | NA | 16.0 | 6.5 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | 133 | NA | NA | 281 | 260 | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | 31.2 | NA | NA | 56 | 34.9 | NA | NA |
| Under Cap | | | | Yes | Yes | Yes | Yes** | No | Yes | Yes | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified






Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | 3-B62-1 | 3-B63-1 | 3-B64-1 | 3HA-1 | 3HA-7 | 3-HA10-1 | 3-HA10-2 | 4HA-46 |
|---|--------------------------------------|--------------------|--|---------|---------|---------|---------|---------|----------|----------|---------|
| | | | | 5/14/97 | 5/14/97 | 5/14/97 | 5/14/97 | 5/15/97 | 5/15/97 | 5/15/97 | 5/30/97 |
| | | | | 1' | 1' | 1' | NDS | NDS | 1' | 1' | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | NA | NA | NA | NA | NA | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | NA | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 105 | 7.4 | 6.6 | 17.6 | 1,230 | NA | NA | 49.2 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | NA | <0.219 | <0.226 | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | NA | NA | NA | NA |
| Under Cap | | | | Yes | Yes | Yes | No | Yes | Yes | Yes | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard






NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | 4HA-46-2 | 4HA-47 | 4HA-47-2 | 4HA-48* | 4-HA-49 | MS-1 | MS-2 | MS-3 |
|---|--------------------------------------|--------------------|--|----------|---------|----------|---------|---------|--------|--------|--------|
| | | | | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/2/97 | 5/2/97 | 5/2/97 |
| | | | | 2' | NDS | NDS | NDS | NDS | 1.66' | 1.0' | 1.0' |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | NA | NA | NA | NA | 88.7 | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | NA | NA | NA | NA | 24.4 | 31.6 | 115 | 47.8 |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | NA | NA | NA | 2.40 | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | NA | NA | NA | NA | 7.38 | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA | NA | 12.60 | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 49.2 | 2,720 | 2,040 | 5,140 | 180 | 179 | 10 | 46.3 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | 409 | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA | NA | 9.8 | NA | NA | NA |
| Under Cap | | | | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified






Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

Table L-6
SWMU-3 Historic Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility, Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | MS-4 | MS-5 | MS-6 |
|---|--------------------------------------|--------------------|--|--------|--------|--------|
| | | | | 5/2/97 | 5/2/97 | 5/2/97 |
| | | | | 1.2' | 1.33' | 1.33' |
| Priority Pollutant Metals (mg/kg) | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 37 | 98.7 | 115 |
| Cadmium | 3 | 200 | <0.1-12.7 | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 7.6 | 407 | 22 |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | NA | NA | NA |
| Under Cap | | | | Yes | Yes | Yes |

Notes:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

Metals analysis via Method 6010C and 7471B

Table L-7
SWMU-3 Past Soil TCLP Analytical Results Summary
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | USEPA Threshold | TP-1 | TP-2 | TP-3 | TP-4 | SB-13-40 | Comp-1 | 2HA-1 | 2HA-2 | 2HA-7 | 2HA-9 |
|---|--------------------|-----------|-----------|-----------|------------|----------|------------|-------------|---------|---------|-------------|
| | | 10/1/91 | 10/1/91 | 10/1/91 | 10/1/91 | 9/1/92 | 12/10/96 | 4/24/97 | 4/24/97 | 4/24/97 | 4/24/97 |
| | | 0-18' | 0-18' | 0-18' | 0-18' | NDS | NDS | NDS | NDS | NDS | NDS |
| TCLP RCRA Primary Metals (mg/L) | | | | | | | | | | | |
| Arsenic | 5 | <0.52 | <0.52 | <0.52 | <0.52 | <0.29 | <0.01 | NA | NA | NA | NA |
| Barium | 100 | 6.7 | 3.4 | 2.2 | 4.6 | <0.52 | 1,87 | NA | NA | NA | NA |
| Cadmium | 1.0 | <0.11 | <0.11 | <0.11 | <0.11 | <0.05 | 0.011 | NA | NA | NA | NA |
| Chromium, total | 5.0 | <0.56 | <0.56 | <0.56 | <0.56 | <0.33 | 0.025 | NA | NA | NA | NA |
| Lead | 5.0 | 47 | 51 | 63 | 130 | <0.34 | 187 | 7.57 | <0.01 | 0.641 | 15.5 |
| Mercury | 0.2 | <0.017 | <0.017 | <0.017 | <0.017 | <0.018 | <0.0004 | NA | NA | NA | NA |
| Selenium | 1.0 | <0.3 | <0.3 | <0.3 | <0.3 | <0.049 | <0.01 | NA | NA | NA | NA |
| Silver | 5.0 | <0.83 | <0.83 | <0.83 | <0.83 | <0.12 | <0.01 | NA | NA | NA | NA |

Notes:

NA = Not Analyzed

NDS = No Depth Specified

 Results are above USEPA threshold for characteristic hazardous waste (40 CFR 261.24- Table 1)

Table L-7
SWMU-3 Past Soil TCLP Analytical Results Summary
Former Porcelanite Facility
Lexington, North Carolina

| 2HA-10 | Sample ID | USEPA Threshold | 2HA-23 | 2TPI-C | MS-1 | MS-3 | MS-5 | 4HA-47 | 4HA-47-2 | 4HA-48 |
|--|-----------------|--------------------|---------|---------|--------|--------|-------------|-----------|-------------|-------------|
| 4/24/97 | Date Sampled | | 4/24/97 | 4/24/97 | 5/2/97 | 5/2/97 | 5/2/97 | 5/30/97 | 5/30/97 | 5/30/97 |
| NDS | Sample Depth | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| <i>TCLP RCRA Primary Metals (mg/L)</i> | | | | | | | | | | |
| NA | Arsenic | 5 | NA | NA | NA | NA | NA | NA | NA | NA |
| NA | Barium | 100 | NA | NA | NA | NA | NA | NA | NA | NA |
| NA | Cadmium | 1.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| NA | Chromium, total | 5.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| <0.01 | Lead | 5.0 | 2.73 | 0.042 | 1.13 | 2.63 | 17.9 | 91 | 93.5 | 60.8 |
| NA | Mercury | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA |
| NA | Selenium | 1.0 | NA | NA | NA | NA | NA | NA | NA | NA |
| NA | Silver | 5.0 | NA | NA | NA | NA | NA | NA | NA | NA |

Notes:

NA = Not Analyzed

NDS = No Depth Specified

Results are above USEPA threshold for characteristic hazardous waste (40 CFR 261.24- Table 1)

Table L-8
SWMU-3 Past VOC, SVOC and Other Compounds Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | B-1 | B-2 | B-3 | B-4 | EX-1 | EX-2 | EX-3 | EX-4 | SB-1 |
|---|--------------------------------------|--------------------|----------|----------|----------|----------|--------|--------|--------|--------|----------|
| | | | 3/1/92 | 3/1/92 | 3/1/92 | 3/1/92 | 9/1/92 | 9/1/92 | 9/1/92 | 9/1/92 | 12/10/96 |
| | | | 22-24.5' | 22-24.5' | 22-24.5' | 22-24.5' | 18' | 20' | 16' | 21' | 15' |
| Volatile Organic Compounds (VOCs) (mg/kg) | | | | | | | | | | | |
| Methylene Chloride | 0.023 | 640 | 0.85 | 0.82 | 0.86 | 0.85 | ND | ND | ND | ND | NA |
| Semivolatile Organic Compounds (SVOCs) (mg/kg) | | | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | 7.2 | 160 | 4.6 | 1.9 | 5.3 | 3.5 | ND | ND | ND | ND | NA |
| Other Organics (mg/kg) | | | | | | | | | | | |
| Formaldehyde | 2.4 | 32,000 | <1.1 | <1.1 | <1.1 | <1.1 | ND | ND | ND | ND | NA |
| Phenols | 0.23 | 50,000 | NA | NA | NA | NA | NA | NA | NA | NA | <0.112 |

Notes:

NA = Not Analyzed



Result Exceeds Protection of Groundwater PSRG

ND = Non-Detect



Result Exceeds Industrial PSRG

NDS = No Depth Specified



Result Exceeds Protection of Groundwater PSRG and Industrial PSRG

Table L-8
SWMU-3 Past VOC, SVOC and Other Compounds Analytical Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | SB-4 | SB-5 | SB-6 | HA-1 | HA-2 | HA-3 | HA-4 |
|---|--------------------------------------|--------------------|----------|----------|----------|----------|----------|----------|----------|
| | | | 12/10/96 | 12/10/96 | 12/10/96 | 12/11/96 | 12/10/96 | 12/11/96 | 12/11/96 |
| | | | 10' | 2.5' | 2.5' | NDS | NDS | NDS | NDS |
| Volatile Organic Compounds (VOCs) (mg/kg) | | | | | | | | | |
| Methylene Chloride | 0.023 | 640 | NA | NA | NA | NA | NA | NA | NA |
| Semivolatile Organic Compounds (SVOCs) (mg/kg) | | | | | | | | | |
| Bis(2-ethylhexyl) phthalate | 7.2 | 160 | NA | NA | NA | NA | NA | NA | NA |
| Other Organics (mg/kg) | | | | | | | | | |
| Formaldehyde | 2.4 | 32,000 | NA | NA | NA | NA | NA | NA | NA |
| Phenols | 0.23 | 50,000 | <0.112 | <0.122 | <0.146 | <0.161 | <0.122 | <0.119 | <0.146 |

Notes:

NA = Not Analyzed



Result Exceeds Protection of Groundwater PSRG

ND = Non-Detect



Result Exceeds Industrial PSRG

NDS = No Depth Specified



Result Exceeds Protection of Groundwater PSRG and Industrial PSRG

Table L-9
SWMU-7 Past Surface Water Results Versus 2B and Risk Based Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID | NCDENR 2B/EPA Screening Value | Onsite Up | Onsite Down | Onsite Up | Onsite Down | S-1 | S-2 | S-3 | S-4 | S-5 Onsite Up | S-6 | S-7 Onsite Down |
|---|--|-----------|-------------|-----------|-------------|----------|----------|----------|----------|------------------|----------|--------------------|
| | | 3/26/96 | 3/26/96 | 3/1/99 | 3/1/99 | 12/29/04 | 12/29/04 | 12/29/04 | 12/29/04 | 2/8/2005 | 2/8/2005 | 2/8/2005 |
| | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/L) | | | | | | | | | | | | |
| Arsenic | 0.05* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 1.0** | NA | NA | 0.059 | 0.127 | NA | NA | NA | NA | NA | NA | NA |
| Boron | 0.75*** | 0.084 | 1.93 | BDL | 1.06 | BDL | BDL | BDL | 0.223 | 0.104 | BDL | 2.89 |
| Cadmium | 0.002* | NA | NA | <0.005 | <0.005 | NA | NA | NA | NA | NA | NA | NA |
| Chromium, total | 0.05* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Copper | 0.007* | NA | NA | 0.01 | 0.11 | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | NS | NA | NA | <0.025 | <0.025 | NA | NA | NA | NA | NA | NA | NA |
| Iron | NS | NA | NA | 1.34 | 2.58 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 0.025* | NA | NA | <0.005 | 0.011 | NA | NA | NA | NA | NA | NA | NA |
| Manganese | 0.02** | NA | NA | 0.109 | 0.23 | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 0.012* | NA | NA | <0.0002 | <0.0002 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 0.088* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 0.005* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 0.00006* | NA | NA | <0.01 | <0.01 | NA | NA | NA | NA | NA | NA | NA |
| Tin | NS | NA | NA | <1.0 | <1.0 | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NA | NA | <0.1 | <0.1 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | NS | NA | NA | <0.02 | <0.02 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 0.05* | NA | NA | 0.035 | 0.142 | NA | NA | NA | NA | NA | NA | NA |

Notes:

Result Exceeds NCDENR 2B or EPA Screening Value

NA = Not Analyzed

NS = No Standard

NDS = No Depth Specified

* - Freshwater

** - Water Supply

*** - EPA Screening Value

Note- March 1999 Sampling included additional radionuclides and Secondary Parameters which have no 2B Standards


Table L-10
SWMU-7 Past Sediment Results Versus Current PSRG Standards
Former Porcelanite Facility
Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Com/Ind PSRG | Range of Background Concentrations | Onsite Up | Onsite Down | S-1 | S-2 | S-3 | S-4 | S-5 Onsite Up | S-6 | S-7 Onsite Down |
|---|--------------------------------------|-----------------|--|-----------|-------------|----------|----------|----------|----------|------------------|--------|--------------------|
| | | | | 3/1/99 | 3/1/99 | 12/29/04 | 12/29/04 | 12/29/04 | 12/29/04 | 2/8/05 | 2/8/05 | 2/8/05 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS | |
| Priority Pollutant Metals (mg/kg)* | | | | | | | | | | | | |
| Arsenic | 5.8 | 3 | <0.5-4.38 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | 49.9 | 93.9 | NA | NA | NA | NA | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 13.7 | 33 | 87.8 | 104 | 89.6 | 78.9 | BDL | BDL | BDL |
| Cadmium | 3 | 200 | <0.1-12.7 | 0.486 | 0.716 | NA | NA | NA | NA | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 12.9 | 20.7 | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 4.46 | 9.76 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 48.6 | 125 | NA | NA | NA | NA | NA | NA | NA |
| Manganese | 65 | 5,200 | 56.6-449 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 1 | 3.1 | <0.0005-0.862 | <0.177 | <0.171 | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | 4.0 | 5.03 | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <1.54 | <1.48 | NA | NA | NA | NA | NA | NA | NA |
| Tin | NS | NS | 46.1-1,020 | <154 | <157 | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 93.2 | 163 | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 39.4 | 54.3 | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 121 | 365 | NA | NA | NA | NA | NA | NA | NA |

Notes:

 Result Exceeds Protection of Groundwater (PGW) PSRG

 Result Exceeds Industrial PSRG

 Result Exceeds PGW and Industrial PSRG

*- mg/L denoted in sediment sample results versus mg/kg potentially due to high water content in the sample aliquot

NA = Not Analyzed






NS = No Standard

NDS = No Depth Specified

Table L-11
AOC-1 Past Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | HA-7 | HA-9* | 2-HA-23 | 2-HA-24 | 2-HA-25 | 2-HA-26 | 2-HA-33 | 2-HA-34 |
|---|--------------------------------------|-----------------|--|---------|---------|---------|---------|---------|---------|---------|---------|
| | | | | 3/25/97 | 3/25/97 | 4/24/97 | 4/24/97 | 4/24/97 | 4/24/97 | 4/24/97 | 4/24/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | 3.2 | 2.53 | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | 329 | 402 | 231 | 38.7 | NA | NA | 29.7 | 27.2 |
| Boron | 45 | 46,000 | <10.5-123 | 43.6 | 44.4 | NA | NA | NA | NA | NA | NA |
| Cadmium | 3 | 200 | <0.1-12.7 | 5.75 | 6.99 | NA | NA | NA | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 13.1 | 31.6 | NA | NA | NA | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 16.4 | 20.2 | NA | NA | NA | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | 288 | 1,370 | 458 | 14.8 | 7.98 | 18.8 | 9.88 | 9.06 |
| Manganese | 65 | 5,200 | 56.6-449 | 388 | 313 | NA | NA | NA | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | <0.191 | <0.191 | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | 8.3 | 20.4 | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <0.444 | <0.564 | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <0.954 | <0.921 | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | 254 | 613 | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 40.6 | 56.9 | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 1,560 | 1,990 | NA | NA | NA | NA | NA | NA |
| Under Cap | | | Yes | Yes | Yes | No | No | No | No | No | ** |

Note:

-  Exceeds PGW PSRG
-  Exceeds Industrial PSRG
-  Exceeds Range of Background Samples
-  Exceeds PGW PSRG and Range of Background Samples
-  Exceeds All PSRGs

NA- Not Analyzed

NS- No Standard

NDS- No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

** - 2-HA-34 could not be located on figure but is described as north of tile pile.

***-2HA-44 is under Ceramic Tile Pile Cap

Table L-11
AOC-1 Past Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility Lexington, North Carolina

| Sample ID Date Sampled Sample Depth | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | 2-HA-44 | 4HA-48* | 4HA-49 | 4HA-49-2 | 4HA-50 | 4HA-50-2 |
|---|--------------------------------------|-----------------|--|---------|---------|---------|----------|---------|----------|
| | | | | 4/24/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 | 5/30/97 |
| | | | | NDS | NDS | NDS | NDS | NDS | NDS |
| Priority Pollutant Metals (mg/kg) | | | | | | | | | |
| Aluminum | NS | 100,000 | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 0.9 | 94 | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 5.8 | 3 | <0.5-4.38 | NA | NA | NA | NA | NA | NA |
| Barium | 580 | 44,000 | <10-413 | NA | NA | NA | NA | NA | NA |
| Boron | 45 | 46,000 | <10.5-123 | 87 | NA | NA | NA | NA | NA |
| Cadmium | 3 | 200 | <0.1-12.7 | 5.58 | NA | NA | NA | NA | NA |
| Chromium, total | 360,000 | 100,000 | <0.5-123 | 28.6 | NA | NA | NA | NA | NA |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 217 | NA | NA | NA | NA | NA |
| Iron | 150 | 100,000 | NA | NA | NA | NA | NA | NA | NA |
| Lead | 270 | 800 | <0.5-18.8 | NA | 5,140 | 180 | 6.63 | 19.8 | 22.5 |
| Manganese | 65 | 5,200 | 56.6-449 | 281 | NA | NA | NA | NA | NA |
| Mercury | 1 | 3 | <0.0005-0.862 | NA | NA | NA | NA | NA | NA |
| Nickel | 130 | 4,400 | 2.77-12 | NA | NA | NA | NA | NA | NA |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | NA | NA | NA | NA | NA | NA |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | NA | NA | NA | NA | NA | NA |
| Tin | 10,000 | 100,000 | NA | NA | NA | NA | NA | NA | NA |
| Titanium | NS | NS | 46.1-1,020 | NA | NA | NA | NA | NA | NA |
| Vanadium | 6.0 | 1,200 | 5.01-199 | NA | NA | NA | NA | NA | NA |
| Zinc | 1,200 | 70,000 | 27.3-124 | 56 | NA | NA | NA | NA | NA |
| Under Cap | | | Yes | No | Yes | No | No | No | No |

Note:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

NA- Not Analyzed

NS- No Standard

NDS- No Depth Specified

Metals analysis via Method 6010C and 7471B

*- The area around HA-9 and 4-HA-48 removed and placed on tile pile prior to closure.

** - 2-HA-34 could not be located on figure but is described as north of tile pile.

***-2HA-44 is under Ceramic Tile Pile Cap

Table L-12
AOC-2 Past Inorganic Soil Sampling Results Versus Current PSRG Standards
Former Porcelanite Facility Lexington, NC

| Parameter | Protection of Groundwater PSRG | Industrial PSRG | Range of Background Concentrations | SS-8 0 - 1' 5/27/94 | SS-42 0 - 1' 2/17/00 | SS-43 0 - 1' 2/17/00 | SS-43 3' 2/17/00 |
|----------------------------------|--------------------------------|-----------------|------------------------------------|---------------------------|----------------------------|----------------------------|------------------------|
| <i>Inorganics (mg/kg)</i> | | | | | | | |
| Arsenic | 5.8 | 3.0 | <0.5-4.38 | <3.73 | <0.971 | <1.03 | <1.11 |
| Barium | 580 | 44,000 | <10-413 | 186 | 140 | 34.8 | 55.1 |
| Boron | 45 | 46,000 | <10.5-123 | 61.2 | 13.0 | <10.3 | <11.1 |
| Bromide | NS | NS | <10-<10 | <10 | <10 | <10 | <10 |
| Cadmium | 3.0 | 200 | <0.1-12.7 | <0.746 | <0.097 | <0.103 | <0.111 |
| Chromium | 360,000 | 100,000 | <0.5-123 | 8.58 | 11.8 | 6.82 | 8.64 |
| Cobalt | 0.9 | 70 | 2.02-47.2 | 14 | 9.42 | 3.82 | 3.77 |
| Lead | 270 | 800 | <0.5-18.8 | 996 | 239 | 16.8 | 32.7 |
| Manganese | 65 | 5,200 | 56.6-449 | 122 | 142 | 302 | 119 |
| Mercury | 1.0 | 3.1 | <0.0005-0.862 | <0.149 | <0.194 | <0.206 | <0.221 |
| Nickel | 130 | 4,400 | 2.77-12 | 7.31 | 6.31 | 1.76 | 2.66 |
| Selenium | 2.1 | 1,200 | <0.1-2.47 | <1.49 | <0.971 | <1.03 | <1.11 |
| Silver | 3.4 | 1,200 | <0.5-<1.34 | <0.746 | <0.971 | <1.03 | <1.11 |
| Sulfate | NS | NS | <100-<100 | 537 | <25 | <25 | <25 |
| Titanium | NS | NS | 46.1-1,020 | 118 | 84.7 | 22.3 | 26.3 |
| Vanadium | 6.0 | 1,200 | 5.01-199 | 33.2 | 20.1 | 12.2 | 25.6 |
| Zinc | 1,200 | 70,000 | 27.3-124 | 5,230 | 258 | 21.2 | 9.60 |

Notes:

- Exceeds PGW PSRG
- Exceeds Industrial PSRG
- Exceeds Range of Background Samples
- Exceeds PGW PSRG and Range of Background Samples
- Exceeds All PSRGs

NA = Not Analyzed

NS = No Standard

Part L Appendix

**Appendix L-1-
SWMU-1 and
SWMU-11 2015
Investigation Results**

March 5, 2015

Ms. Mary Siedlecki
NCDENR
217 West Jones Street
Raleigh, North Carolina 27603

Reference: SWMU #1 and #11 Initial & Interim Investigation Results
Former Condumex Facility
20 Victor Street
Lexington, North Carolina
Waters Edge Job No. R1-21
EPA ID #NCD 986 181 451

Dear Ms. Siedlecki:

Here is an additional interim site investigation report for the two (2) Solid Waste Management Units (SWMUs) at the facility in Lexington, North Carolina. As agreed, Waters Edge is assessing items for SWMU #1 and SWMU #11 according to the recommendations provided in the February 16, 2005 NCDENR *RCRA Facility Assessment Report* (RFAR) as described below:

- SWMU #1- Wastewater Pretreatment System- Conduct visual observations and collect four (4) wipe samples which would be analyzed for RCRA Primary Metals.
- SWMU #11- Spray Line Sumps- The RFAR recommended that the sumps be pumped out and the walls and floor observed for stains and integrity of the concrete for conditions reporting to NCDENR.

Based on these recommendations, below is a current account of the assessment:

- SWMU #1- Wastewater Pretreatment System- On January 23, 2015, four (4) wipe samples were collected from the surface of this SWMU with a hexane wipe and submitted to a laboratory according to EPA-approved methodologies. All four (4) samples were analyzed for RCRA Primary Metals according to Method 6010 and Method 7470 which are summarized in Table 1 and documented in Appendix A. We have forwarded these sample results to the NCDENR toxicologist in a February 12, 2015 Email to determine whether they would meet acceptable industrial settleable dust standards and a response has not been received as of the date of this report. Photodocumentation showing condition of foundation platforms is provided in Appendix B. The Photodocumentation explanation for this SWMU is as follows:
 - Photograph #1- Condition of WWT Floor at Wipe Sample #1
 - Photograph #2- Condition of WWT Floor at Wipe Sample #2
 - Photograph #3- Condition of WWT Floor at Wipe Sample #3
 - Photograph #4- Condition of WWT Floor at Wipe Sample #4

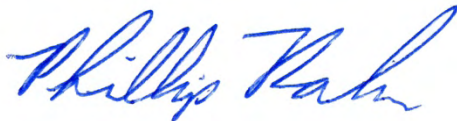
We are available to discuss these findings in making further determinations on this location.

- SWMU #11- Spray Line Sumps- On February 10, 2015, an environmental technician and vacuum truck were mobilized to the facility. Both sumps and trenches were cleaned of debris and also pumped out and then a squeegee was used to expose the floor of the sumps and trenches. The sump walls, the sumps, and the trenches were determined to be intact and there were no indications of cracking that would jeopardize the integrity of the unit. Photodocumentation is provided in Appendix B. The Photodocumentation explanation for this SWMU is as follows:
 - Photograph #5/#6- Surficial Condition of Spray Line Trench Area
 - Photograph #7/#8- Spray Line Sump Walls Depicting Non-Cracked Condition
 - Photograph #9/#10/#11- Non-Cracked Condition of Spray Line Sump Floor
 - Photograph #12/#13- Non-Cracked Condition of Spray Line Trench Bottom

As such, we are of the opinion that strong evidence exists to recommend that no further action should be required for SWMU #11.

Sincerely,

WATERS EDGE ENVIRONMENTAL, LLC



Phillip L. Rahn, P.G.
President

15-015/PLR

cc *Mr. Dave Kitts and Mr. Tony Shaw- Mannington
Mr. Alex Sanchez- Condumex*

TABLES

Table 1
Wipe Sample Analytical Results
Former Cundumex Facility
Lexington, North Carolina

| Sample Identification | | WS-1 | WS-2 | WS-3 | WS-4 |
|------------------------------|----------|------------|--------------|--------------|------------|
| Sample Date: | | 1.23.2015 | 1.23.2015 | 1.23.2015 | 1.23.2015 |
| <i>Metals (Method 6010)</i> | | | | | |
| Arsenic | Total µg | ND | 3.0 | ND | 4.1 |
| Barium | Total µg | 134 | 854 | 559 | 794 |
| Cadmium | Total µg | 1.2 | 7.8 | 1.3 | 0.83 |
| Chromium | Total µg | 14.0 | 38.5 | 21.6 | 23.8 |
| Lead | Total µg | 262 | 2,000 | 1,640 | 708 |
| Selenium | Total µg | 2.7 | 4.0 | 3.1 | 3.4 |
| Silver | Total µg | ND | 6.3 | ND | ND |
| <i>Mercury (Method 7470)</i> | | | | | |
| Mercury | Total µg | ND | 5.6 | ND | ND |

ND - Compound not above detection limits.

APPENDIX A

February 06, 2015

Mr. Phil Rahn
Waters Edge Environmental
4901 Water's Edge Drive
Suite 201
Raleigh, NC 27606

RE: Project: PORCELANITE R1-21
Pace Project No.: 92234894

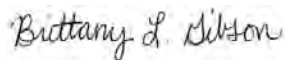
Dear Mr. Rahn:

Enclosed are the analytical results for sample(s) received by the laboratory on January 26, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Brittany Gibson for
Terri Page
terri.page@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PORCELANITE R1-21

Pace Project No.: 92234894

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804

Florida/NELAP Certification #: E87648

Massachusetts Certification #: M-NC030

North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40

South Carolina Certification #: 99030001

West Virginia Certification #: 356

Virginia/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: PORCELANITE R1-21

Pace Project No.: 92234894

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|-------------|-----------|--------|----------------|----------------|
| 92234894001 | WS-1 | Wipe | 01/23/15 09:20 | 01/26/15 13:52 |
| 92234894002 | WS-2 | Wipe | 01/23/15 09:30 | 01/26/15 13:52 |
| 92234894003 | WS-3 | Wipe | 01/23/15 09:40 | 01/26/15 13:52 |
| 92234894004 | WS-4 | Wipe | 01/23/15 09:50 | 01/26/15 13:52 |

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SAMPLE ANALYTE COUNT

Project: PORCELANITE R1-21

Pace Project No.: 92234894

| Lab ID | Sample ID | Method | Analysts | Analytes Reported | Laboratory |
|-------------|-----------|----------|----------|-------------------|------------|
| 92234894001 | WS-1 | EPA 6010 | JMW | 7 | PASI-A |
| | | EPA 7470 | HVK | 1 | PASI-A |
| 92234894002 | WS-2 | EPA 6010 | JMW | 7 | PASI-A |
| | | EPA 7470 | HVK | 1 | PASI-A |
| 92234894003 | WS-3 | EPA 6010 | JMW | 7 | PASI-A |
| | | EPA 7470 | HVK | 1 | PASI-A |
| 92234894004 | WS-4 | EPA 6010 | JMW | 7 | PASI-A |
| | | EPA 7470 | HVK | 1 | PASI-A |

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ANALYTICAL RESULTS

Project: PORCELANITE R1-21

Pace Project No.: 92234894

Sample: WS-1 **Lab ID: 92234894001** Collected: 01/23/15 09:20 Received: 01/26/15 13:52 Matrix: Wipe

| Parameters | Results | Units | Report | | | Prepared | Analyzed | CAS No. | Qual |
|---|---------|----------|--------|------|----|----------------|----------------|-----------|------|
| | | | Limit | MDL | DF | | | | |
| 6010 MET ICP, Wipe Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | | |
| Arsenic | ND | Total ug | 2.5 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7440-38-2 | |
| Barium | 134 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7440-39-3 | |
| Cadmium | 1.2 | Total ug | 0.25 | 0.12 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7440-43-9 | |
| Chromium | 14.0 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7440-47-3 | |
| Lead | 262 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7439-92-1 | |
| Selenium | 2.7 | Total ug | 2.5 | 1.2 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7782-49-2 | |
| Silver | ND | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:08 | 7440-22-4 | |
| 7470 Mercury, Wipe Analytical Method: EPA 7470 | | | | | | | | | |
| Mercury | ND | Total ug | 1.6 | 1.6 | 1 | | 02/03/15 16:15 | 7439-97-6 | |

Sample: WS-2 **Lab ID: 92234894002** Collected: 01/23/15 09:30 Received: 01/26/15 13:52 Matrix: Wipe

| Parameters | Results | Units | Report | | | Prepared | Analyzed | CAS No. | Qual |
|---|---------|----------|--------|------|----|----------------|----------------|-----------|------|
| | | | Limit | MDL | DF | | | | |
| 6010 MET ICP, Wipe Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | | |
| Arsenic | 3.0 | Total ug | 2.5 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7440-38-2 | |
| Barium | 854 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7440-39-3 | |
| Cadmium | 7.8 | Total ug | 0.25 | 0.12 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7440-43-9 | |
| Chromium | 38.5 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7440-47-3 | |
| Lead | 2000 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7439-92-1 | |
| Selenium | 4.0 | Total ug | 2.5 | 1.2 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7782-49-2 | |
| Silver | 6.3 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:20 | 7440-22-4 | |
| 7470 Mercury, Wipe Analytical Method: EPA 7470 | | | | | | | | | |
| Mercury | 5.6 | Total ug | 1.6 | 1.6 | 1 | | 02/03/15 16:18 | 7439-97-6 | |

Sample: WS-3 **Lab ID: 92234894003** Collected: 01/23/15 09:40 Received: 01/26/15 13:52 Matrix: Wipe

| Parameters | Results | Units | Report | | | Prepared | Analyzed | CAS No. | Qual |
|---|---------|----------|--------|------|----|----------------|----------------|-----------|------|
| | | | Limit | MDL | DF | | | | |
| 6010 MET ICP, Wipe Analytical Method: EPA 6010 Preparation Method: EPA 3050 | | | | | | | | | |
| Arsenic | ND | Total ug | 2.5 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7440-38-2 | |
| Barium | 559 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7440-39-3 | |
| Cadmium | 1.3 | Total ug | 0.25 | 0.12 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7440-43-9 | |
| Chromium | 21.6 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7440-47-3 | |
| Lead | 1640 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7439-92-1 | |
| Selenium | 3.1 | Total ug | 2.5 | 1.2 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7782-49-2 | |
| Silver | ND | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:23 | 7440-22-4 | |
| 7470 Mercury, Wipe Analytical Method: EPA 7470 | | | | | | | | | |
| Mercury | ND | Total ug | 1.6 | 1.6 | 1 | | 02/03/15 16:21 | 7439-97-6 | |

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PORCELANITE R1-21

Pace Project No.: 92234894

| Sample: WS-4 | | Lab ID: 92234894004 | | Collected: 01/23/15 09:50 | Received: 01/26/15 13:52 | Matrix: Wipe | | | |
|---------------------------|-------------|-----------------------------|-----------------|------------------------------|--------------------------|----------------|----------------|-----------|------|
| Parameters | Results | Units | Report Limit | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
| 6010 MET ICP, Wipe | | Analytical Method: EPA 6010 | | Preparation Method: EPA 3050 | | | | | |
| Arsenic | 4.1 | Total ug | 2.5 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7440-38-2 | |
| Barium | 794 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7440-39-3 | |
| Cadmium | 0.83 | Total ug | 0.25 | 0.12 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7440-43-9 | |
| Chromium | 23.8 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7440-47-3 | |
| Lead | 708 | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7439-92-1 | |
| Selenium | 3.4 | Total ug | 2.5 | 1.2 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7782-49-2 | |
| Silver | ND | Total ug | 1.2 | 0.62 | 5 | 01/28/15 16:45 | 01/29/15 02:26 | 7440-22-4 | |
| 7470 Mercury, Wipe | | Analytical Method: EPA 7470 | | | | | | | |
| Mercury | ND | Total ug | 1.6 | 1.6 | 1 | | 02/03/15 16:23 | 7439-97-6 | |

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QUALITY CONTROL DATA

Project: PORCELANITE R1-21

Pace Project No.: 92234894

QC Batch: MERC/7238

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury Wipe

Associated Lab Samples: 92234894001, 92234894002, 92234894003, 92234894004

METHOD BLANK: 1383056

Matrix: Wipe

Associated Lab Samples: 92234894001, 92234894002, 92234894003, 92234894004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-----------|----------|--------------|-----------------|----------------|------------|
| Mercury | Total ug | ND | 1.6 | 02/03/15 16:26 | |

LABORATORY CONTROL SAMPLE & LCSD: 1383057

1383058

| Parameter | Units | Spike Conc. | LCS Result | LCSD Result | LCS % Rec | LCSD % Rec | % Rec Limits | RPD | Max RPD | Qualifiers |
|-----------|----------|-------------|------------|-------------|-----------|------------|--------------|-----|---------|------------|
| Mercury | Total ug | 60 | 56.6 | 59.0 | 94 | 98 | 80-120 | 4 | | |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PORCELANITE R1-21

Pace Project No.: 92234894

QC Batch: MPRP/17797

Analysis Method: EPA 6010

QC Batch Method: EPA 3050

Analysis Description: 6010 MET Wipes

Associated Lab Samples: 92234894001, 92234894002, 92234894003, 92234894004

METHOD BLANK: 1379624

Matrix: Wipe

Associated Lab Samples: 92234894001, 92234894002, 92234894003, 92234894004

| Parameter | Units | Blank Result | Reporting Limit | Analyzed | Qualifiers |
|-----------|----------|--------------|-----------------|----------------|------------|
| Arsenic | Total ug | ND | 0.50 | 01/29/15 01:59 | |
| Barium | Total ug | ND | 0.25 | 01/29/15 01:59 | |
| Cadmium | Total ug | ND | 0.050 | 01/29/15 01:59 | |
| Chromium | Total ug | ND | 0.25 | 01/29/15 01:59 | |
| Lead | Total ug | ND | 0.25 | 01/29/15 01:59 | |
| Selenium | Total ug | ND | 0.50 | 01/29/15 01:59 | |
| Silver | Total ug | ND | 0.25 | 01/29/15 01:59 | |

LABORATORY CONTROL SAMPLE & LCSD: 1379625

1379626

| Parameter | Units | Spike Conc. | LCS Result | LCSD Result | LCS % Rec | LCSD % Rec | % Rec Limits | RPD | Max RPD | Qualifiers |
|-----------|----------|-------------|------------|-------------|-----------|------------|--------------|-----|---------|------------|
| Arsenic | Total ug | 25 | 23.9 | 23.7 | 96 | 95 | 80-120 | 1 | 20 | |
| Barium | Total ug | 25 | 24.3 | 24.4 | 97 | 98 | 80-120 | 0 | 20 | |
| Cadmium | Total ug | 25 | 24.6 | 24.5 | 98 | 98 | 80-120 | 1 | 20 | |
| Chromium | Total ug | 25 | 24.1 | 24.2 | 96 | 97 | 80-120 | 1 | 20 | |
| Lead | Total ug | 25 | 24.9 | 24.8 | 99 | 99 | 80-120 | 0 | 20 | |
| Selenium | Total ug | 25 | 24.9 | 24.8 | 99 | 99 | 80-120 | 0 | 20 | |
| Silver | Total ug | 12.5 | 12.0 | 12.1 | 96 | 97 | 80-120 | 1 | 20 | |

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PORCELANITE R1-21
Pace Project No.: 92234894

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PORCELANITE R1-21

Pace Project No.: 92234894

| Lab ID | Sample ID | QC Batch Method | QC Batch | Analytical Method | Analytical Batch |
|-------------|-----------|-----------------|------------|-------------------|------------------|
| 92234894001 | WS-1 | EPA 3050 | MPRP/17797 | EPA 6010 | ICP/16015 |
| 92234894002 | WS-2 | EPA 3050 | MPRP/17797 | EPA 6010 | ICP/16015 |
| 92234894003 | WS-3 | EPA 3050 | MPRP/17797 | EPA 6010 | ICP/16015 |
| 92234894004 | WS-4 | EPA 3050 | MPRP/17797 | EPA 6010 | ICP/16015 |
| 92234894001 | WS-1 | EPA 7470 | MERC/7238 | | |
| 92234894002 | WS-2 | EPA 7470 | MERC/7238 | | |
| 92234894003 | WS-3 | EPA 7470 | MERC/7238 | | |
| 92234894004 | WS-4 | EPA 7470 | MERC/7238 | | |

REPORT OF LABORATORY ANALYSIS

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Document Name: **Sample Condition Upon Receipt (SCUR)**

Document Revised: March 13, 2013
Page 1 of 2

Document No.:
F-EDN-CS-003-rev.09

Issuing Authorities:
Pace Eden Quality Office

Client Name: Waters Edge Env.

Where Received: Huntersville Asheville Eden Raleigh

Courier (circle): Fed Ex UPS USPS Client Commercial Pace Other _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used: IR Gun ED007 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Temp Correction Factor: Add / Subtract + .4 C

Corrected Cooler Temp.: .4 C Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: Eden-15 dp

Temp should be above freezing to 6°C

Comments:

| | | |
|--|---|-----------------------------------|
| Chain of Custody Present: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 1. |
| Chain of Custody Filled Out: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 2. |
| Chain of Custody Relinquished: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 3. |
| Sampler Name & Signature on COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 4. |
| Samples Arrived within Hold Time: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 5. |
| Short Hold Time Analysis (<72hr): | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 6. |
| Rush Turn Around Time Requested: | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | 7. |
| Sufficient Volume: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 8. |
| Correct Containers Used: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 9. |
| -Pace Containers Used: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | |
| Containers Intact: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 10. |
| Filtered volume received for Dissolved tests | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 11. |
| Sample Labels match COC: | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | 12. |
| -Includes date/time/ID/Analysis Matrix: | <u>WP</u> | |
| All containers needing preservation have been checked. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 13. |
| All containers needing preservation are found to be in compliance with EPA recommendation. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | |
| exceptions: VOA, coliform, TOC, O&G, WI-DRO (water) | <input type="checkbox"/> Yes <input type="checkbox"/> No | Initial when completed: <u>dp</u> |
| Samples checked for dechlorination: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 14. |
| Headspace in VOA Vials (>6mm): | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 15. |
| Trip Blank Present: | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | 16. |
| Trip Blank Custody Seals Present | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | |
| Pace Trip Blank Lot # (if purchased): | | |

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

| | | | | |
|---------------|------------|-------|-----------------|---|
| SCURF Review: | <u>BIG</u> | Date: | <u>11/20/15</u> | Place label here OR Handwrite project number (if no label available) |
| SRF Review: | <u>JHP</u> | Date: | <u>11/20/15</u> | |

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

APPENDIX B



Photograph #1- SWMU #1- WWT System Floor Area and Wipe Sample #1



Photograph #2- SWMU #1- WWT System Floor Area and Wipe Sample #2



Photograph #3- SWMU #1- WWT System Floor Secondary Containment Area and Wipe Sample #3



Photograph #4- SWMU #1- WWT System Floor Area and Wipe Sample #4



Photograph #5- SWMU #11- Spray Line South Trench Area



Photograph #6- SWMU #11- Spray Line North Trench Area



Photograph #7- SWMU #11- Spray Line Sump Walls



Photograph #8- SWMU #11- Spray Line Sump Walls



Photograph #9- SWMU #11- North Spray Line Sump Floor



Photograph #10- SWMU #11- North Spray Line Sump Floor



Photograph #11- SWMU #11- South Spray Line Sump Floor



**Photograph #12- SWMU #11- North Spray Line Trench
Bottom**



**Photograph #13- SWMU #11- South Spray Line Trench
Bottom**