WORK PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
HUNTERSTOWN ROAD SITE
STABAN TOWNSHIP
ADAMS COUNTY, PENNSYLVANIA

Project No. 87-376
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This Work Plan for an RI/FS investigation of the Hunterstown Road Site, Straban Township, Adams County, Pennsylvania has been prepared for Westinghouse Electric Corporation (Westinghouse) in accordance with the Consent Order between Westinghouse and the United States Environmental Protection Agency, Region III (EPA), dated March 10, 1987 (USEPA Docket No. III-87-5-DC). This Work Plan has also been prepared in accordance with RI/FS guidelines presented in the National Contingency Plan published in the Federal Register (November 20, 1983) plus Section 121 of the Superfund Amendments and Reauthorization Act (SARA). The Work Plan was submitted to the USEPA in February 1988 and approved on or about December 1, 1988. The RI/FS field activities were initiated in December 1988.

As described in the Work Plan, the RI portion of the project was presented as a two-phased study. Phase I has been completed and is documented in a Phase I Report issued in August 1989 (Rizzo Associates, 1989a). As the scope of the second phase (Phase II) is contingent upon results of the first phase (Phase I), the RI/FS process provides for Work Plan revisions to effectively utilize the phased approach. This revised Work Plan is part of that process. In addition, a Sampling and Analysis Plan (Rizzo Associates, 1989b) has been prepared. This revised Work Plan should be reviewed as an extension of the 1988 Work Plan, the comprehensive Phase I Report, and the Sampling and Analysis Plan.
1.1 RI/FS OBJECTIVES

A Remedial Investigation (RI) is a comprehensive investigation of the extent of contamination and the geotechnical, geological, and hydrogeological characteristics of a site. The data gathered during the RI serve as the basis for a subsequent Feasibility Study (FS). As part of the FS, various remedial alternatives are considered, including the "no-action" alternative. A comprehensive evaluation of the remedial alternatives is performed, encompassing topics such as environmental assessment, technical feasibility, and costs to determine a recommended remedial alternative. A conceptual design is developed for the recommended remedial alternative.

The basic objectives of this RI/FS investigation are:

- **Identify Potential Sources of Contamination**
  Potential source areas which could release contaminants to the environment are identified.

- **Define Nature and Extent of Contamination**
  The nature and extent of contamination is defined by the types of contaminants present and their distribution in environmental media.

- **Determine Pathways of Migration**
  The mechanisms by which contaminants could move off site are defined.

- **Assess Risks**
  An endangerment assessment is performed to define existing and potential environmental and public health hazards that may result from the identified source areas.

- **Identify Remedial Alternatives**
  Various remedial alternatives are identified including the "no-action" alternative.

- **Evaluate Remedial Alternatives**
  Remedial alternatives are evaluated in terms of technical feasibility, estimated cost, and effectiveness in reducing public health/environmental risks.
1.2 TECHNICAL APPROACH
The RI portion of the project is planned as a two-phased study. The emphasis in Phase I, as part of the RI/FS scope process, was to determine the contaminants of interest (COI) at the site and to assess the physical characteristics of the site such as geology and hydrogeology. The first phase included such tasks as fracture-trace analysis, drilling and logging of borings and installation of monitoring wells, surface water and sediment sampling, chemical characterization of the site, sampling of monitoring wells and preliminary evaluation of contaminant fate transport. Based on the analytical results, contaminants of interest (COI) were determined for the site. Phase I has been completed and a comprehensive Phase I Report was submitted to the USEPA and Pennsylvania Department of Environmental Resources (PADER) on August 4, 1989 (Rizzo Associates, 1989a).

Based on the results of the Phase I investigation, additional site work will be conducted in Phase II to assess the extent of contamination and to obtain additional data necessary for the evaluation of remedial alternative and performance of an endangerment assessment. Analyses in Phase II will be for the COI identified during Phase I.

1.3 WORK PLAN FORMAT
Section 2.0 of the Work Plan summarizes existing data related to the site. Section 3.0 provides a summary of identified data gaps and remedial investigation objectives. Descriptions of the tasks which comprise the RI/FS study are presented in Section 4.0. A schedule for accomplishing these tasks is presented in Section 5.0.

1.4 ABBREVIATIONS AND CONVENTIONS
Abbreviations for some chemical names and other terms which are frequently used in the text are as follows:

- Target Compound List - TCL
- Target Analyte List - TAL
- Tetrachloroethylene - PCE
- Quality Assurance Project Plan - QAPP
- Site Operations Plan - SOP
- Sampling and Analysis Plan - SAP
- Contract Laboratory Program - CLP
- Trichloroethylene - TCE
- 1,1-Dichloroethylene - 1,1-DCE
- 1,2-Dichloroethylene - 1,2-DCE
- 1,1,1-Trichloroethane - TCA
- 1,1-Dichloroethane - 1,1-DCA
- 1,2-Dichloroethane - 1,2-DCA
2.0 SUMMARY OF EXISTING DATA

2.1 DATA SOURCES
Hunterstown Road Site data have been collected from several sources. These have included files from the Pittsburgh and Gettysburg offices of Westinghouse, records from the Harrisburg office of the Pennsylvania Department of Environmental Resources (PADER), geologic and hydrogeologic reports from the Pennsylvania Geological Survey, records of the public water supply from the Gettysburg Municipal Authority, site remediation reports (O.H. Materials, 1984 and REMCOR, 1987), data obtained from EPA files under the Freedom of Information Act and the Phase I Report (Rizzo Associates, 1989a).

Several site reconnaissance surveys have been made to ascertain existing physical conditions at the site. A field interview was conducted with Mr. Frederick M. Shealer, a former waste hauler associated with the site. Mr. Shealer, who owns the property on which the Hunterstown Road Site is located, described waste handling practices at the site.

2.2 SITE LOCATION AND DESCRIPTION
The site is located about 1.5 miles northeast of downtown Gettysburg in Straban Township, Adams County, Pennsylvania. A site location map is provided as Figure 2-1. Topography in the area is gently rolling. The site area is semi-rural with both farmlands and residences.

The site occupies an approximate area of 22 acres, and portions of the site lie both east and west of Hunterstown Road, as shown on Figure 2-2. An access road leads into the portion of the site which is east of Hunterstown Road (Figure 2-2). The coordinates of the site are latitude 39° 51' 6" and longitude 77° 12' 18".

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There are three unnamed tributaries of Rock Creek which flow adjacent to portions of the site. These are referred to herein as the west stream, middle stream, and east stream, as indicated on Figure 2-2. There are seven identified subareas of the site. These are shown on Figure 2-2, and are briefly described in the following:

- **Former Drum Burial Area No. 1**
  This area is located west of Hunterstown Road, just east of the west stream, and has an approximate length of 440 feet and a width averaging 90 feet.

- **Former Drum Burial Area No. 2**
  This area lies north of the access road and immediately west of the middle stream. The approximate dimensions are 180 feet by 50 feet.

- **North Cornfield**
  A roughly triangular open field located north of the access road which leads from Hunterstown Road. The field is approximately 500 feet wide at the base and about 800 feet in length.

- **South Cornfield**
  A roughly square open field located south of the access road. The field has approximate dimensions of 400 feet by 400 feet.

- **Former Lagoon**
  A sloping area with approximate dimensions of 100 feet by 150 feet. The area is enclosed by a chain-link fence. Straw bales have also been placed around the area, and a silt barrier is in place in downgradient locations.

- **Stressed Vegetation Area**
  This area is located east of the South Cornfield and roughly southwest of the Lagoon. It has approximate dimensions of 50 feet by 100 feet.

- **Borrow Area**
  This area is located along the east bank of the east stream. It has approximate dimensions of 175 feet by 175 feet.
2.3 SITE HYDROGEOLOGY

2.3.1 Topography and Surface Drainage
Topography in the Hunterstown Road area is gently rolling with about 3 percent slopes. The east portion of the site slopes toward the east stream and the west portion is nearly flat. Elevations range from 528 feet above mean sea level (MSL) at Shealer Road to about 574 feet MSL in the North Cornfield. Most of the land has been cleared for agricultural use or residential development.

The three tributary streams of Rock Creek that drain the site combine and join Rock Creek just east of Gettysburg. The west and middle streams join just north of Shealer Road, and the east stream joins the other combined streams approximately 1,200 feet south of Shealer Road.

2.3.2 Soils and Geology
The following paragraphs briefly describe the site soils and geology. A detailed description of these characteristics is presented in Section 3.0 of the Phase I Report (Rizzo Associates, 1989a).

The natural soils of the Hunterstown Road Site were classified by the Soil Conservation Service (USSCS, 1967) as part of the Klinesville-Abbottstown-Readington-Penn Association. These soils are moderately eroded, gently to moderately sloping, very shallow to deep shaley soils primarily derived from the underlying Triassic red beds. These soils vary from somewhat poorly drained to well drained.

Results from the Phase I Remedial Investigation subsurface explorations and previous investigations indicate that natural soil encountered was typically two to twenty feet thick consisting of red brown silty clay-clayey silt with rock fragments.

A total of 21 borings were drilled to characterize the subsurface in Phase I (Figure 2-3). Data from the subsurface investigation indicate that the bedrock underlying the site is composed of hornfels with
numerous igneous intrusives. The site borings define the strike and dip of the rocks in the vicinity of the Hunterstown Road Site as N41°E dipping 26°NW.

The fracture traces and lineaments assessed in Phase I appear to mainly reflect bedding, with a trend nearly perpendicular to bedding of unknown origin, but which could be strike-slip faulting. Although the joint azimuths appear to be reflected in the pattern of fracture traces, most of the fracture traces or lineaments do not appear to be joint controlled.

2.3.3 Groundwater
The following paragraphs briefly describe the site groundwater. A detailed description of the groundwater conditions at the Hunterstown Road Site is presented in Section 3.6 of the Phase I Report (Rizzo Associates, 1989a).

The Gettysburg Formation is used for water supply and is the second most productive aquifer in Adams County. According to Taylor and Royer (1981), well yields range from 1 to 630 gpm, with a median yield of 12 gpm for domestic wells and 69 gpm for non-domestic wells. Median specific capacities are 0.18 gpm per foot in domestic wells and 1.0 gpm per foot in non-domestic wells. Water quality is generally good, although it tends to be hard (median hardness 171/mg/l).

The Gettysburg Municipal Water Authority uses groundwater to provide 40 percent (464,000 gallons per day) of its water supply. Gettysburg Municipal Water Authority has seven water supply wells. Four wells (Nos. 3, 4, 5, and 6) are currently in use, although not all operate simultaneously. The water from Well No. 6 is currently being processed through an air-stripping tower. The wells are located between 1.3 to 4.7 miles southeast to southwest of the site. Municipal well data are summarized in Table 2-1 (Gettysburg Municipal Water Authority, 1977). Locations of the nearest municipal wells are shown on Figure 2-1.
Groundwater movement is characterized by fracture flow. The horizontal direction of shallow groundwater flow is west to southwest towards Rock Creek. Based on Phase I water level measurements, the horizontal component of hydraulic gradient varies from 0.01 to 0.05 (shallow groundwater). The most permeable zones observed in Phase I were within the upper 22 feet of bedrock. In the vertical plane, downward hydraulic gradients combined with anisotropic hydraulic conductivities to produce groundwater movement that is primarily along the bedding, perpendicular to the strike.

2.4 SITE OPERATIONS
Wastes were placed at the Hunterstown Road Site by Frederick M. Shealer, who owns the property on which the site is located and who transported the materials to the site from various locations. Wastes reportedly included drums of paint solvents; paint sludges; bundles of insulation board containing asbestos; and tank truck loads of spent solvents, white clay sludges, pigmented clay sludges, and domestic septic-tank sludges.

Reported disposal operations at each area of the site are described in the following:

- **Lagoon** - Paint sludges from drums and colored pigmented clays from tank trucks formed the Lagoon. Sludges with a high liquid content were discharged into small depressions (pools) created by mounding the drier residual solids into embankments.

- **Cornfields** - Tank-truck loads of liquid wastes such as white clay sludges and domestic septic tank sludges were sprayed onto the ground.

- **Stressed Vegetation Area** - Tank-truck loads of pigmented clay sludges were reportedly discharged into depressions remaining after the removal of the top soil.
• **Borrow Area** - Drums of waste and bundles of insulation board containing asbestos were disposed of at the surface.

• **Drum Burial Areas** - Drums of paint sludges and solvents, insulation board containing asbestos, construction material and other debris were placed in depressions which were about four to five feet deep. These depressions were created when soil was previously excavated for use in the manufacture of field tile.

### 2.5 ANALYTICAL RESULTS

Twenty-five sampling trips have been made to the site by the USEPA and PADER to collect samples of waste materials, surface soil, surface water, and groundwater. A chronology of the sampling prior to the RI/FS is presented in Table 2-2.

#### 2.5.1 Waste Materials

Prior to Phase I, sampling of waste materials had been limited to materials found in the Lagoon and Borrow Area. Some of these results are provided in Table 2-3. Thirty samples, 26 from drums and four from the Lagoon material, were analyzed; metals, volatile organics, and base neutral organics were detected. Concentration ranges for the most frequently detected contaminants were: zinc (0.68 to 79,000 ppm); chromium (8.4 to 4,600 ppm); nickel (1.1 to 270 ppm); arsenic (12 to 49 ppm); trichloroethylene (TCE) (89 to 410 ppb); 1,1,1-trichloroethane (TCA) (29 to >90,000 ppb); 1,1-dichloroethylene (1,1-DCE) (16 to 16,000 ppb); chloroform (17 to 130 ppb); toluene (11 to 17,000 ppb); ethylbenzene (110 to 100,000 ppb); and methylene chloride (29 to 230 ppb).

In May 1986, two mounds of a white material in the Borrow Area were sampled. Analyses revealed they were 70 percent amosite asbestos.

Five grab samples of the stress vegetation area were collected and analyzed for Phase I. Results are summarized in Table 2-4.
2.5.2 Soil Sampling

Prior to the RI/FS, ten surface soil samples had been collected: six from the Lagoon, one from the edge of the South Cornfield, two from the Stressed Vegetation Area, and one from Drum Burial Area No. 1. The results are summarized in Table 2-5. No samples from background locations had been analyzed.

Soil samples collected from the Lagoon after removal of the sludge revealed the presence of volatile organic compounds such as TCE; 1,2-dichloroethylene (1,2-DCE); toluene; TCA; xylene; ethylbenzene and naphthalene. Metals such as lead, copper, chromium, and zinc were also detected.

Additional Lagoon soil sampling was performed outside the fenced area. Volatile organics (1,2-DCE and TCA) were detected between the fence and the stream. Samples from the slope west of the fence contained no volatiles but did contain heavy metals such as lead (4,680 to 8,580 ppm), copper (1,220 to 2,799 ppm), chromium (1,160 to 1,774 ppm), and zinc (493 to 1,126 ppm).

A sample collected from the lower corner of the South Cornfield showed no volatile organics, but did contain metals including lead (7,940 ppm). Two samples collected from the Stressed Vegetation Area contained phthalates (910 to 9,100 ppb) and heavy metals, especially lead (6,640 to 48,500 ppm).

One sample collected from near Drum Burial Area No. 1 contained chrysene, benzo-anthracene, and 1,2-DCE. Heavy metals were also detected at relatively low concentrations.

Analytical results of composite surface soils collected during the Phase I investigation showed elevated concentrations of a few compounds. The areas and corresponding elevated compounds are as follows:
- Borrow Area: Lead, copper, magnesium, zinc, beryllium, and sodium.
- Lagoon: Lead, copper, chromium, beryllium, and sodium.
- Cornfields: Copper, lead, zinc, chromium, calcium, mercury, sodium, cadmium, selenium, and silver.

Tables 2-6 and 2-7 summarize the results of the composite surface soil samples from the Borrow Area, Lagoon, and Cornfields. Figure 2-4 provides a schematic representation of the sampling and compositing scheme. Post excavation soil samples were collected from the drum burial areas. Results are summarized in Tables 2-8 through 2-14.

2.5.3 Surface Water/Sediment Sampling
Twenty-two surface water and 11 related sediment samples from the site have been analyzed prior to the RI/FS. The results are summarized in Table 2-15.

Volatile organic compounds have been found in surface water in and downstream from the Lagoon. These compounds include 1,1,1-DCE; TCE; TCA; 1,1-DCA; ethylbenzene; xylene; toluene; and naphthalene. Aqueous samples from puddles outside the fence on the west slope did not contain organic compounds.

Surface water samples obtained from the east stream at the culvert located immediately downstream from the Lagoon and at a point farther downstream contained organic compounds. The compounds detected were TCE, TCA, and 1,2-DCE. Sampling of sediment in the east stream revealed the presence of heavy metals. In 1986, levels of lead were measured at 5,000 to 8,900 ppm at the culvert and 100 ppm farther downstream; chromium was 1,213 to 1,625 ppm at the culvert and 1,849 ppm farther downstream. Phthalates were also detected in sediment collected from the east stream.
Two samples were collected from the pond near Drum Burial Area No. 1 in 1984; analyses showed the presence of 1,2-DCE; TCE; and TCA.

Samples of surface water from the west stream contained organic compounds. The compounds included TCA (110 to 1,500 ppb); 1,1-DCA (61 to 3,100 ppb); and 1,2-trans DCE (15 to 1,100 ppb). Sediment in the west stream downstream from Drum Burial Area No. 1 contained organic compounds but not heavy metals. The organics detected were TCA (13 ppb) and 1,2-DCE (10 ppb).

Four surface water samples and six sediment samples were collected during Phase I (Figure 2-5). Table 2-16 summarizes the results of both inorganic and organic analysis of the surface water samples. Sediment samples results are summarized in Table 2-17.

2.5.4 Groundwater

Seventy-six groundwater samples have been collected from 42 residential wells in the vicinity of the site. The samples were analyzed to determine contaminant concentrations in off-site groundwater. A list of the well owners, addresses, and construction data is provided in Table 2-18. Well locations are shown on Figure 2-6. Analytical data are presented in Table 2-19.

Samples were analyzed for volatile organic compounds. Fourteen wells contained at least one compound in concentrations equal to or greater than 1.0 ppb. The most commonly detected compounds and their ranges in concentration are listed below:

<table>
<thead>
<tr>
<th>COMPOUNDS</th>
<th>NUMBER OF WELLS</th>
<th>RANGE IN CONCENTRATION (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCA</td>
<td>14</td>
<td>1.1 - 500</td>
</tr>
<tr>
<td>TCE</td>
<td>10</td>
<td>1.0 - 500</td>
</tr>
<tr>
<td>1,1-DCE</td>
<td>9</td>
<td>1.6 - 95</td>
</tr>
</tbody>
</table>

2-9
<table>
<thead>
<tr>
<th>COMPOUNDS</th>
<th>NUMBER OF WELLS</th>
<th>RANGE IN CONCENTRATION (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-DCE</td>
<td>6</td>
<td>1.2 - 150</td>
</tr>
<tr>
<td>1,1-DCA</td>
<td>5</td>
<td>1.0 - 63</td>
</tr>
<tr>
<td>PCE</td>
<td>3</td>
<td>1.0 - 1.6</td>
</tr>
</tbody>
</table>

The most highly contaminated wells are located primarily near the intersection of Hunterstown and Shealer Roads, as shown on Figure 2-3.

Twenty monitoring wells were installed, developed, and sampled in Phase I (Figure 2-3). Table 2-20 summarized the results of analyses of groundwater samples taken from shallow monitoring wells. Groundwater samples analyzed summarized Table 2-21. Detailed description of groundwater sample results is provided in Section 4.1.3 of the Phase I Report (Rizzo Associates, 1989a).

2.6 SITE REMEDIATION

Westinghouse has conducted remedial activities at several of the subareas at the site, as described below:

- April 1984 - The Lagoon embankment and sludge material plus some unopened drums were removed. Drums were also removed from the Borrow Area at this time. Subsequently, a chain-link fence was installed around the Lagoon.

- December 1986 - Two piles of bulk asbestos were removed from the Borrow Area.

- April/May 1987 - A series of site modifications were undertaken to control drainage, sedimentation, and erosion. The work included: installing straw-bale dikes around the lower half of the Lagoon and around the Stressed Vegetation Area, covering the Lagoon with mulch, covering the Stressed Vegetation Area with mulch and plastic sheeting, regrading the southwest corner of the Lagoon, installing a
silt fence below the Lagoon next to the stream, and removing a culvert and reshaping the channel in the east stream. Additional work included: installing a security fence around the Lagoon and eastern portion of the South Cornfield, placing warning signs around the site, removing contaminated debris from the east stream channel, and liming the Lagoon and Stressed Vegetation Area.

- December 1988 - Removal of waste materials from drum burial areas was initiated. During this four month project waste, contaminated soil and drums were excavated and disposed at a RCRA facility.

2.7 EVALUATION OF EXISTING DATA
Based on current understanding of the site hydrogeology, the soil surface water, sediment and groundwater analytical data and past remediation actions, the following findings have been established:

- The compounds of interest for the Hunterstown Road Site vary based on area or matrix. Compounds of interest are as follows:
  - Borrow Area
    Copper, lead, and zinc.
  - Lagoon Area
    Copper, chromium, and lead.
  - Cornfields
    Copper, chromium, lead, and zinc.
  - Stressed Vegetation Area
    Copper, chromium, lead, zinc, 1,1-DCA, TCA, 1,2-DCE, TCE, and PCE.
  - Drum Burial Area 1
    Toluene, ethylbenzene, xylenes, 1,2-DCA, 1,1,2-TCA, 1,2-DCE, TCE, and PCE.
  - Drum Burial Area 2
    None.
  - Surface Water
    Lead, zinc, 1,1-DCA, TCA, 1,2-DCE, and TCE.
- Sediment
  Chromium, copper, lead, zinc, 1,2-DCE, and TCE.

- Groundwater
  Chromium, chloroethane, 1,1-DCA, TCA, vinyl chloride, 1,1-DCE, 1,2-DCE, TCE, and PCE.

• Only two potential source areas (cornfields and stress vegetation area) have not been subjected to remedial action. Results indicate they are not an immediate threat to human health or the environment.

• Residual compounds of interest remain in the three areas which have been remediated. The areas are drum burial areas, lagoon, and borrow area.

• The distribution of volatile organic compounds (VOC) and groundwater levels suggest subsurface barriers or dikes.

• The bedrock underlying the site consists of hornfels with numerous igneous intrusives. The strata strike at N41°E with a dip of 26°NW.

• The fracture traces and lineaments assessed in this study appear to mainly reflect beddings, with a trend nearly perpendicular to bedding, or unknown origin, but which could be strike-slip faulting. Although the joint azimuths appear to be reflected in the pattern of fracture traces, most of the fracture traces or lineaments do not appear to be joint controlled.

• Groundwater movement is characterized by fracture flow. Groundwater appears to flow horizontally in the shallow, weathered bedrock zones. In the vertical plane, downward hydraulic gradients combine with anisotropic hydraulic conductivities to produce groundwater movement that is primarily along the bedding, perpendicular to the strike.

• The Borrow Area, Lagoon Area, Cornfields, and Stressed Vegetation Area are characterized as having elevated levels of heavy metals. The Stressed Vegetation Area also contains chlorinated aliphatic hydrocarbons.
Drum Burial Area 1 is characterized as containing aromatic hydrocarbons and chlorinated aliphatic hydrocarbons. Drum Burial Area 2 is relatively uncontaminated.

Surface water and sediment are characterized as having elevated levels of heavy metals and chlorinated aliphatic hydrocarbons. Locations of elevated levels are primarily found in the East and Middle Streams.

Groundwater was found to contain possibly elevated concentrations of chromium and chlorinated aliphatic hydrocarbons. Areas of elevated organics include shallow and deep zones near Drum Burial Area 1, a shallow zone near Drum Burial Area 2, and shallow and deep zones west of the Lagoon Area. The distribution of organics in groundwater is bounded to the east and north, but not to the south and west.

Based on the evaluation of existing data, preliminary remedial alternatives were determined as described in the Sampling and Analysis Plan. Various tasks to provide the additional data for further evaluation of the alternatives are summarized in Section 4.0.
3.0 OBJECTIVES

The specific objectives for the remedial investigation at the Hunterstown Road Site are described as follows:

- Characterize bedrock fractures.
- Characterize the site geology, including lithology, stratigraphy, and structure. This includes development of geologic cross sections.
- Document site climatic conditions.
- Characterize the site with respect to the nature and extent of the wastes present.
- Determine vertical and lateral extent of groundwater contamination through analysis of samples from monitoring wells.
- Determine the vertical and lateral extent of soil contamination.
- Determine whether streams are currently transporting contaminants from the site. Water samples will be collected during typical flow conditions. Results of sample analysis will be used to determine whether the streams are receiving any contaminated groundwater discharge or surface runoff from the site. Sediment samples will be collected to estimate the potential contribution of contaminants in sediment to the stream water.
- Classify current and designated uses of groundwater and surface water.

During Phase I significant amounts of data have been compiled specifically on the geological and hydrogeological characteristics of the site to meet the above objectives. In addition, an indication of the extent of contamination has been developed in Phase I. Additional data that would facilitate evaluation of risk and remedial responses include:
- Anomalies in the distribution of water levels and contaminants in groundwater leads to speculation regarding the existence of a dike near the eastern edge of the site. Understanding the controls on groundwater flow is essential for evaluating the feasibility of common remedial technologies.

- In the vicinity of the Middle Stream, a potentially more permeable zone to facilitate groundwater movement was identified as a fracture trace.

- The horizontal extent of chlorinated aliphatics in groundwater has not been fully defined in the following areas: shallow and deep groundwater west of the site beyond HMW-9A and HMW-9B; shallow groundwater southwest of the site beyond HMW-7A; and deep groundwater west of HMW-6B and HMW-7B. The (downward) vertical extent of contamination has not been fully defined below HMW-9B, HMW-2B, and HMW-7B. Groundwater samples will be analyzed only for COI.

- The highest concentrations of metals and organics in the Stressed Vegetation Area were all found in the samples form the southern end of the area. Additional surficial soil samples around the perimeter of the Stressed Vegetation Area and subsurface soil samples (taken by hand auger) from within the area analyzed for metals of interest and VOCs would provide necessary information regarding the volume of contaminated soils for remedial alternative evaluation.

- Drilling and installation of deep and shallow monitoring wells south and west of the site to provide additional hydrogeologic regime.

- Groundwater sampling and analysis of Phase I and proposed Phase II monitoring wells.

- Additional surface water and stream sediment sampling and analysis including upstream locations.

- Survey of other potential sources within the site vicinity.

Data collection activities have been developed in the Sampling and Analysis Plan to provide data for fulfillment of the above objective.
This section provides a description of the proposed RI/FS study on a task-by-task basis. Field activities, data reduction, and report preparation are included.

4.1 TASK 1 - FRACTURE-TRACE ANALYSIS
The purpose of a fracture-trace analysis was to identify the location and general orientation of bedrock fractures (e.g., faults, joints, steeply inclined bedding planes, etc.) that could control groundwater flow. The analysis consisted of observing the ground surface at two levels of detail.

A study of aerial photographs constitutes the first level of analysis. Aerial photos were compared to geologic and topographic maps and then field checked to distinguish probable fractures from cultural effects. The field investigation constituted the second level of analysis and also included the preparation of azimuth frequency and stereonet plots of local joint sets as described in the Phase I Report (Rizzo Associates, 1989). This task was completed in Phase I.

4.2 TASK 2 - CHARACTERIZATION OF SITE GEOLOGY
Three test borings were drilled at the site to an approximate depth of 150 feet (Figure 2-3). The three borings are planned in a triangular pattern so that roughly orthogonal geologic cross sections can be prepared from the boring log data. Continuous split-barrel samples were obtained in soil, and core samples were obtained in rock. Boring logs were generated from an inspection of the soil and rock samples (Rizzo Associates 1989a). The borings were tremie grouted to the surface upon completion.
The lithology, stratigraphy, fracture characteristics, and geologic structure of the site vicinity was developed from the field data. The technical literature for the area was studied so that the site field results can be correlated to known local and regional conditions.

This task has been completed in Phase I although additional geologic data will be produced in Phase II.

4.3 TASK 3 - MONITORING WELL INSTALLATION AND SAMPLING

As part of the Phase I remedial investigation, several pairs of monitoring wells were installed at the site (Figure 2-3). Geophysical borehole logging was performed on several boreholes to verify potential groundwater flow zones.

The objectives of the Phase I groundwater monitoring program were:

- Define fracture characteristics.
- Define vertical and horizontal hydraulic gradients.
- Determine contaminants present.
- Assess the extent of contamination.

Upon completion of the monitoring well installation and development, all of the wells were sampled. Sampling of the wells and analysis of the samples for the Target Compound List (TCL) and Target Analyte List (TAC) parameters allowed the identification of groundwater contaminants. Each well was purged and sampled as described in the QAPP. Temperature, pH, and specific conductance were recorded in the field at the time of sampling. Samples were labeled, stored, and shipped with appropriate custody and quality control protocols, as described in the QAPP.

This task (as described above) was completed in Phase I. Phase II will include additional monitoring well installation, sampling, and analysis.
4.4 TASK 4 - CHARACTERIZATION OF SITE CONTAMINANTS

4.4.1 North and South Cornfields
As described in Section 2.0 the nature of on-site contaminants at the North and South Cornfields was identified through soil sampling. Approximate boundaries of the cornfields were established from current vegetation patterns (i.e., tree lines), and samples were collected from within these boundaries. A 100-foot grid was established, and soil samples were collected and composited into six samples. The samples were collected by visual selection at a point within each 100-foot block defined by the grid and at a depth of eight to twelve inches. Sampling procedures were as described in the QAPP.

One background sample was collected from a cornfield along Hunterstown Road to the northeast of the site. One duplicate sample was also collected for quality assurance purposes. All samples were analyzed for TCL and TAL parameters.

This task was completed in Phase I. Additional sampling is proposed in Phase II.

4.4.2 Lagoon and Borrow Area
As described in Section 2.0, the disposal method at the Lagoon and Borrow Area was to discharge or place wastes at the soil surface. Surface drums and sludge were removed from these areas during previous remedial activities.

Soil sampling at the Lagoon was similar to the cornfields. Samples were obtained from two 100-foot square blocks and composited into a single sample for analysis. Sampling procedures were as described in the QAPP. Selection of the sampling points were by visual inspection. Soil sampling at the Borrow Area was also similar to the method used for the cornfields. Samples were obtained from four 100-foot square blocks.
and a soil stockpile near the center of the Borrow Area and composited into a single sample for analysis. Sampling procedures was as discussed in the QAPP. Selection of sampling points was by visual inspection.

The composited sample from the Lagoon was analyzed for TCL and TAL parameters. The composited sample from the Borrow Area was analyzed for TCL and TAL parameters and asbestos.

This task (as described above) was completed in Phase I.

4.4.3 Stressed Vegetation Area
Disposal of wastes at the Stressed Vegetation Area was reportedly at the surface or into shallow depressions. Five soil/waste samples were obtained from the Stressed Vegetation Area and these were analyzed for TCL and TAL parameters. Samples were collected from depths of 8 to 12 inches following sampling procedures described in the QAPP.

This task was completed in Phase I. Additional samples will be collected in Phase II.

4.5 TASK 5 - SURFACE WATER AND SEDIMENT SAMPLING
Water and sediment samples were collected from five stream and pond locations. The locations were chosen for the purpose of determining if the western, middle, and eastern tributaries or western pond have received contaminants from the site. At three locations, both surface water and sediment samples were obtained; at two locations, only sediment samples was obtained. The water samples were collected during typical flow conditions. Sediment samples were collected at the same time. One duplicate sample of surface water and sediment was collected for quality assurance purposes. Samples were analyzed for TCL and TAC parameters.

This task was completed in Phase I. An additional 14 stream locations will have surface water and sediment samples collected in Phase II.
4.6 TASK 6 - RESIDENTIAL WELL SURVEY
A survey of residential wells in the vicinity of the site will be performed. Data to be gathered will include: depth, capacity, construction details, usage, and other information as available.

This task will be performed in Phase II.

4.7 TASK 7 - AIR MONITORING
Air monitoring data were obtained from two sources in Phase I. These are:

- **Periodic Walk-Through Monitoring of Active Site Areas**
  A HNu or OVA was used to continually monitor the air quality around Phase I activities. Levels above background were not observed in the breathing zone.

- **Normal Personnel Monitor**
  Ambient air samples were obtained on a during RI activities. No values above the detection limits were reported for the organic compounds which was analyzed.

The task as described above was completed in Phase I.

4.8 LABORATORY ANALYSIS
All samples collected during Phase I remedial investigation activities were analyzed by the Lancaster Laboratories, Inc. These samples were analyzed for the Target Compound List (TCL) and Target Analytical List (TAL) parameters. The composite soil sample from the Borrow Area was also be analyzed for asbestos.

This task as described above was completed in Phase I. Phase II will include additional laboratory analyses for compounds of interest.
4.9 TASK 8 - EVALUATE PHASE I DATA
Upon completion of the Phase I field activities and after receipt of all analytical data, the site information and data was evaluated. A comprehensive Phase I Report detailing the procedures, data, and conclusions was prepared and submitted to the USEPA in August 1989 (Rizzo Associates, 1989a).

In the assessment of the Phase I data, a determination was made as to whether or not sufficient data had been obtained to satisfy the RI objectives, as needed for the feasibility study. Based on this assessment, additional investigative activities were defined as discussed in Section 3.0.

This task was completed in Phase I.

4.10 TASK 9 - FINALIZE PHASE II WORK PLAN
During the evaluation of Phase I data, additional data needs were identified. A Sampling and Analysis Plan will then be developed to address these needs. This work plan will be submitted to the EPA for approval. The Work Plan has been reviewed and revised as appropriate and a Sampling and Analysis Plan (SAP) has been developed. This revised Work Plan and the SAP are being submitted to the USEPA; these submittals constitutes completion of the task.

4.11 TASK 10 - PHASE II FIELD ACTIVITIES
Upon approval of the revised Work Plan and SAP, subcontractors will be procured as needed and sampling teams will be mobilized to carry out the tasks required for Phase II.

4.12 TASK 11 - EVALUATE PHASE II DATA
Data from Phase II field activities will be summarized and combined with Phase I data to evaluate the extent of contamination, the concentration of the contaminants, and the pathways of migration.
4.13 TASK 12 - PERFORM ENDANGERMENT ASSESSMENT

The objective of the Endangerment Assessment (EA) is to assess potential impacts on public health, welfare or the environment from releases resulting from past activities at the Hunterstown Road Site. There are two components of the EA process which apply to this site. The components are as follows:

- Baseline Endangerment Assessment, and
- Remedial Alternatives Endangerment Assessment.

The baseline EA will address the potential human health and environmental impacts associated with the site under the no-action alternative. The no-action alternative assumes that no corrective actions take place at the site and that no restrictions are placed on the future use of the site. The evaluation of the no-action alternative is required under Section 300.68(f)(v) of the National Contingency Plan. By conducting this baseline assessment, Westinghouse will be able to identify if remedial actions are appropriate and it will provide a basis for determining the increase in degree of safety from remediation. The baseline EA will focus only on potential exposures that are related to past site activities.

The second component of the overall EA is a discussion on the increased degree of safety possible through implementation of various remedial alternatives. Also, the short-term risk resulting from the implementation of remedial actions will also be considered. If the baseline EA determines that human health and environmental risks are acceptable under current conditions, endangerment assessment of various remedial alternatives will not be performed.

4.13.1 Baseline Assessment Methodology

It is Westinghouse's intent that the EA be a continuous process, where as new information is generated by other Phase II activities the EA will be adjusted and modified. The baseline EA for the Hunterstown Road Site will consist of four tasks.

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The tasks are as follows:

- Selection of compounds of interest (COI),
- Exposure assessment,
- Toxicity assessment, and
- Risks assessment.

Based on past studies and Phase I, several of these tasks have been initiated.

4.13.1.1 Compounds of Interest: Previous sampling at and in the vicinity of the site have detected various compounds. As detailed in the Phase I Report, several compounds have been selected as COI. The compounds vary by area and matrix. The COI compounds regardless of area and matrix are as follows:

- Trichloroethene,
- 1,1-Dichloroethene,
- 1,1,1-Trichloroethane,
- Tetrachloroethene
- 1,2 Dichloroethene
- Trichloroethane
- Copper
- Zinc
- Chromium
- Lead

The selection of the COI was based on observed concentrations and frequency of occurrence. Toxicity of the compounds was also considered in the determination of COI.

4.13.1.2 Exposure Assessment: The objective of this task is to identify actual or potential routes of exposure and characterize the magnitude of the exposure to the receptors. This task will only consider exposure related to COI from the site. Each exposure scenario will include:
- Source of compound,
- Transport route,
- Possible receptors,
- Likely exposure routes (ingestion, inhalation, or direct contact),
- Concentrations at potential receptors, and
- Estimation of daily intake.

Where concentrations have not been measured at the potential exposure points, estimates of concentrations will be made. The estimate of daily intake will be based on frequency and duration of exposure.

4.13.1.3 Toxicity Assessment: In this task, critical toxicity values will be identified for each COI. These toxicity values will be combined with the intake values. For humans, toxicity data will be presented in the following forms:

- For carcinogens, the carcinogenic potency factor, in the units (mg/kg/day)⁻¹;
- For noncarcinogens, the estimated reference dose (RFD) in the units mg/kg/day (formerly called acceptable daily intake, or ADI).

In addition to critical toxicity values, any applicable or relevant and appropriate requirements (ARARs) that have been established for the compounds of interest will be identified. Currently, USEPA guidelines consider maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) developed under the Safe Drinking Water Act, federal ambient water quality criteria (AWQC), national ambient air quality standards (NAAQS), and state environmental standards to be some of the standards or criteria that are potential ARARs for use in risk assessment at Superfund sites. Section 4.13.2 discusses preliminary site-specific ARARs for the Hunterstown Road Site.
Assessments will be conducted separately for each exposure pathway and for each source, when appropriate. Results will be presented separately for the "average case" and the "plausible maximum or worst case" exposure assumptions. The assessment for each exposure pathway will include a discussion of the uncertainties in the estimates.

In addition, the potential impact of the site on non-human populations will be evaluated as appropriate. This evaluation may include endangered species, critical habitats, and valued natural resources, as well as application of USEPA's Ambient Water Quality Criteria to aquatic life in the surface water courses that drain the Hunterstown Road Site.

4.13.1.4 Risk Assessment: In accordance with the procedures developed by USEPA for EA the potential effects on human health will be assessed where possible by comparing concentrations found at or near the site with ARARs that have been developed. For example, groundwater concentrations of COI will be compared to the MCLs developed under the Safe Drinking Water Act. However, if suitable ARARs are not available for all of the COI and the exposure scenarios considered, a quantitative risk assessment will be performed.

Evaluation of the noncancerous health risks associated with the COI will be based primarily on a comparison of the estimated daily intake of the compound with appropriate critical toxicity values for the protection of human health. For potential carcinogens, the estimated cancer risks associated with exposure will be calculated using USEPA-derived cancer potency factors. Specifically, excess lifetime cancer risks will be obtained by multiplying the cancer potency factor by the daily intake of the compound under consideration.

4.13.2 ARARS for the Hunterstown Road Site
Section 300.68(e)(1) of the NCP and the CERCLA Compliance Policy requires the determination of the extent to which federal or state public health and environmental standards are applicable or relevant and
appropriate. The appropriate standards will be reviewed during Phase II and the FS. In addition, other federal or state advisories, criteria, and guidances will be examined to determine if they are relevant or appropriate during development of remedial action alternatives at the site. This section provides a preliminary identification of ARARs.

4.13.2.1 Resource Conservation and Recovery Act: Resource Conservation and Recovery Act (RCRA) regulates the treatment, storage, and disposal of hazardous wastes in incinerators, thermal treatment systems, other treatment units, waste piles, landfilling, and surface impoundments. These regulations are considered applicable to any contaminant disposal and treatment alternatives for remediation of the site. RCRA landfill requirements may apply to any wastes consolidated on site or otherwise disturbed by the investigation or remediation.

4.13.2.2 RCRA Groundwater Protection Standards: Although the site is not a RCRA facility, RCRA groundwater protection standards may be considered to be relevant and appropriate because some of the constituents in the groundwater were listed in 40CFR261 (Appendix VIII) and the constituents are present above background levels.

4.13.2.3 Primary and Secondary Drinking Water Standards: The Safe Drinking Water Act establishes maximum contaminant levels (MCLs) and maximum contaminant level goals (MCLGs) for parameters on the list of the primary drinking water standards. MCLs are enforceable standards, while MCLGs are non-enforceable health goals. Both are considered relevant and appropriate for assessing remedial alternatives.

The secondary drinking water standards control compounds that primarily affect its aesthetic qualities. The regulations are not enforceable but are intended to serve as guidelines.
4.13.2.4 USEPA Drinking Water Health Advisories: In accordance with USEPA guidance documents, health advisories are considered relevant for this project. The advisories will be used for endangerment assessment purposes.

4.13.2.5 Occupational Safety and Health Administration Requirements: Occupational safety and health requirements are applicable for workers conducting RI/FS activities and any remedial actions. OSHA requirements will be followed as applicable.

4.13.2.6 Clean Water Act: The water quality criteria developed under the Clean Water Act (CWA) delineate pollutant concentrations which, when not exceeded, protect human health and aquatic life. They are not enforceable but are considered relevant and appropriate for selection of remedial alternatives.

4.13.2.7 National Pollution Discharge Elimination System: Remedial alternatives requiring the discharge of treated water to surface water will have applicable discharge requirements. Although the groundwater pump and treat system currently operating at the facility has an NPDES permit, a permit modification for additional treated discharges to surface water may be required.

4.13.2.8 Transportation Requirements: Both RCRA and the U.S. Department of Transportation (DOT) regulate transport of hazardous waste/hazardous materials. RCRA requirements include tracking of waste shipments via completion of manifests. DOT requirements include packaging, shipper equipment, and placarding. Both RCRA and DOT regulations are considered applicable to any wastes shipped off site for laboratory analysis, treatment, or disposal.

4.13.2.9 National Emission Standards for Hazardous Air Pollutants: Emission standards have been promulgated by the USEPA under the Clean Air Act. The standards have been adopted by Pennsylvania and are enforced by PADER. The standards will be considered relevant during the remedial alternative selection.

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4.13.2.10 State Water Laws: Various Commonwealth of Pennsylvania laws, regulations, and rules concerning surface water may be applicable to the project and include the following:

- Clean Stream Laws,
- Water Resources Regulations,
- Discharge Elimination System Rules, and
- Water Quality (WQ) Standards.

These laws, regulations, rules, and standards will be reviewed in conjunction with federal surface water requirements and guidelines.

Rock Creek is considered a warm-water habitat under Pennsylvania WQ Standards. The standards are related to the maintenance and propagation of fish species, flora, and fauna indigenous to a warm-water habitat and are considered to be relevant to this project.

4.14 TASK 13 - PREPARE DRAFT REMEDIAL INVESTIGATION AND ENDANGERMENT ASSESSMENT REPORTS

This task will consist of preparing a draft report which provides a description of the RI field work, results, and an evaluation of the data. The key issues will include: source characterization, site hydrogeology, extent of contamination, and pathways of migration. In addition, this task will consist of preparing a draft EA report addressing potential impacts on public health, welfare, or environment associated with the site. The EA will include assessment of impacts under the no-action alternative and assessment of the increased degree of safety possible through implementation of various remedial alternatives.

4.15 TASK 14 - PREPARE FINAL REMEDIAL INVESTIGATION AND ENDANGERMENT ASSESSMENT REPORT

Following USEPA comments, the draft remedial investigation and endangerment assessment reports will be revised to address and/or incorporate review comments and issued as final reports.
4.16 TASK 15 - CONDUCT FEASIBILITY STUDY

A feasibility study will be conducted to develop and evaluate remedial alternatives for the Hunterstown Road site. The feasibility study will meet the requirements of the National Contingency Plan and Section 121 of the Superfund Amendments and Reauthorization Act (SARA) and will be based on EPA guidance for feasibility studies (USEPA, 1988). As part of the feasibility study, exposure, and environmental assessments will be conducted as appropriate. Site-specific remedial objectives will be developed which address soil, surface water, sediment, and groundwater contamination. Applicable or relevant and appropriate regulations (ARARs) on the state and federal level as described in Section 4.13.2 will be reviewed as part of the feasibility study.

According to the National Contingency Plan, at least one alternative will be developed for each of the following categories:

- Alternatives for off-site treatment or disposal; however, potential human and environmental exposures that may result during any excavation, transportation, and storage in an off-site landfill will be considered.

- Alternatives which attain public health and environmental requirements.

- Alternatives which exceed public health and environmental requirements.

- Alternatives which do not attain public health and environmental requirements, but reduce the present or future threats to public health and the environment.

- No-action alternative.

As the result of recent Superfund legislation, permanent on-site treatment remedial alternatives, innovative treatment technologies, and resource recovery technologies will all be considered, as appropriate, in the feasibility study.
An initial screening will be performed to eliminate alternatives which are not based on proven/acceptable technology; which are unreliable, ineffective, infeasible, extremely costly; or which pose public health or environmental problems. The need for additional field studies to evaluate site-specific remedial alternatives and/or treatability studies of remedial technologies will be evaluated based upon the results of the initial screening.

Alternatives remaining after the screening process will be evaluated in greater detail. Source control and groundwater remediation appear to be the primary concerns at the Hunterstown Road Site. Typically, two or three alternatives will be evaluated for each type of remedial action. Site data from the remedial investigation report will be used to develop the detailed evaluation. Additional data on methodology, equipment, and performance will be collected for each alternative. Comparisons will be made based on technical feasibility and the ability to reduce any environmental and public health impacts. Finally, preliminary cost estimates will be made for each alternative. These cost estimates will be subjected to a present worth and sensitivity analyses for comparison purposes.

4.17 TASK 16 - ADDITIONAL FIELD STUDIES
It may be determined that additional field studies in addition to those already identified (Section 3.0) are necessary in order to fully evaluate certain site-specific remedial alternatives which remain after initial screening. Additional field studies may include field interviews, field observations, and sampling and analysis activities. Only additional data required for completion of the remedial alternatives evaluation will be collected. Work plans and schedules will be established for these studies, and the studies will be carried out in such a manner as to minimize any delays to the overall project schedule.
4.18 TASK 17 - TREATABILITY STUDIES

It may be necessary to conduct treatability studies to determine design parameters and to verify the efficiency of some of the proposed remedial alternatives which remain after initial screening. The results from treatability studies (bench- and/or pilot-scale testing) as appropriate would be used to evaluate the applicability and effectiveness of potential remedial treatment technologies. As discussed in detail in the SAP (Rizzo Associates, 1989b), a treatability investigation to aid in assessing the appropriateness of a groundwater pump and treat system will be conducted as part of Phase II.

4.19 TASK 18 - PREPARE DRAFT FEASIBILITY STUDY REPORT

A draft report will be prepared that provides a discussion of the objectives of the feasibility study and a description of the alternatives that have been identified and screened. Standards, permits, and other regulatory requirements will be presented. Criteria for screening of initial alternatives will be discussed. The results of the screening, any additional field studies, treatability studies, and the detailed evaluation of selected alternatives will be presented.

Recommendations will be made based on technical feasibility, environmental considerations, and estimated cost. The draft feasibility study report will be submitted to the USEPA for review.

4.20 TASK 19 - PREPARE FINAL FEASIBILITY STUDY REPORT

Following USEPA comments, the draft feasibility study will be revised to address and/or incorporate review comments into a final feasibility study report.

4.21 TASK 20 - PREPARE CONCEPTUAL DESIGN

The conceptual design will provide basic engineering and scheduling components related to the implementation of the recommended remedial action. This may include technical descriptions of processes, design criteria, equipment and utility requirements, data needs, construction cost ranges, and preliminary site drawings and process flow diagrams.
5.0 PROJECT SCHEDULE

The project schedule from the initiation of Phase II through concept design for the Hunterstown Road Site is presented on Figure 5-1. Based upon the scope of Phase II, the schedule provides for the submittal of the draft RI Report covering both Phase I and Phase II and the draft Endangerment Assessment Report 10.5 months from authorization to proceed with Phase II of the RI. The schedule also provides for submittal of the draft Feasibility Study Report within five months of receiving USEPA approval of the Final RI and Endangerment Assessment Reports.

The current schedule, assuming very prompt USEPA review and turnaround of submittals, is for the preparation and submittal of the draft Feasibility Study Report 18 months after receipt of approval from the agencies to initiate Phase II. In the event that off-site access agreements are not obtained within 30 days of the approval of this revised Work Plan and the Sampling and Analysis Plan, Westinghouse will notify the USEPA regarding both the lack of, and efforts to obtain, such agreements within 45 days of the approval of the plans.
REFERENCES


Pennsylvania Department of Environmental Resources, Harrisburg Office, Files pertaining to the Hunterstown Road Site.


Shealer, Frederick M., Personal conversations concerning past disposal activities.

Westinghouse Electric Corporation, Gettysburg Elevator Plant, Files containing meeting notes, waste records, plant drawings, and newspaper articles.
Westinghouse Electric Corporation, Gateway Center, Pittsburgh, Files containing correspondence, sampling data and removal orders.

TABLES
### TABLE 2-1.
DATA ON GETTYSBURG MUNICIPAL WELLS

<table>
<thead>
<tr>
<th>Well No.</th>
<th>Well Location</th>
<th>Well Depth</th>
<th>Well Yield</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Behind water works on March Creek</td>
<td>550'</td>
<td>emergency use only</td>
<td>Installation 1954, very hard water, artesian at times</td>
</tr>
<tr>
<td>2</td>
<td>Just west of Warner Hospital</td>
<td>500'</td>
<td>not used</td>
<td>Installed in 1968 unused due to TCE and chlordane contamination. Contamination not attributed to Westinghouse plant</td>
</tr>
<tr>
<td>3</td>
<td>0.25 mi NE of water works</td>
<td>550'</td>
<td>200 gpm</td>
<td>placed in service in 1972</td>
</tr>
<tr>
<td>4</td>
<td>0.5 mi NNE of water works</td>
<td>655'</td>
<td>120 gpm</td>
<td>under construction in 1977; water zones at 72', 22', 262', 513', 562', 587' below ground surface</td>
</tr>
<tr>
<td>5</td>
<td>Rte 30, 1 mi E of downtown Gettysburg</td>
<td>420'</td>
<td>250 gpm</td>
<td>placed in service 4/24/84; water zones at 100', 200', 260', 320' below ground surface</td>
</tr>
<tr>
<td>6</td>
<td>Delap Ave., 0.2 mi NW of downtown Gettysburg</td>
<td>900'</td>
<td>not used</td>
<td>closed due to TCE contamination in 1986. Contamination not attributed to Westinghouse plant</td>
</tr>
<tr>
<td>7</td>
<td>Rte 34, 0.7 mi N of downtown Gettysburg</td>
<td>900'</td>
<td>not used</td>
<td>Unused due to sulphates, total dissolved solids and manganese; drilled July 1985, tested August 1985 and January 1986</td>
</tr>
</tbody>
</table>

Note: See Figure 2-3 for well locations map  
<table>
<thead>
<tr>
<th>Date</th>
<th>Sampler</th>
<th>Waste</th>
<th>Soil</th>
<th>Surface Water/ Ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/14/83</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/19-21/83</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/28/84</td>
<td>NUS for EPA</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2/23/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/13-14/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/27-28/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/29/84</td>
<td>OH Materials</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/24/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/10/84</td>
<td>NUS for EPA*</td>
<td>3</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>5/21/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/1/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/14/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/10/84</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/21/84</td>
<td>Culligan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/28/85</td>
<td>NUS for EPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/6/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4/17/85</td>
<td>Weston for EPA</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>4/24/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/20/85</td>
<td>NUS for EPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/5/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/21/85</td>
<td>Weston for EPA</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>11/19/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/25/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/9/85</td>
<td>PaDER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/14/86</td>
<td>Weston for EPA</td>
<td><em>2</em></td>
<td><em>3</em></td>
<td><em>7</em></td>
</tr>
</tbody>
</table>

**TOTALS** 35 10 33 76

*Five samples from this group are not included because locations are indeterminate: junk pile (soil and water), field auger, leachate soil, and filled hole.*
## Table 2-3.
### Summary of Waste Sampling

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Test</th>
<th>No. of Samples</th>
<th>No. of Detections</th>
<th>Compound</th>
<th>Range in Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/28/84</td>
<td>Lagoon</td>
<td>RCRA Organics</td>
<td>3</td>
<td>2</td>
<td>Flashpoint 1,4-dichlorobenzene</td>
<td>57°-48°C 81,000 ppb 34,000 ppb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4,4 DDT di-n-butyl phthalate</td>
<td>10,000 ppb</td>
</tr>
<tr>
<td>3/29/84</td>
<td>Lagoon</td>
<td>pH</td>
<td>27</td>
<td>27</td>
<td>-</td>
<td>2.8-9.58 70°-85°C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashpoint</td>
<td>27</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP Tox</td>
<td>16</td>
<td>3</td>
<td>lead</td>
<td>5.5-95 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cyanide</td>
<td>27</td>
<td>0</td>
<td>-</td>
<td>D.L. 5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sulfide</td>
<td>27</td>
<td>0</td>
<td>-</td>
<td>D.L. 10 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acid E</td>
<td>30</td>
<td>0</td>
<td>-</td>
<td>D.L. 25 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B-N E</td>
<td>30</td>
<td>1</td>
<td>naphthalene bis-phthalate</td>
<td>1,700 ppb 290 ppb</td>
</tr>
<tr>
<td>3/29/84</td>
<td>Lagoon</td>
<td>Purgeable Organics</td>
<td>30</td>
<td>4</td>
<td>benzene chloroform 1,1-DCA 1,1-DCE</td>
<td>38-110 ppb 17-130 ppb 150-890 ppb 16-16,000 ppb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>13</td>
<td>ethyl benzene methyl chloride TCA TCE toluene</td>
<td>110-100,000 ppb 29-&gt;90,000 ppb 89-410 ppb 11-17,000 ppb</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>16</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>12</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3/29/84</td>
<td>Lagoon</td>
<td>Pesticides</td>
<td>30</td>
<td>0</td>
<td>-</td>
<td>D.L. 10 ppb</td>
</tr>
<tr>
<td>3/29/84</td>
<td>Lagoon</td>
<td>PCBs</td>
<td>30</td>
<td>0</td>
<td>-</td>
<td>D.L. 10 ppb</td>
</tr>
</tbody>
</table>
### TABLE 2-3. (CONTINUED)

**SUMMARY OF WASTE SAMPLING**

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Test</th>
<th>No. of Samples</th>
<th>No. of Detections</th>
<th>Compound</th>
<th>Range in Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/29/84</td>
<td>Lagoon</td>
<td>Inorganics</td>
<td>30</td>
<td>4</td>
<td>antimony</td>
<td>5.4-93 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>7</td>
<td>arsenic</td>
<td>12-49 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>1</td>
<td>beryllium</td>
<td>2.6 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>3</td>
<td>cadmium</td>
<td>2.6-8.0 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>27</td>
<td>chromium</td>
<td>8.4-4,600 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>25</td>
<td>copper</td>
<td>2.1-9,900 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>20</td>
<td>lead</td>
<td>5.8-25,000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>3</td>
<td>mercury</td>
<td>.64-3.4 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>17</td>
<td>nickel</td>
<td>1.1-270 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>1</td>
<td>silver</td>
<td>62 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>30</td>
<td>zinc</td>
<td>.68 - 79,000 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
<td>1</td>
<td>cyanide</td>
<td>13 ppm</td>
</tr>
</tbody>
</table>

5/14/86    Borrow Area Asbestos | 2   | 2 | amosite asbestos | 70%

Note: D.L. Detection Limit
**TABLE 2-4**  
**STRESSED VEGETATION AREA SOIL SAMPLES**  
**SUMMARY OF ANALYTICAL RESULTS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS</th>
<th>SAMPLE DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Moisture</strong></td>
<td>%</td>
<td>SV-1</td>
</tr>
<tr>
<td>Moisture%</td>
<td>43.3</td>
<td>18.9</td>
</tr>
</tbody>
</table>

**TAL Inorganics**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS</th>
<th>SAMPLE DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>mg/kg</td>
<td>16800</td>
</tr>
<tr>
<td>Antimony</td>
<td>mg/kg</td>
<td>92</td>
</tr>
<tr>
<td>Arsenic</td>
<td>mg/kg</td>
<td>ND</td>
</tr>
<tr>
<td>Barium</td>
<td>mg/kg</td>
<td>1100</td>
</tr>
<tr>
<td>Beryllium</td>
<td>mg/kg</td>
<td>ND</td>
</tr>
<tr>
<td>Calcium</td>
<td>mg/kg</td>
<td>11800</td>
</tr>
<tr>
<td>Chromium</td>
<td>mg/kg</td>
<td>8590</td>
</tr>
<tr>
<td>Cobalt</td>
<td>mg/kg</td>
<td>ND</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/kg</td>
<td>2820</td>
</tr>
<tr>
<td>Iron</td>
<td>mg/kg</td>
<td>12500</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/kg</td>
<td>54300</td>
</tr>
<tr>
<td>Magnesium</td>
<td>mg/kg</td>
<td>1360</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg/kg</td>
<td>155</td>
</tr>
<tr>
<td>Mercury</td>
<td>mg/kg</td>
<td>1.5</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/kg</td>
<td>11</td>
</tr>
<tr>
<td>Potassium</td>
<td>mg/kg</td>
<td>723</td>
</tr>
<tr>
<td>Sodium</td>
<td>mg/kg</td>
<td>300</td>
</tr>
<tr>
<td>Vanadium</td>
<td>mg/kg</td>
<td>37</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/kg</td>
<td>547</td>
</tr>
<tr>
<td>Cyanide</td>
<td>mg/kg</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**TCL Volatiles**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS</th>
<th>SAMPLE DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>ug/kg</td>
<td>53</td>
</tr>
<tr>
<td>Toluene</td>
<td>ug/kg</td>
<td>ND</td>
</tr>
<tr>
<td>Methylene Chloride</td>
<td>ug/kg</td>
<td>ND</td>
</tr>
<tr>
<td>1,1-Dichloroethane</td>
<td>ug/kg</td>
<td>11</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>ug/kg</td>
<td>194</td>
</tr>
<tr>
<td>Trans-1,2-Dichloroethene</td>
<td>ug/kg</td>
<td>ND</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ug/kg</td>
<td>37</td>
</tr>
<tr>
<td>Tetrachloroethene</td>
<td>ug/kg</td>
<td>129</td>
</tr>
</tbody>
</table>

**TCL Pesticides**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS</th>
<th>SAMPLE DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDD</td>
<td>ug/kg</td>
<td>229</td>
</tr>
<tr>
<td>DDT</td>
<td>ug/kg</td>
<td>670</td>
</tr>
</tbody>
</table>
### TABLE 2-4
(Continued)

<table>
<thead>
<tr>
<th>a. Target Analyte List (TAL) and Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. &quot;mg/kg&quot; indicates milligrams per kilogram or parts per million (ppm); &quot;ug/kg&quot; indicates micrograms per kilogram or parts per billion (ppb); results reported on dry-weight basis.</td>
</tr>
<tr>
<td>d. &quot;ND&quot; indicates parameter was not detected above quantitation limits.</td>
</tr>
</tbody>
</table>
### Table 2-5

**Summary of Soil Sampling**

<table>
<thead>
<tr>
<th>Date Collected</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/10/84</td>
<td>Lagoon-stained soil</td>
<td>NUS</td>
<td>Organics</td>
<td>Phenol (3 ppm), benzoic acid (29 ppm), 4- ( \text{methylphenol (1.4 ppm)}, ) 1,4-dichlorobenzene (1.2 ppm), Naphthalene (2 ppm), aniline (2.3 ppm), 4-chloroaniline (24 ppm), TCA (2.8%), 1,1-DCE (&lt;0.4%), 1,2-DCE (9.3%), ethyl benzene (0.8%), toluene (2.9%) TCE (24%), o-xylene (2%).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Aluminum (0.6%), chromium (0.1%), barium (0.03%), beryllium (1.4 ppm) cobalt (5.6 ppm), copper (0.2%), iron (1.1%), nickel (5.6 ppm), manganese (0.05%), zinc (0.06%), vanadium (24.5 ppm), arsenic (2.4 ppm), antimony (1.15 ppm), mercury (0.18 ppm), tin (3.5 ppm), cadmium (0.35 ppm), lead (0.7%).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other Inorganics</td>
<td>Cyanide (1.2 ppm).</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Drum area Shealer Backyard Soil</td>
<td>NUS</td>
<td>Organics</td>
<td>Di-n-butyl phthalate (DNQ); 1,2-DCE (35 ppb) ethyl benzene (DNQ), methylene chloride (DNQ) benz (a) anthracene (840 ppb), benz (a) pyrene (&lt;1406 ppm) benz (2) fluoranthene (&lt;1406 ppb), chrysene (110 ppb) pyrene (&lt;903 ppb).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Aluminum (1%), chromium (20.2 ppm), barium (DNQ) beryllium (2.2 ppm), cobalt (18.9 ppm), copper (DNQ) iron (3.1%), nickel (16.6 ppm), manganese (0.1%), zinc (60.5 ppm), vanadium (44.5 ppm), arsenic (8.4 ppm), selenium (0.1 ppm), cadmium (0.14 ppm), lead (6.5 ppm).</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Collected</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/17/85</td>
<td>Soil between lagoon and E stream</td>
<td>Weston-Sper</td>
<td>VOA</td>
<td>Benzene (ND); bromodichloromethane (ND); bromoform (ND); methylbromide (ND); carbon tetrachloride (ND); chlorobenzene (ND); ethylchloride (ND); 2-chloroethylvinylether (ND); chloroform (ND); methylchloride (ND), dibromochloromethane (ND); dichlorobenzenes (ND); 1,1-DCA (ND); 1,2-DCA (ND); 1,1-DCE (ND); 1,2-DCE (280 ppb); 1,2-dichloropropane (ND); 1,3-dichloropropene (ND); ethylbenzene/xylenes (ND); methylene chloride (ND); 1,1,2,2-tetrachloroethane (ND); PCE (ND); toluene (ND); 1,1,1-TCA (140 ppb); 1,1,2-TCA (ND); TCE (ND); Trichlorofluoromethane (ND); vinyl chloride (ND).</td>
</tr>
<tr>
<td>10/21/85</td>
<td>Soil from lagoon area</td>
<td>Weston-Sper</td>
<td>VOA</td>
<td>Chloromethane (ND 800 ppm); bromomethane (ND 400 ppm); dichlorodifluoromethane (ND 200 ppm); vinylchloride (ND 80 ppm); chloroethane (ND 80 ppm); methylene chloride (ND 200 ppm); trichlorofluoromethane (ND 200 ppm); 1,1-DCE (ND 40 ppm); 1,1-DCA (ND 40 ppm); 1,2-DCE (ND 40 ppm); chloroform (ND 40 ppm); 1,2-DCA (ND 40 ppm) 1,1,1-TCA (ND 80 ppm); carbon tetrachloride (ND 80 ppm); Bromodichloromethane (ND 80 ppm); 1,2-dichloropropene (ND 40 ppm); 1,3-trans dichloropropene (ND 200 ppm); TCE (ND 80 ppm); bromochloromethane (ND 80 ppm); 1,1,2-TCA (ND 200 ppm); 1,3-Cis dichloropropene (ND 200 ppm); 2-chloroethylvinylether (ND 200 ppm); Bromoform (ND 400 ppm); 1,1,2,2-Tetrachloroethane (ND 400 ppm); PCE (ND 80 ppm); chlorobenzene (ND 40 ppm); dichlorobenzene (ND 40 ppm).</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Collected</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/21/85</td>
<td>Soil stressed vegetation area near cornfield</td>
<td>Weston-Sper</td>
<td>VOA</td>
<td>Metals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Beryllium (&lt;0.5 ppm); cadmium (1.9 ppm); chromium (0.1%); copper (0.1%); nickel (23.5 ppm); lead (0.5%); zinc (640 ppm); arsenic (3.6 ppm); silver (&lt;0.01 ppm); selenium (&lt;0.6 ppm); thallium (4.0 ppm); mercury (0.07 ppm); antimony (15 ppm).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Chloromethane (ND 800 ppm); bromomethane (ND 400 ppm); dichlorodifluoromethane (ND 220 ppm); vinylchloride (ND 80 ppm); chloroethane (ND 80 ppm); methylene chloride (ND 200 ppm); trichlorofluoromethane (ND 200 ppm); 1,1-DCE (ND 40 ppm); 1,1-DCA (ND 40 ppm); 1,2-DCE (ND 40 ppm); chloroform (ND 40 ppm); 1,2-DCA (ND 40 ppm); 1,1-TCA (ND 80 ppm); carbon tetrachloride (ND 80 ppm); Bromodichloromethane (ND 80 ppm); 1,2-dichloropropane (ND 40 ppm); 1,3-trans dichloropropene (ND 200 ppm); TCE (ND 80 ppm); bromochloromethane (ND 80 ppm); 1,1,2-TCA (ND 200 ppm); 1,3-Cis dichloropropene (ND 200 ppm); 2-chloroethylvinylether (ND 200 ppm); Bromoform (ND 400 ppm); 1,1,2,2-Tetrachloroethane (ND 400 ppm); PCE (ND 80 ppm); chlorobenzene (ND 40 ppm); dichlorobenzene (ND 40 ppm).</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/21/85</td>
<td>Soil stressed</td>
<td>Weston-Sper</td>
<td>VOA</td>
<td>Chloromethane (ND 800 ppm); bromomethane (ND 400 ppm); dichlorodifluoromethane (ND 200 ppm); vinylchloride (ND 80 ppm); chloroethane (ND 80 ppm); methylene chloride (ND 200 ppm); trichlorofluoromethane (ND 200 ppm); 1,1-DCE (ND 40 ppm); 1,1-DCA (ND 40 ppm); 1,2-DCE (ND 40 ppm); chloroform (ND 40 ppm); 1,2-DCA (ND 40 ppm); 1,1,1-TCA (ND 80 ppm); carbon tetrachloride (ND 80 ppm); Bromodichloromethane (ND 80 ppm); 1,2-dichloropropane (ND 40 ppm); 1,3-trans dichloropropene (ND 200 ppm); TCE (ND 80 ppm); bromochloromethane (ND 80 ppm); 1,1,2-TCA (ND 200 ppm); 1,3-Cis dichloropropene (ND 200 ppm); 2-chloroethylvinylether (ND 200 ppm); Bromoform (ND 400 ppm); 1,1,2-Tetrachloroethene (ND 400 ppm); PCE (ND 80 ppm); chlorobenzene (ND 40 ppm); dichlorobenzene (ND 40 ppm).</td>
</tr>
<tr>
<td></td>
<td>vegetation near lagoon</td>
<td></td>
<td></td>
<td>Metals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Beryllium (&lt;0.5 ppm); cadmium (1.6 ppm); chromium (360 ppm); copper (0.2%); nickel (18.8 ppm) lead (0.8%); zinc (190 ppm); arsenic (6.9 ppm); silver (&lt;0.01 ppm); selenium (&lt;0.6 ppm); thallium (3.0 ppm); mercury (0.06 ppm); antimony (13.5 ppm).</td>
</tr>
<tr>
<td>5/14/86</td>
<td>Soil stressed</td>
<td>Weston-Sper</td>
<td>Base neutral extractables</td>
<td>Di-n-butyl phthalate (2.7 ppm); butyl benzyl phthalate (910 ppb); bis (2-ethylhexyl) phthalate (9.1 ppm).</td>
</tr>
<tr>
<td></td>
<td>vegetation area</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Collected</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/14/86</td>
<td>Soil, stressed vegetation area, mound</td>
<td>Weston-Sper</td>
<td>Base neutral extractables</td>
<td>Di-n-butyl phthalates (4.9 ppm); butyl benzyl phthalate (1.5 ppm); bis (2-ethylhexyl) phthalate (1.1 ppm).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Antimony (&lt;22.6 ppm); arsenic (&lt;9.05 ppm); beryllium (&lt;9.04 ppm); cadmium (&lt;2.26 ppm); chromium (22 ppm); copper (0.3%); lead (0.7%); magnesium (&lt;1.14 ppm); nickel (12 ppm); selenium (&lt;4.53 ppm); silver (&lt;9.05 ppm); thallium (&lt;9.05 ppm); zinc (742 ppm).</td>
</tr>
<tr>
<td>5/14/86</td>
<td>Soil beneath ponded water outside lagoon fence</td>
<td>Weston-Sper</td>
<td>Base neutral extractables</td>
<td>Di-n-butyl phthalates (690 ppb); butyl benzyl phthalate (690 ppb); bis (2-ethylhexyl) phthalate (1.4 ppm).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Antimony (25.2 ppm); arsenic (4.55 ppm); beryllium (&lt;3.27 ppm); cadmium (&lt;0.82 ppm); chromium (0.2%); copper (0.3%); lead (0.9%); magnesium (&lt;0.36 ppm); nickel (20 ppm); selenium; (&lt;1.64 ppm); silver (&lt;3.27 ppm); thallium (&lt;3.27 ppm); zinc (0.1%).</td>
</tr>
</tbody>
</table>

Note: DNQ - Detected, not quantified  
ND - Not detected or below detection limit  
ND 40 ppm - Not detected, detection limit 40 ppm
### TABLE 2-6

**SOIL SAMPLES**  
**SUMMARY OF INORGANIC ANALYTICAL RESULTS**

<table>
<thead>
<tr>
<th>PARAMETER(a)</th>
<th>UNITS(b)</th>
<th>SS-1</th>
<th>SS-2</th>
<th>SS-3</th>
<th>SS-4</th>
<th>SS-5</th>
<th>SS-5D</th>
<th>SS-6</th>
<th>SS-7</th>
<th>SS-8</th>
<th>SS-BG</th>
<th>CORNFIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>%</td>
<td>13.2</td>
<td>23.3</td>
<td>20.8</td>
<td>22.2</td>
<td>17.4</td>
<td>19.2</td>
<td>17.3</td>
<td>18.3</td>
<td>17.3</td>
<td>22.5</td>
<td>23.0</td>
</tr>
<tr>
<td>TCL Inorganics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>mg/kg</td>
<td>22800</td>
<td>15300</td>
<td>12600</td>
<td>21300</td>
<td>17800</td>
<td>20200</td>
<td>16300</td>
<td>19800</td>
<td>11800</td>
<td>12500</td>
<td>12400</td>
</tr>
<tr>
<td>Arsenic</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>2</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Barium</td>
<td>mg/kg</td>
<td>100</td>
<td>91</td>
<td>560</td>
<td>170</td>
<td>150</td>
<td>190</td>
<td>240</td>
<td>950</td>
<td>340</td>
<td>64</td>
<td>7030</td>
</tr>
<tr>
<td>Beryllium</td>
<td>mg/kg</td>
<td>1.2</td>
<td>0.9</td>
<td>ND</td>
<td>0.8</td>
<td>ND</td>
<td>ND</td>
<td>0.6</td>
<td>0.6</td>
<td>0.7</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Cadmium</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>1.4</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>1.2</td>
</tr>
<tr>
<td>Calcium</td>
<td>mg/kg</td>
<td>2720</td>
<td>2140</td>
<td>6460</td>
<td>1900</td>
<td>1260</td>
<td>1410</td>
<td>1310</td>
<td>2200</td>
<td>1460</td>
<td>2030</td>
<td>11900</td>
</tr>
<tr>
<td>Chromium</td>
<td>mg/kg</td>
<td>47</td>
<td>72</td>
<td>313</td>
<td>36</td>
<td>34</td>
<td>45</td>
<td>34</td>
<td>36</td>
<td>62</td>
<td>22</td>
<td>65</td>
</tr>
<tr>
<td>Cobalt</td>
<td>mg/kg</td>
<td>22</td>
<td>16</td>
<td>11</td>
<td>32</td>
<td>11</td>
<td>14</td>
<td>15</td>
<td>22</td>
<td>18</td>
<td>14</td>
<td>169</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/kg</td>
<td>70</td>
<td>60</td>
<td>702</td>
<td>59</td>
<td>27</td>
<td>28</td>
<td>71</td>
<td>70</td>
<td>73</td>
<td>8</td>
<td>188</td>
</tr>
<tr>
<td>Iron</td>
<td>mg/kg</td>
<td>17000</td>
<td>30200</td>
<td>11900</td>
<td>25800</td>
<td>24100</td>
<td>33200</td>
<td>17500</td>
<td>19100</td>
<td>12000</td>
<td>18600</td>
<td>3300</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/kg</td>
<td>336</td>
<td>118</td>
<td>1770</td>
<td>62.0</td>
<td>38.5</td>
<td>31.1</td>
<td>173</td>
<td>246</td>
<td>241</td>
<td>28.0</td>
<td>6550</td>
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<tr>
<td>Magnesium</td>
<td>mg/kg</td>
<td>8090</td>
<td>3120</td>
<td>2730</td>
<td>3180</td>
<td>2950</td>
<td>3040</td>
<td>2200</td>
<td>2360</td>
<td>1700</td>
<td>2100</td>
<td>1770</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg/kg</td>
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<td>390</td>
<td>489</td>
<td>1980</td>
<td>734</td>
<td>745</td>
<td>580</td>
<td>791</td>
<td>972</td>
<td>1150</td>
<td>309</td>
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<tr>
<td>Mercury</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>0.51</td>
<td>0.22</td>
<td>0.12</td>
<td>0.09</td>
<td>0.35</td>
<td>0.17</td>
<td>0.24</td>
<td>ND</td>
<td>0.31</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/kg</td>
<td>24</td>
<td>13</td>
<td>21</td>
<td>15</td>
<td>13</td>
<td>16</td>
<td>13</td>
<td>22</td>
<td>12</td>
<td>9</td>
<td>294</td>
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<tr>
<td>Potassium</td>
<td>mg/kg</td>
<td>1020</td>
<td>847</td>
<td>871</td>
<td>1000</td>
<td>968</td>
<td>1190</td>
<td>1210</td>
<td>1380</td>
<td>629</td>
<td>645</td>
<td>1820</td>
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<tr>
<td>Selenium</td>
<td>mg/kg</td>
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<td>ND</td>
<td>0.76</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>Silver</td>
<td>mg/kg</td>
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<td>ND</td>
<td>1.3</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
</tr>
<tr>
<td>Sodium</td>
<td>mg/kg</td>
<td>69</td>
<td>140</td>
<td>240</td>
<td>77</td>
<td>85</td>
<td>110</td>
<td>60</td>
<td>150</td>
<td>ND</td>
<td>ND</td>
<td>2230</td>
</tr>
<tr>
<td>Vanadium</td>
<td>mg/kg</td>
<td>35</td>
<td>46</td>
<td>23</td>
<td>48</td>
<td>46</td>
<td>62</td>
<td>31</td>
<td>38</td>
<td>22</td>
<td>36</td>
<td>21</td>
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<tr>
<td>Zinc</td>
<td>mg/kg</td>
<td>129</td>
<td>56</td>
<td>585</td>
<td>123</td>
<td>77</td>
<td>89</td>
<td>133</td>
<td>200</td>
<td>123</td>
<td>41</td>
<td>2940</td>
</tr>
<tr>
<td>Cyanide</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>0.07</td>
<td>ND</td>
<td>N/A</td>
<td>(e)</td>
</tr>
</tbody>
</table>

---

**Notes:**

a. Target Analyte List (TAL) compounds not listed were not present in these samples above quantitation limits.

b. "mg/kg" indicates milligrams per kilogram or parts per million (ppm); results reported on dry-weight basis.


d. "ND" indicates parameter was not detected in the sample above quantitation limits.

e. "N/A" indicates sample not analyzed for this parameter.
<table>
<thead>
<tr>
<th>PARAMETER(a)</th>
<th>UNITS(b)</th>
<th>SAMPLE DESIGNATION(c)</th>
<th>CORNFIELD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SS-1</td>
<td>SS-2</td>
</tr>
<tr>
<td>TCL Volatiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Toluene</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Methylene Chloride</td>
<td>ug/kg</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Tetrachloroethene</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>TCL Semivolatiles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bis(2-ethylhexyl) Phthalate</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>TCL Pesticides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDT</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

---

**a.** Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.

**b.** "mg/kg" indicates milligrams per kilograms or parts per million (ppm); and "ug/kg" indicates micrograms per kilogram or parts per billion (ppb); results reported on a dry-weight basis.

**c.** Samples collected December 7, 1988 by Rizzo Associates.

"ND" indicates parameter was not detected in the sample above quantitation limits.

"N/A" indicates sample was not analyzed for this parameter.
## TABLE 2-8
POST-EXCAVATION COMPOSITE SOIL SAMPLES - DRUM BURIAL AREA 1
SUMMARY OF ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>PARAMETER (a)</th>
<th>UNITS (b)</th>
<th>1-COMP</th>
<th>2-COMP</th>
<th>3-COMP</th>
<th>4-COMP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TCL Inorganics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>mg/kg</td>
<td>24800</td>
<td>18800</td>
<td>27600</td>
<td>21900</td>
</tr>
<tr>
<td>Barium</td>
<td>mg/kg</td>
<td>112</td>
<td>133</td>
<td>159</td>
<td>185</td>
</tr>
<tr>
<td>Beryllium</td>
<td>mg/kg</td>
<td>2.11</td>
<td>1.57</td>
<td>1.83</td>
<td>1.97</td>
</tr>
<tr>
<td>Calcium</td>
<td>mg/kg</td>
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<td>2960</td>
<td>3460</td>
<td>2360</td>
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<tr>
<td>Chromium</td>
<td>mg/kg</td>
<td>33.5</td>
<td>25.4</td>
<td>31.7</td>
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<tr>
<td>Cobalt</td>
<td>mg/kg</td>
<td>22.3</td>
<td>31.4</td>
<td>26.8</td>
<td>27.1</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/kg</td>
<td>8.7</td>
<td>7.2</td>
<td>7.3</td>
<td>8.6</td>
</tr>
<tr>
<td>Iron</td>
<td>mg/kg</td>
<td>42800</td>
<td>35300</td>
<td>45200</td>
<td>50800</td>
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<td>Lead</td>
<td>mg/kg</td>
<td>9.54</td>
<td>9.78</td>
<td>13.2</td>
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<td>Magnesium</td>
<td>mg/kg</td>
<td>15600</td>
<td>11500</td>
<td>17000</td>
<td>17800</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg/kg</td>
<td>693</td>
<td>698</td>
<td>933</td>
<td>894</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/kg</td>
<td>40.9</td>
<td>44.7</td>
<td>46.3</td>
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<td>mg/kg</td>
<td>5180</td>
<td>2630</td>
<td>5460</td>
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<td>mg/kg</td>
<td>ND (d)</td>
<td>ND</td>
<td>ND</td>
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<td>Sodium</td>
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<td>372</td>
<td>326</td>
<td>232</td>
<td>197</td>
</tr>
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<td>Vanadium</td>
<td>mg/kg</td>
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<td>80.1</td>
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<tr>
<td>Zinc</td>
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<td>93.0</td>
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<td>111</td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>mg/kg</td>
<td>ND</td>
<td>0.036</td>
<td>ND</td>
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</tr>
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<td>Ethylbenzene</td>
<td>mg/kg</td>
<td>1.1</td>
<td>ND</td>
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<td>ND</td>
</tr>
<tr>
<td>Xylenes (total)</td>
<td>mg/kg</td>
<td>7.7</td>
<td>ND</td>
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<td>0.010</td>
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<tr>
<td>2-Butanone</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>0.099</td>
</tr>
<tr>
<td>Napthalene</td>
<td>mg/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>0.002</td>
</tr>
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</table>

a. Target Analyte List (TAL) and Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.
b. "mg/kg" indicates milligrams per kilograms or parts per million (ppm); results reported on dry-weight basis.
c. Samples collected April 13, 1989 by Rizzo Associates.
d. "ND" indicates parameter was not present in the sample above quantitation limits.
### TABLE 2-9

**POST-EXCAVATION SOIL SAMPLES - DRUM BURIAL AREA 1, SECTION 1**

**SUMMARY OF ANALYTICAL RESULTS**

<table>
<thead>
<tr>
<th>PARAMETER (a)</th>
<th>UNITS (b)</th>
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<th>1AD</th>
<th>1BS</th>
<th>1BD</th>
<th>1CS</th>
<th>1CD</th>
<th>1DS</th>
<th>1DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>%</td>
<td>27.5</td>
<td>23.4</td>
<td>18.0</td>
<td>18.1</td>
<td>20.1</td>
<td>19.8</td>
<td>21.1</td>
<td>26.3</td>
</tr>
<tr>
<td><strong>TCL Volatiles</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>ug/kg</td>
<td>28</td>
<td>39</td>
<td>ND  (d)</td>
<td>12</td>
<td>ND</td>
<td>75</td>
<td>ND</td>
<td>27000</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>12</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>4-Methyl-2-Pentanone</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>12</td>
<td>ND</td>
<td>ND</td>
</tr>
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<td>Toluene</td>
<td>ug/kg</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>2200</td>
<td>11000</td>
<td>ND</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>46000</td>
<td>20000</td>
</tr>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>1000000</td>
<td>300000</td>
<td>180000</td>
</tr>
<tr>
<td>Methylene Chloride</td>
<td>ug/kg</td>
<td>23</td>
<td>29</td>
<td>18</td>
<td>9.8</td>
<td>19</td>
<td>25</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>140</td>
<td>ND</td>
<td>ND</td>
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<td>Trans-1,2-Dichloroethene</td>
<td>ug/kg</td>
<td>63</td>
<td>7.8</td>
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<td>ND</td>
<td>ND</td>
<td>27</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
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<td>ND</td>
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<td>ND</td>
<td>15000</td>
<td>ND</td>
</tr>
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</table>

---

*(a) Volatile organic parameters in Target Compound List (TCL) not listed were not present in these samples above quantitation limits. Samples were analyzed for volatile organic compounds only.*

*(b) "ug/kg" indicates micrograms per kilogram or parts per billion (ppb); results reported on dry-weight basis.*

*(c) Samples collected April 13, 1989 by Rizzo Associates. For grab samples, the first two characters in sample name refer to sampling station shown on Figure 2-2. Third character is "S" for shallow sample or "D" for deep sample.*

*(d) "ND" indicates parameter was not present in the sample above quantitation limits. Quantitation limits for Samples 1DS and 1DD elevated by a factor of 1,000 and for Sample 1-COMP by a factor of 100 over CLP CRQLs.*
TABLE 2-10
POST-EXCAVATION SOIL SAMPLES - DRUM BURIAL AREA 1, SECTION 2
SUMMARY OF ANALYTICAL RESULTS

<table>
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<th>PARAMETER(a)</th>
<th>UNITS(b)</th>
<th>2AS</th>
<th>2AD</th>
<th>2BS</th>
<th>2BD</th>
<th>2CS</th>
<th>2CD</th>
<th>2DS</th>
<th>2DD</th>
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</thead>
<tbody>
<tr>
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<td>18.5</td>
<td>16.3</td>
<td>16.0</td>
<td>23.9</td>
<td>26.9</td>
<td>16.3</td>
<td>14.3</td>
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<tr>
<td><strong>TCL Volatiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ND(d)</td>
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<td>48</td>
<td>26</td>
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<td></td>
<td></td>
<td></td>
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<td>ND</td>
<td>ND</td>
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<td>48</td>
<td>93</td>
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<tr>
<td>4-Methyl-2-Pentanone</td>
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<td>93</td>
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<td>ND</td>
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<td>Methylene Chloride</td>
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<td>ND</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>ND</td>
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<tr>
<td>Trichloroethene</td>
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<td>23</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>13</td>
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</tbody>
</table>

**a.** Volatile organic parameters in Target Compound List (TCL) not listed were not present in these samples above quantitation limits. Samples were analyzed for volatile organic compounds only.  
**b.** "ug/kg" indicates micrograms per kilograms or parts per billion (ppb); results reported on dry-weight basis.  
**c.** Samples collected April 13, 1989 by Rizzo Associates. For grab samples, the first two characters in sample name refer to sampling station shown on Figure 2-2. Third character is "S" for shallow sample or "D" for deep sample.  
**d.** "ND" indicates parameter was not present in the sample above quantitation limits.
### Table 2-11

**Post-Excavation Soil Samples - Drum Burial Area 1, Section 3**

**Summary of Analytical Results**

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<th>Parameter (a)</th>
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<th>3BD</th>
<th>3CS</th>
<th>3CD</th>
<th>3DS</th>
<th>3DD</th>
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<tr>
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<td>14.5</td>
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<td>16.5</td>
<td>11.6</td>
<td>11.0</td>
<td>19.4</td>
<td>22.8</td>
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<td><strong>TCL Volatiles</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
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<td>94</td>
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<td>ND</td>
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<td>ND</td>
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<td>ND</td>
<td>23</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>7100</td>
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<tr>
<td>Xylenes (total)</td>
<td>ug/kg</td>
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<td>ND</td>
<td>8.7</td>
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<td>1500</td>
<td>68000</td>
<td>1700</td>
</tr>
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<td>Methylene Chloride</td>
<td>ug/kg</td>
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<td>ND</td>
<td>ND</td>
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<td>ND</td>
</tr>
<tr>
<td>1,1,2-Trichloroethane</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
<td>ND</td>
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</table>

**Notes:**

a. Volatile organic parameters in Target Compound List (TCL) not listed were not present in these samples above quantitation limits. Samples were only analyzed for volatile organic compounds.

b. "ug/kg" indicates micrograms per kilograms or parts per billion (ppb); results reported on dry-weight basis.

c. Samples collected April 13, 1989 by Rizzo Associates. For grab samples, the first two characters in sample name refer to sampling station shown on Figure 2-2. Third character is "S" for shallow sample or "D" for deep sample.

d. "ND" indicates parameter was not present in the sample above quantitation limits. Quantitation limits for Sample 3DD elevated by a factor of 5 and for Samples 3DD, 3CS, 3CD, and 3DS by a factor of 100 over CLP CRQLs.
### TABLE 2-12

**POST-EXCAVATION SOIL SAMPLES - DRUM BURIAL AREA 1, SECTION 4**

**SUMMARY OF ANALYTICAL RESULTS**

<table>
<thead>
<tr>
<th>PARAMETER (a)</th>
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<th>4AD</th>
<th>4BS</th>
<th>4BD</th>
<th>4CS</th>
<th>4CD</th>
<th>4DS</th>
<th>4DD</th>
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<tbody>
<tr>
<td>Moisture</td>
<td>%</td>
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<td>19.9</td>
<td>12.5</td>
<td>14.6</td>
<td>21.9</td>
<td>22.2</td>
<td>17.8</td>
<td>16.7</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>ug/kg</td>
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<td>25</td>
<td>ND</td>
<td>ND</td>
<td>220</td>
<td>490</td>
<td>36</td>
<td>36</td>
</tr>
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<td>ND</td>
<td>ND</td>
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</tr>
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<td>ND</td>
<td>ND</td>
<td>13</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
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<td>ND</td>
<td>ND</td>
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<td>4100</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>470000</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
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<td>Methylene Chloride</td>
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<td>ND</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>7.3</td>
<td>6.0</td>
<td>6.0</td>
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<td>ND</td>
</tr>
<tr>
<td>1,1,2-Trichloroethane</td>
<td>ug/kg</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>9.0</td>
<td>ND</td>
<td>19</td>
<td>16</td>
</tr>
</tbody>
</table>

**a.** Volatile organic parameters in Target Compound List (TCL) not listed were not present in the samples above quantitation limits. Samples were only analyzed for volatile organic compounds.

**b.** "ug/kg" indicates micrograms per kilograms or parts per billion (ppb); results reported on dry-weight basis.

**c.** Samples collected April 13, 1989 by Rizzo Associates. For grab samples, the first two characters in sample name refer to sampling station shown on Figure 2-2. Third character is "S" for shallow sample or "D" for deep sample.

**d.** "ND" indicates parameter was not present in the sample above quantitation limits. Quantitation limits for Sample 4CD elevated by a factor of 5 and for Samples 4BS and 4BD by a factor of 100 over CLP CRQLs.
TABLE 2-13
POST-EXCAVATION SOIL SAMPLES - DRUM BURIAL AREA 2
SUMMARY OF INORGANIC ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>PARAMETER(a)</th>
<th>UNITS(b)</th>
<th>SAMPLE DESIGNATION(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-COMP</td>
</tr>
<tr>
<td>Moisture</td>
<td>%</td>
<td>18.9</td>
</tr>
<tr>
<td>TCL Inorganics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum</td>
<td>mg/kg</td>
<td>30000</td>
</tr>
<tr>
<td>Barium</td>
<td>mg/kg</td>
<td>173</td>
</tr>
<tr>
<td>Beryllium</td>
<td>mg/kg</td>
<td>1.97</td>
</tr>
<tr>
<td>Calcium</td>
<td>mg/kg</td>
<td>2430</td>
</tr>
<tr>
<td>Chromium</td>
<td>mg/kg</td>
<td>28.4</td>
</tr>
<tr>
<td>Cobalt</td>
<td>mg/kg</td>
<td>16.0</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/kg</td>
<td>13.6</td>
</tr>
<tr>
<td>Iron</td>
<td>mg/kg</td>
<td>22900</td>
</tr>
<tr>
<td>Lead</td>
<td>mg/kg</td>
<td>15.8</td>
</tr>
<tr>
<td>Magnesium</td>
<td>mg/kg</td>
<td>8710</td>
</tr>
<tr>
<td>Manganese</td>
<td>mg/kg</td>
<td>533</td>
</tr>
<tr>
<td>Nickel</td>
<td>mg/kg</td>
<td>41.9</td>
</tr>
<tr>
<td>Potassium</td>
<td>mg/kg</td>
<td>2610</td>
</tr>
<tr>
<td>Sodium</td>
<td>mg/kg</td>
<td>222</td>
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<tr>
<td>Vanadium</td>
<td>mg/kg</td>
<td>41.9</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/kg</td>
<td>97.4</td>
</tr>
</tbody>
</table>

a. Target Analyte List (TAL) compounds not listed were not present in these samples above quantitation limits.

b. "mg/kg" indicates milligrams per kilogram or parts per million (ppm); results reported on a dry-weight basis.

c. Samples collected May 23, 1989 by Rizzo Associates.
TABLE 2-14
POST-EXCAVATION SOIL SAMPLES - DRUM BURIAL AREA 2
SUMMARY OF ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS (a)</th>
<th>1AS</th>
<th>1AD</th>
<th>1BS</th>
<th>1BD</th>
<th>1-COMP</th>
<th>2AS</th>
<th>2AD</th>
<th>2BS</th>
<th>2BD</th>
<th>2-COMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>%</td>
<td>21.2</td>
<td>19.8</td>
<td>16.6</td>
<td>19.3</td>
<td>18.9</td>
<td>21.1</td>
<td>21.0</td>
<td>25.3</td>
<td>25.6</td>
<td>22.5</td>
</tr>
<tr>
<td>TCL Volatiles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>ug/kg</td>
<td>720</td>
<td>940</td>
<td>12</td>
<td>ND</td>
<td>350</td>
<td>51</td>
<td>51</td>
<td>120</td>
<td>160</td>
<td>120</td>
</tr>
<tr>
<td>2-Butanone</td>
<td>ug/kg</td>
<td>460</td>
<td>500</td>
<td>ND</td>
<td>ND</td>
<td>200</td>
<td>190</td>
<td>320</td>
<td>27</td>
<td>67</td>
<td>230</td>
</tr>
<tr>
<td>4-Methyl-2-Pentanone</td>
<td>ug/kg</td>
<td>ND</td>
<td>62</td>
<td>ND</td>
<td>ND</td>
<td>12</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Xylenes</td>
<td>ug/kg</td>
<td>ND</td>
<td>90</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>1,1,2-Trichloroethane</td>
<td>ug/kg</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>7.4</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ug/kg</td>
<td>ND</td>
<td>86</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

a. Volatile organic compounds in Target Compound List (TCL) not listed were not present in these samples above quantitation limits. Samples were only analyzed for volatile organic compounds.
b. "ug/kg" indicates micrograms per liter or parts per billion (ppb).
c. Samples collected May 23, 1989 by Rizzo Associates. For grab samples, the first two characters in sample name refer to sampling station shown on Figure 2-3. Third character is "S" for shallow sample or "D" for deep sample.
d. "ND" indicates parameter was not detected above quantitation limits.
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/19/83</td>
<td>Lagoon puddles 5 to 16 yards downgradient</td>
<td>PaDER</td>
<td>VOA</td>
<td>Chloroethylene (1.1 ppm), Chloroethane (0.72 ppm), Dichloromethane (est 0.1 ppm), 1,1-DCE (0.18 ppm), 1,1-DCA (1.1 ppm), 1,2-DCE (3.1 ppm), TCA (1.9 ppm), TCE (0.12 ppm), 1,1,2-TCA (&lt;25 ppb)</td>
</tr>
<tr>
<td>12/19/83</td>
<td>Surface water E. Stream 60-80 yards upgradient of lagoon</td>
<td>PaDER</td>
<td>Acid and Base Neutral extractables</td>
<td>Metals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cadmium (0.2 ppb), Chromium (10 ppb), Copper (10 ppb), Iron (20 ppb), Lead (5. F ppb), Manganese (&lt;10 ppb), Nickel (10 ppb), Zinc (30 ppb)</td>
</tr>
<tr>
<td>12/19/83</td>
<td>Surface water E. Stream 40-50 yards downgradient of lagoon</td>
<td>PaDER</td>
<td>Acid and Base Neutral extractables</td>
<td>ND (1 ppb)</td>
</tr>
<tr>
<td>12/21/83</td>
<td>Surface water Tributary below dump site</td>
<td>PaDER</td>
<td>TCA Scan</td>
<td>TCA (8.0 ppb), TCE (20.0 ppb), PCE (ND)</td>
</tr>
<tr>
<td>1/12/84</td>
<td>Sediment E. Stream above culvert</td>
<td>PaDER</td>
<td>RCRA</td>
<td>Flash point (56° C)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,2-DCA (ND), 1,4-Dichlorobenzene (30 ppm), di-n-butyl phthalate (38 ppm), 4,4 ddt (16 ppm), trichloro fluoromethane (1 ppm), naphthalene (ND) ethyl benzene (ND), 1,1-DCA (ND), TCA (ND), Chloroethane (ND) TCE (1 ppm) benzene (ND), phenol (2.6 ppm), cyanide (0.86 ppm)</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12/84 (cont.)</td>
<td></td>
<td>Metals</td>
<td></td>
<td>Antimony (23.2 ppm), Arsenic (2.9 ppm), Cadmium (8.6%), Chromium (0.9 ppm), Copper (206 ppm), Lead (8.7 ppm), Nickel (7.4 ppm), Selenium (4.4 ppm), Zinc (53%)</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Ponded water on lagoon</td>
<td>NUS</td>
<td>Organics</td>
<td>Naphthalene (240 ppb), TCA (DNQ), Ethylbenzene (380 ppm), Toluene (38 ppm), Orthoxylene (0.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metals</td>
<td></td>
<td>Aluminum (21.8 ppm), Chromium (2.2 ppm), Barium (658 ppb), Copper (6.6 ppm), Iron (62.5 ppm), Manganese (6.24 ppm), Zinc (3.3 ppm), Cadmium (3.0 ppm), Lead (14.8 ppm)</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Subsurface E. Stream upgradient of lagoon</td>
<td>NUS</td>
<td>Organics</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metals</td>
<td></td>
<td>Aluminum (169 ppb), Iron (DNQ), Manganese (20.8 ppb)</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Sediment E. Stream upgradient of lagoon</td>
<td>NUS</td>
<td>Organics</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Metals</td>
<td></td>
<td>Aluminum (0.5%), Chromium (6.8 ppm), Barium (41.9 ppm), Beryllium (DNQ), Cobalt (4.3 ppm), Copper (DNQ), Iron (0.5%), Nickel (4.3 ppm), Manganese (341 ppm), Zinc (23.7 ppm), Vanadium (13.1 ppm), Arsenic (0.80 ppm), Selenium (0.15 ppm), Cadmium (0.11 ppm), Lead (13 ppm)</td>
</tr>
</tbody>
</table>

Source: Metcalf Study (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/10/84</td>
<td>Surface water</td>
<td>NUS</td>
<td>Organics</td>
<td>Dl-n-butyl Phthalate (DNQ) TCA (25 ppb), 1,2-DCE (35 ppb), TCE (330 ppb)</td>
</tr>
<tr>
<td></td>
<td>E. Stream</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>downgradient</td>
<td></td>
<td>Metals</td>
<td>Aluminium (271 ppb), Copper (DNQ), Iron (DNQ), Manganese (230 ppb), Zinc (129 ppb), Lead (DNQ)</td>
</tr>
<tr>
<td></td>
<td>of lagoon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/10/84</td>
<td>Sediment</td>
<td>NUS</td>
<td>Organics</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>E. Stream</td>
<td></td>
<td>Metals</td>
<td>Aluminium (0.7%), Chromium (258 ppm), Barium (13.9 ppm), Beryllium (2.1 ppm), Cobalt (25.1 ppm), Copper (380 ppm), Iron (3%) Nickel (14.5 ppm), Manganese (0.4%), Zinc (540 ppm), Vanadium (49 ppm), Arsenic (4.8 ppm), Cadmium (0.83 ppm), Lead (0.2%), Cyanide (0.30 ppm)</td>
</tr>
<tr>
<td></td>
<td>downgradient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>of lagoon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/10/84</td>
<td>Ponded Water</td>
<td>NUS</td>
<td>Organics</td>
<td>TCA (21 ppb), 1,1-DCA (25 ppb), 1,2-DCE (220 ppb), Toluene (DNQ), TCE (39 ppb), Carbon Disulfide (&lt;10 ppb), Ortho-xylene (DNQ)</td>
</tr>
<tr>
<td></td>
<td>drum area</td>
<td></td>
<td>Metals</td>
<td>Lead (DNQ), Aluminium (936 ppb), Copper (DNQ), Iron (7.2 ppm), Manganese (507 ppb), Zinc (DNQ)</td>
</tr>
<tr>
<td></td>
<td>Shealers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>backyard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR301387</td>
<td>Surface water</td>
<td>NUS</td>
<td>Organics</td>
<td>ND</td>
</tr>
<tr>
<td></td>
<td>W. Stream</td>
<td></td>
<td>Metals</td>
<td>Aluminium (415 ppb), Iron (DNQ), Manganese (31.1 ppb), Zinc (DNQ), Lead (DNQ)</td>
</tr>
<tr>
<td></td>
<td>upgradient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shealers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>backyard</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/10/84</td>
<td>Sediment W. Stream upstream of Shealers backyard</td>
<td>NUS</td>
<td>Organics</td>
<td>Methylene Chloride (DNQ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Aluminum (0.9%), Chromium (15.8 ppm), Barium (58 ppm), Beryllium (DNQ), Cobalt (24.7 ppm), Copper (DNQ), Iron (2.6%), Nickel (10.1 ppm), Manganese (700 ppm), Zinc (116.8 ppm), Vanadium (36.1 ppm), Arsenic (2.5 ppm), Mercury (0.16 ppm), Cadmium (DNQ), Lead (22.2 ppm)</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Surface water W. Stream downstream of Shealers backyard</td>
<td>NUS</td>
<td>VOA</td>
<td>TCA (430 ppb), 1,1-DCA (80 ppb), 1,1-DCE (6.0 ppb), 1,2-DCE (240 ppb); Methylene Chloride (DNQ), TCE (125 ppb); Vinyl chloride (&lt;5 ppb)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Aluminum (145 ppb); Beryllium (DNQ); Iron (2.4 ppm), Manganese (371 ppb); Zinc (DNQ); Silver (19.7 ppb), Lead (DNQ)</td>
</tr>
<tr>
<td>5/10/84</td>
<td>Sediment W. Stream downstream of Shealer's backyard</td>
<td>NUS</td>
<td>VOA</td>
<td>TCA (13 ppb) 1,1-DCA (&lt;3.6 ppb); 1,2-DCE (10 ppb) Methylene Chloride (DNQ)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Metals</td>
<td>Aluminum (1.2%); Chromium (17 ppm); Barium (51.5 ppm) Beryllium (0.9 ppm); Cobalt (6.9 ppm); Copper (DNQ); Iron (1.6%); Nickel (9.8 ppm); Manganese (229 ppm); Zinc (28.9 ppm); Vanadium (33.9 ppm) Arsenic (3.2 ppm)</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/17/85</td>
<td>Surface water upper lagoon</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Benzene (ND); Bromochloromethane (ND); Bromoform (ND); Methyl Bromide (ND); Carbon tetrachloride (ND); Chlorobenzene (ND); Ethyl Chloride (ND); 2-Chloroethylvinyether (ND); Chloroform (ND); Methylchloride (ND); Dibromochlorobenzene (ND); Dichlorobenzene (ND); 1,1-DCA (320 ppb); 1,2-DCA (ND); 1,1-DCE (ND); 1,2-DCE (4300 ppb); 1,2-Dichloropropane (ND) 1,3-Dichloropropane (ND); Ethylbenzene/xylene (94 ppb); Methylene Chloride (ND); 1,1,2,2, -Tetrachloroethane (ND); PCE (ND); toluene (70 ppb); 1,1,1-TCA (890); 1,1,2-TCA (ND); TCE (1200 ppb); Trichlorofluoromethane (ND); Vinyl Chloride (ND)</td>
</tr>
<tr>
<td>4/17/85</td>
<td>Surface water lower lagoon</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Benzene (ND); Bromodichloromethane (ND); Bromoform (ND); Methyl Bromide (ND); Carbon tetrachloride (ND); Chlorobenzene (ND); Ethylchloride (10 ppm); 2-Chloroethylvinyether (ND); Chloroform (ND); Methylchloride (ND); Dibromochloromethane (ND); Dichlorobenzene (ND); 1,1-DCA (90 ppb); 1,2-DCA (ND); 1,1-DCE (ND); 1,2-DCE (710 ppb); 1,2-Dichloropropane (ND); 1,3-Dichloropropane (ND); Ethylbenzene/xylene (ND); Methylchloride (ND); 1,1,2,2 -Tetrachloroethane (ND); PCE (ND); Toluene (7 ppb); 1,1,1 - TCA (280 ppb); 1,1,2 - TCA (ND); TCE (410 ppb); Trichlorofluoromethane (ND); Vinyl chloride (ND)</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
TABLE 2-15 (Continued)

<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/17/85</td>
<td>Surface water E. Stream upgradient of lagoon</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Benzene (ND); Bromochloromethane (ND); Bromoform (ND); MethylBromide (ND); Carbon tetrachloride (ND) Chlorobenzenes (ND); Ethylchloride (ND); 2 - Chloroethylvinylether (ND); Chloroform (ND); Methylchloride (ND); Dibromochloromethane (ND); Dichlorobenzene (ND); 1,1 - DCA (ND); 1,2 - DCA (ND); 1,1 - DCE (ND); 1,2-DCE (ND); 1,2 - Dichloropropane (ND); 1,3 Dichloropropane (ND); 1,1,2,2 - Tetrachloroethane (ND); PCE (ND); Toluene (ND); 1,1,1 TCA (ND); 1,1,2 - TCA (ND); Ethylbenzenexylenes (ND); Methylchloride (ND)</td>
</tr>
<tr>
<td>4/17/85</td>
<td>Surface water E. Stream downgradient of lagoon culvert</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Benzene (ND); Bromodichloromethane (ND); Bromoform (ND); Methylbromide (ND); Carbontetrachloride (ND); Chlorobenzene (ND); Ethylchloride (ND); 2 - Chloroethylvinyl ether (ND) Chloroform (ND); Methylchloride (ND); Dibromochloromethane (ND); Dichlorobenzene (ND); 1,1 - DCA (ND); 1,2 - DCA (ND); 1,1 - DCE (ND); 1,2-DCE (73 ppb) 1,2-Dichloropropane (ND); 1,3 - Dichloropropane (ND); 1,1,2,2 - Tetrachloroethane (ND); PCE (ND); Toluene (ND); 1,1,1 TCA (ND); 1,1,2 TCA (ND); TCE (170 ppb); Tetrachlorofluoromethane (ND); Vinyl chloride (ND); Ethylbenzenexylenes (ND); Methylchloride (ND)</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/21/85</td>
<td>Surface water Pond near buried drums in Shealer's backyard</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Chloromethane (ND 2 ppb); Bromomethane (ND 10 ppb); Dichlorodifluoromethane (ND 5 ppb); Vinyl chloride (ND 2 ppb); Chloroethane (ND 2 ppb); Ethylene Chloride (6.3 ppb); Trichlorofluoromethane (ND 5 ppb); 1,1 - DCE (ND ppb); 1,1, - DCA (ND 1 ppb); 1,2 - trans-DCE (ND1 ppb); Chloroform (ND 2 ppb); 1,2 - DCA (ND 1 ppb); 1,1,1 - TCA (ND 2 ppb); Carbon tetrachloride (ND 2 ppb) Bromodichloromethane (ND 1 ppb); 1,2 Dichloropropane (ND 5 ppb); Trans-1,3 - Dichloropropene (ND 5 ppb); TCE (ND 2 ppb); Bromochloromethane (ND 5 ppb); 1,1,2-TCA (ND 5 ppb); cis-1,3-Dichloropropane (ND 5 ppb); 2-Chloroethylvinylether (ND 5 ppb); Bromoform (ND 10 ppb); 1,1,2,2-Tetrachloroethane (ND 10 ppb); PCE (ND 2 ppb); Chlorobenzene (ND 1 ppb); Dichlorobenzene (ND 1 ppb)</td>
</tr>
<tr>
<td>10/21/85</td>
<td>Surface water West stream near buried drums Shealer's backyard</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>Chloromethane (ND 20 ppb); Bromomethane (ND 100 ppb); Dichlorodifluoromethane (ND 50 ppb); Vinyl chloride (ND 20 ppb); Chloroethane (ND 20 ppb); Ethylene Chloride (66 ppb); Trichlorofluoromethane (ND 50 ppb); 1,1 - DCE (ND 10 ppb); 1,1, - DCA (3100 ppb); 1,2 - trans-DCE (ND 1100 ppb); Chloroform (ND 20 ppb); 1,2 - DCA (10 ppb); 1,1,1 - TCA (1500 ppb); Carbon tetrachloride (ND 20 ppb) Bromodichloromethane</td>
</tr>
</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/ Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/21/85</td>
<td>Surface water W. Stream downgradient of buried drums Shealer's backyard</td>
<td>Weston Sper</td>
<td>VOA</td>
<td>(ND 20 ppb); 1,2-Dichloropropane (ND 10 ppb); Trans-1,3-Dichloropropane (ND 50 ppb); TCE (ND 20 ppb); Bromochloromethane (ND 50 ppb); 1,1,2-TCA (ND 50 ppb); cis 1,3-Dichloropropane (ND 50 ppb); 2-Chloroethylvinylether (ND 100 ppb); Bromoform (ND 100 ppb); 1,1,2,2-Tetrachloroethane (ND 100 ppb); PCE (ND 20 ppb); Chlorobenzene (ND 10 ppb); Dichlorobenzene (ND 10 ppb)</td>
</tr>
<tr>
<td>Date Sampled</td>
<td>Location/Matrix</td>
<td>Sampler</td>
<td>Test</td>
<td>Results</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>10/21/85</td>
<td>Surface water</td>
<td>Weston</td>
<td>VOA</td>
<td>Chloromethane (ND 2 ppb); Bromomethane (ND 10 ppb); Dichlorodifluoromethane (ND 5 ppb); Vinyl chloride (ND 2 ppb); Chloroethane (ND 2 ppb); Ethylene Chloride (ND 5 ppb); Trichlorofluoromethane (ND 5 ppb); 1,1 - DCE (ND 1 ppb); 1,1 - DCA (ND 1 ppb); 1,2 - trans DCE (ND 1 ppb); Chloroform (ND 2 ppb); 1,2 - DCA (ND 1 ppb); 1,1,1 - TCA (ND 2 ppb); Carbon tetrachloride (ND 2 ppb); Bromodichloromethane (ND 2 ppb); 1,2-Dichloropropane (ND 1 ppb); Trans-1,3-Dichloropropane (ND 5 ppb); TCE (ND 2 ppb); Bromochloromethane (ND 5 ppb); 1,1,2-TCA (ND 5 ppb); cis-1,3-Dichloropropane (ND 5 ppb); 2-Chloromethylvinylether (ND 5 ppb); Bromoform (ND 10 ppb); 1,1,2,2-Tetrachloroethane (ND 10 ppb); PCE (ND 2 ppb); Chlorobenzene (ND 1 ppb); Dichlorobenzene (ND 1 ppb)</td>
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<tr>
<td>10/21/85</td>
<td>Sediment</td>
<td>Weston</td>
<td>VOA</td>
<td>Chloromethane (ND 2 ppb); Bromomethane (ND 10 ppb); Dichlorodifluoromethane (ND 5 ppb); Vinyl chloride (ND 2 ppb); Chloroethane (ND 2 ppb); Ethylene Chloride (ND 5 ppb); Trichlorofluoromethane (ND 5 ppb); 1,1 - DCE (ND 1 ppb); 1,1 - DCA (ND 1 ppb); 1,2 - trans DCE (ND 1 ppb); Chloroform (ND 2 ppb); 1,2 - DCA (ND 1 ppb); 1,1,1 - TCA (ND 2 ppb); Carbon tetrachloride (ND 2 ppb); Bromodichloromethane (ND 2 ppb); 1,2-Dichloropropane (ND 1 ppb); Trans-1,3-Dichloropropane (ND 5 ppb); TCE (ND 2 ppb); Bromochloromethane (ND 5 ppb); 1,1,2-TCA (ND 5 ppb); cis-1,3-Dichloropropane (ND 5 ppb); 2-Chloromethylvinylether (ND 5 ppb); Bromoform (ND 10 ppb); 1,1,2,2-Tetrachloroethane (ND 10 ppb); PCE (ND 2 ppb); Chlorobenzene (ND 1 ppb); Dichlorobenzene (ND 1 ppb)</td>
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Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
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<th>Test</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td>5/14/86</td>
<td>Surface water E. Stream upgradient of lagoon</td>
<td>Weston</td>
<td>Base Neutral Extractables</td>
<td>Data Not Available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sper</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Metals</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Antimony (&lt;0.025 ppm); Arsenic (&lt;0.01 ppm); Beryllium (&lt;0.005 ppm);</td>
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<tr>
<td></td>
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<td></td>
<td>Cadmium (&lt;0.003 ppm); Chromium (0.065 ppm); Copper (0.895 ppm); Lead</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td>(1.14 ppm); Mercury (&lt;0.0005 ppm); Nickel (&lt;0.01 ppm); Selenium (&lt;0.005</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ppm); Silver (&lt;0.01 ppm); Thallium (&lt;0.01 ppm); Zinc (0.342 ppm)</td>
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<tr>
<td>5/14/86</td>
<td>Sediment E. Stream upgradient of lagoon</td>
<td>Weston</td>
<td>Base Neutral Extractables</td>
<td>di-n-butyl Phthalate (6.9 ppm) Butyl</td>
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<td></td>
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<td>Sper</td>
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<td>Benzyl Phthalate (860 ppb); bis (2-ethylhexyl); Phthalate (27 ppb)</td>
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<td>Metals</td>
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<td></td>
<td>Antimony (&lt;6.93 ppm); Arsenic (3.05 ppm); Beryllium (&lt;2.77 ppm);</td>
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<td>Cadmium (&lt;0.693 ppm); Chromium (15.8 ppm); Copper (17 ppm); Lead</td>
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<td>(74.8 ppm); Mercury (&lt;0.347 ppm); Nickel (11 ppm); Selenium (&lt;1.39 ppm)</td>
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<td></td>
<td>Silver (&lt;2.77 ppm); Thallium (&lt;2.77 ppm); Zinc (0.1%)</td>
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</tbody>
</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/14/86</td>
<td>Surface water E. Stream downgradient of lagoon</td>
<td>Weston Sper</td>
<td>Base Neutral Extractables</td>
<td>Data Not Available</td>
</tr>
<tr>
<td></td>
<td>Metals</td>
<td></td>
<td></td>
<td>Antimony (&lt;0.025 ppm); Arsenic (&lt;0.01 ppm); Beryllium (&lt;0.005 ppm); Cadmium (&lt;0.003 ppm); Chromium (&lt;0.01 ppm); Copper (0.037 ppm); Lead (0.17 ppm); Mercury (&lt;0.0005 ppm); Nickel (&lt;0.01 ppm); Selenium (&lt;0.005 ppm); Silver (&lt;0.01 ppm); Thallium (&lt;0.01 ppm); Zinc (0.108 ppm)</td>
</tr>
<tr>
<td>5/14/86</td>
<td>Sediment E. Stream downgradient of lagoon</td>
<td>Weston Sper</td>
<td>Base Neutral Extractables</td>
<td>di-n-butyl Phthalate (9.6 ppm) Butyl Benzyl Phthalate (650 ppb); bis (2-ethylhexyl) Phthalate (310 ppb)</td>
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<tr>
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<td>Metals</td>
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<td>Antimony (&lt;7.7 ppm); Arsenic (&lt;3.08 ppm); Beryllium (&lt;3.08 ppm); Cadmium (&lt;0.77 ppm); Chromium (0.2%); Copper (425 ppm); Lead (0.1%); Magnesium (&lt;0.039 ppm); Nickel (12 ppm); Selenium (&lt;1.54 ppm); Silver (&lt;3.08 ppm); Thallium (&lt;3.08 ppm); Zinc (375 ppm)</td>
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</table>

Source: Metcalf & Eddy (1987)
<table>
<thead>
<tr>
<th>Date Sampled</th>
<th>Location/Matrix</th>
<th>Sampler</th>
<th>Test</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/14/86</td>
<td>Sediment E. Stream at Culvert below lagoon</td>
<td>Weston Sper</td>
<td>Base Neutral Extractables</td>
<td>di-n-butyl Phthalate (2.2 ppm) Butyl Benzyl Phthalate (2.7 ppm); bis (2-ethylhexyl) Phthalate (810 ppb)</td>
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<td>Antimony (14 ppm); Arsenic (2.35 ppm); Beryllium (&lt;2.28 ppm); Cadmium (&lt;0.571 ppm); Chromium (0.2%); Copper (0.1%); Lead (0.9%); Magnesium (&lt;0.29 ppm); Nickel (16 ppm); Selenium (&lt;1.14 ppm); Silver (&lt;2.28 ppm); Thallium (&lt;3.42 ppm); Zinc (431 ppm)</td>
</tr>
<tr>
<td>5/14/86</td>
<td>Surface water Pond outside of lagoon fence</td>
<td>Weston Sper</td>
<td>Base Neutral Extractables</td>
<td>Data Not Available</td>
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<td>Antimony (&lt;0.03 ppm); Arsenic (&lt;0.01 ppm); Beryllium (&lt;0.005 ppm); Cadmium (&lt;0.003 ppm); Chromium (0.065 ppm); Copper (0.895 ppm); Lead (1.14 ppm); Mercury (&lt;0.0005 ppm); Nickel (&lt;0.01 ppm); Selenium (&lt;0.005 ppm); Silver (&lt;0.01 ppm); Thallium (&lt;0.01 ppm); Zinc (0.342 ppm)</td>
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Source: Metcalf et al. (1987)
### TABLE 2-16
SURFACE WATER SAMPLES
SUMMARY OF ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>PARAMETER (a)</th>
<th>UNITS (b)</th>
<th>SAMPLE DESIGNATION (c)</th>
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</thead>
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<tr>
<td></td>
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<td>SW-1</td>
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<tr>
<td><strong>TCL Inorganics</strong></td>
<td></td>
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</tr>
<tr>
<td>Aluminum</td>
<td>mg/l</td>
<td>1</td>
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<tr>
<td>Calcium</td>
<td>mg/l</td>
<td>25.7</td>
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<tr>
<td>Iron</td>
<td>mg/l</td>
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<tr>
<td>Lead</td>
<td>mg/l</td>
<td>0.010</td>
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<tr>
<td>Magnesium</td>
<td>mg/l</td>
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<tr>
<td>Manganese</td>
<td>mg/l</td>
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<tr>
<td>Potassium</td>
<td>mg/l</td>
<td>5.1</td>
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<tr>
<td>Sodium</td>
<td>mg/l</td>
<td>14.4</td>
</tr>
<tr>
<td>Zinc</td>
<td>mg/l</td>
<td>0.04</td>
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<tr>
<td><strong>TCL Volatiles</strong></td>
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<tr>
<td>Methylene Chloride</td>
<td>ug/l</td>
<td>ND</td>
</tr>
<tr>
<td>1,1-Dichloroethane</td>
<td>ug/l</td>
<td>ND</td>
</tr>
<tr>
<td>1,1,1-Trichloroethane</td>
<td>ug/l</td>
<td>8</td>
</tr>
<tr>
<td>Trans-1,2-Dichloroethene</td>
<td>ug/l</td>
<td>18</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ug/l</td>
<td>24</td>
</tr>
</tbody>
</table>

---

**Notes:**

a. Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.
b. "mg/l" indicates milligrams per liter or parts per million (ppm); and "ug/l" indicates micrograms per liter or parts per billion (ppb).
d. "ND" indicates parameter was not present in the sample above quantitation limits.
TABLE 2-17

SEDIMENT SAMPLES
SUMMARY OF ANALYTICAL RESULTS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>UNITS</th>
<th>SD-1</th>
<th>SD-2</th>
<th>SD-3</th>
<th>SD-3D</th>
<th>SD-4</th>
<th>SD-5</th>
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<tbody>
<tr>
<td>Moisture</td>
<td>%</td>
<td>39.2</td>
<td>22.3</td>
<td>22.1</td>
<td>28.9</td>
<td>36.6</td>
<td>34.5</td>
</tr>
</tbody>
</table>

**TCL Inorganics**

- **Aluminum**
  - mg/kg: 12900, 9100, 15800, 18600, 21300, 17300
- **Arsenic**
  - mg/kg: 3, 14, 6, 4, 3, 6
- **Barium**
  - mg/kg: 100, 100, 80, 60, 110, 110
- **Beryllium**
  - mg/kg: 1.0, 1.3, ND (d), ND, 0.9, 1.1
- **Calcium**
  - mg/kg: 2600, 2550, 2700, 2550, 1810, 2610
- **Chromium**
  - mg/kg: 110, 49, 31, 37, 28, 50
- **Cobalt**
  - mg/kg: 10, 30, 9, 8, ND, 20
- **Copper**
  - mg/kg: 160, 55, 12, 20, 14, 52
- **Iron**
  - mg/kg: 13600, 53000, 24600, 25300, 22100, 43400
- **Lead**
  - mg/kg: 704, 96.4, 19.6, 23.9, 23.7, 194
- **Magnesium**
  - mg/kg: 2930, 3290, 4030, 4430, 2900, 5270
- **Manganese**
  - mg/kg: 556, 1900, 582, 323, 375, 1100
- **Mercury**
  - mg/kg: 0.07, ND, ND, ND, ND, ND
- **Nickel**
  - mg/kg: 12, 19, 13, 14, 11, 18
- **Potassium**
  - mg/kg: 691, 566, 1050, 900, 1100, 947
- **Sodium**
  - mg/kg: ND, 140, ND, ND, ND, ND
- **Vanadium**
  - mg/kg: 31, 60, 40, 58, 46, 66
- **Zinc**
  - mg/kg: 219, 138, 53, 48, 50, 261

**TCL Volatiles**

- **Acetone**
  - ug/kg: 33, ND, 26, 42, 32, 46
- **Methylene Chloride**
  - ug/kg: 13, ND, 10, 10, ND, 18
- **Trans-1,2-Dichloroethene**
  - ug/kg: 10, ND, ND, ND, ND, 50
- **Trichloroethene**
  - ug/kg: 28, ND, ND, ND, ND, 81

**TCL Semivolatiles**

- **Butyl Benzyl Phthalate**
  - mg/kg: ND, ND, 3.30, 0.84, ND, ND
- **Di-n-Octyl Phthalate**
  - mg/kg: ND, ND, 2.02, 0.52, ND, ND

---

a. Target Analyte List (TAL) and Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.
b. "mg/kg" indicates milligrams per kilogram or parts per million (ppm).
d. "ND" indicates parameter was not detected above quantitation limits.
# Table 2-18

## Off-Site Well Locations and Addresses

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<thead>
<tr>
<th>Name</th>
<th>Lot Number</th>
<th>Street Number</th>
<th>Street Name</th>
<th>Phone Number</th>
<th>Well Casing Depth</th>
<th>Water Depth</th>
<th>Well Number of Analyses</th>
</tr>
</thead>
<tbody>
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<td>Aikins, Wm L.</td>
<td>13 A</td>
<td>535</td>
<td>Hunterstown</td>
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<td>Allen, Robert M.</td>
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TABLE 2-18
(Continued)

* Footnotes:

1) Lot numbers refer to tax map numbers assigned to residents at
each site. In some cases these have been changed so that no
duplication of numbers occurs within a site.

2) Previous tenant at 485 Hunterstown Road was Gary Sparks up
until June 1986. This residence shares a well with James M.
Shealer 495 Hunterstown, lot 39 F.

3) Probably the "white farmhouse apartments". Residence
contained on section of lot 45 closest to Western Maryland
Railroad line. Property owned by Donald C. Waddell,
340 Hunterstown, Gettysburg 334-3587.

4) Property owned by J.K. Lott; home address 646 Hunterstown,
Gettysburg 334-3560.

5) Property co-owned by John K. Lott, William Lott and E. Robert
Lott.

6) Residence contained on section of lot 51 north of lot 5 (Melvin
E. Trexler) on the west side of Hunterstown Road.

7) Current address: Centennial Avenue Ext., Hanover 632-2662.

8) Current address: unknown; not in July 1986 phone book. Possibly
still residing at this address.

9) Property owned by R. Phiel; home address 3097 Baltimore,
Gettysburg 334-3586.

10) Sometimes referred to as the "Kilgore residence". Additional
reference to a 75 foot well. Property owned by Donald C.
Waddell, 340 Hunterstown, Gettysburg 334-3587.

11) Residence contained on section of lot 39 closest to the
Old Harrisburg Road.

12) Property owned by F.M. Shealer; home address 510 Hunterstown,
Gettysburg 334-3565.

13) Listed in July 1986 phone book as "F.A. Shealer".

14) This residence shares a well with Stephen C. Fissel 485
Hunterstown, lot 39 E.

15) Residence at 485 Hunterstown Road up to June 1986. This
residence shares a well with James M. Shealer 495 Hunterstown,
lot 39 F.

16) Also the residence of Margaret Taughinbaugh.

17) Donald C. Waddell is sometimes referred to as "Donald Waddell,
Sr.". July 1986 phone book lists a "Mrs. Caryl Waddell" at
340 Hunterstown. This residence possibly shares a well with
Samuel C. Waddell 318 Hunterstown, lot 44.

18) Donald M. Waddell is sometimes referred to as "Donald Waddell,
Jr.".

19) Property owned by Donald C. Waddell, 340 Hunterstown,
Gettysburg 334-3587. This residence possibly shares a well
Donald C. Waddell 340 Hunterstown, lot 44 A.

Source: Metcalf & Eddy (1987)
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<td>8  5 85</td>
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<td>VOA</td>
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</table>

Source: Metcalf & Eddy (1987)
TABLE 2-19
(Continued)

- Footnotes:

1) Lot numbers refer to tax map numbers assigned to residences at each site. In some cases these have been changed so that no duplication of numbers occurs within a site.

2) The chemical tests listed are defined as follows:
   - VOA: Full range of volatile organic compounds with detection limits of approximately 0.5 to 1.0 ug/l.
   - SCAN: "ICE scan" which analyzes for TCE, 1,1,1-TCA and PCE only; detection limits same as above.
   - Note: a blank space indicates that the compound in question was tested for but found to be at or below the detection limit. "NA" means that the compound was not tested for.

3) The contaminants listed are defined as follows:
   - TCE: Trichloroethylene
   - 1,1,1-TCA: 1,1,1-Trichloroethane
   - 1,1-DCE: 1,1-Dichloroethylene
   - 1,1-DCA: 1,1-Dichloroethane
   - PCE: Perchloroethylene or Tetrachloroethylene
   - Note: "ethylene" and "ethene" are the same exact compound with formula CH₂=CH₂.

4) Explanation of "Data Source File" Headings:
   - Culligan: Sample originally collected by Culligan T.M.T. Enterprises Inc., Bingham PA.
   - HUS: Sample originally collected by HUS Corporation.
   - PADER: Sample originally collected by Pennsylvania Dept. of Environmental Resources.
   - Ramp (Westinghouse): Data from the "Remedial Action Master Plan" report and originally supplied by Westinghouse Corporation.

5) Previous tenant at this residence was Gary Sparks up until June 1986. This residence also shares a well with James M. Shealer 495 Hunterstown Road, lot 39 F. All data for G. Sparks and J.M. Shealer are included here.

6) The values of 500 parts per billion for TCE and 1,1,1-TCA are estimates.

7) Type of chemical test performed is unknown.

8) Residence in the "white farmhouse apartments" with one well. Tenants are Lee M. Heflin 230-A Shealer Road and Vernon Heflin 230-B Shealer Road. Property is owned by Donald C. Waddell 340 Hunterstown, Gettysburg 334-3587.

9) Residence contained on section of lot 51 north of lot 5 (Melvin E. Hessler) on the west side of Hunterstown Road.

10) McDermott Concrete Inc. owns two wells. Both were tested and volatile organics were not detected in either.

11) Sometimes referred to as the "Kidgore Residence". Property is owned by Donald C. Waddell 340 Hunterstown, Gettysburg 334-3587.

12) This residence shares a well with Stephen C. Fisel 485 Hunterstown lot 39 E. See that heading for all data.

13) Resident at lot 39 E (485 Hunterstown) up to June 1986. Current resident at this address is Stephen C. Fisel. Please see that name for tabulation of all data from this well.

14) Also the residence of Margaret Vaughnbaugh.

15) Donald C. Waddell is sometimes referred to as "Donald Waddell, Sr.". This residence possibly shares a well with Samuel C. Waddell 318 Hunterstown, lot 44.

16) This residence possibly shares a well with Donald C. Waddell 340 Hunterstown, lot 44 A.

Source: Metcalf & Eddy (1987)
## Table 2-20

**Shallow Groundwater Samples**

**Summary of Analytical Results**

<table>
<thead>
<tr>
<th>Parameter (a)</th>
<th>Units (d)</th>
<th>MW-1A</th>
<th>MW-2A</th>
<th>MW-3A</th>
<th>MW-4A</th>
<th>MW-5A</th>
<th>MW-6A</th>
<th>MW-7A</th>
<th>MW-8A</th>
<th>MW-9A</th>
<th>MW-10A</th>
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<tr>
<td>Aluminum</td>
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<td>ND (d)</td>
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<td>ND</td>
<td>ND</td>
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<td>0.7</td>
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<td>ND</td>
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<td>ND</td>
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<td>57.7</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>Methylen Chloride</td>
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<td>ND</td>
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<td>ND</td>
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<td>ND</td>
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<td>10</td>
<td>1100</td>
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<td>91</td>
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<td>ND</td>
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TABLE 2-20  
(Continued)

a. Target Analyte List (TAL) and Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.
b. "mg/l" indicates milligrams per liter or parts per million (ppm) and "ug/l" indicates micrograms per liter or parts per billion (ppb).
d. "ND" indicates parameter was not detected above quantitation limits.
### TABLE 2-21

**DEEP GROUNDWATER SAMPLES**  
**SUMMARY OF ANALYTICAL RESULTS**

<table>
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<tr>
<th>PARAMETER(a)</th>
<th>UNITS (b)</th>
<th>MW-1B</th>
<th>MW-2B</th>
<th>MW-3B</th>
<th>MW-4B</th>
<th>MW-5B</th>
<th>MW-6B</th>
<th>MW-7B</th>
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<th>MW-8BD</th>
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</tr>
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<td>ND</td>
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<td>0.07</td>
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<td>1,1,1-Trichloroethane</td>
<td>ug/l</td>
<td>ND</td>
<td>1200</td>
<td>20</td>
<td>ND</td>
<td>22</td>
<td>130</td>
<td>550</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<tr>
<td>1,1-Dichloroethene</td>
<td>ug/l</td>
<td>ND</td>
<td>260</td>
<td>6</td>
<td>ND</td>
<td>7</td>
<td>10</td>
<td>180</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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<td>Trans-1,2- Dichloroethene</td>
<td>ug/l</td>
<td>ND</td>
<td>270</td>
<td>13</td>
<td>ND</td>
<td>120</td>
<td>52</td>
<td>19</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Trichloroethene</td>
<td>ug/l</td>
<td>ND</td>
<td>14000</td>
<td>100</td>
<td>ND</td>
<td>180</td>
<td>50</td>
<td>240</td>
<td>ND</td>
<td>ND</td>
<td>930</td>
<td>ND</td>
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<tr>
<td>Bis(2-Ethylhexyl) Phthalate</td>
<td>ug/l</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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---

a. Target Analyte List (TAL) and Target Compound List (TCL) compounds not listed were not present in these samples above quantitation limits.

b. "mg/l" indicates milligrams per liter or parts per million (ppm) and "ug/l" indicates micrograms per liter or parts per billion (ppb).


d. "ND" indicates parameter was not detected above quantitation limits.
LEGEND:

SS-5  COMPOSITE SOIL SAMPLE COLLECTED DECEMBER 6 OR 7, 1988.


GRID AREAS NOT SAMPLED DUE TO CONTACT WITH BURIED DRUM REMOVAL OPERATIONS.

GRID AREAS NOT SAMPLED DUE TO WOODS.

NOTES:

1. SAMPLE SS-1 TAKEN FROM BORROW AREA.
2. SAMPLE SS-2 TAKEN FROM LAGOON AREA.
3. SAMPLES SS-3, SS-4, AND SS-5 TAKEN FROM SOUTH CORNFIELD.
4. SAMPLES SS-6, SS-7 AND SS-8 TAKEN FROM NORTH CORNFIELD.
5. SAMPLES SV-1 THROUGH SV-5 TAKEN FROM STRESSED VEGETATION AREA.

SCALE

200 0 200 FEET

REFERENCE:

TOPOGRAPHY PREPARED BY EASTERN MAPPING CO., PITTSBURGH, PENNSYLVANIA, SCALE: 1" = 100'
(MAY, 1984).

FIGURE 2-4

SOIL SAMPLE LOCATIONS
HUNTERSTOWN ROAD SITE R/FT
STRABANE TOWNSHIP, ADAMS COUNTY, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

Paul C. Rizzo Associates, Inc.
CONSULTANTS
# PROJECT SCHEDULE

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
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<tr>
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<tr>
<td>PHASE II FIELD INVESTIGATION (2)</td>
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<td>LABORATORY ANALYSIS</td>
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<td>PERFORM ENDANGERMENT ASSESSMENT</td>
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<td>PERFORM FS</td>
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<tr>
<td>PREPARE CONCEPTUAL DESIGN</td>
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</table>

(1) INITIATION OF SCHEDULE IS CONTINGENT UPON RECEIPT OF ACCESS AGREEMENTS TO OFF SITE SAMPLING LOCATIONS AND OBTAINING DOCUMENTED UNCONDITIONAL APPROVAL OF THE SAMPLING AND ANALYSIS PLAN AND THE REVISED WORK PLAN.

(2) DOES NOT INCLUDE PERFORMANCE OF PUMP TEST/TREATABILITY STUDY.