1.1 Contaminated Soil

Contaminated soil and sediment adjacent to the landfill will be consolidated into the landfill. As part of the pre-remedial design investigation, additional soil samples will be taken around both Area A and Area C as shown on Figure 1. These sampling positions are positioned around the perimeter of each known PCB contaminated soil area to further define the horizontal and vertical extent of PCBs greater than 10 ppm and to determine the necessary extent of excavation. At each of the eight sampling locations an upper and lower sample will be taken and analyzed for PCBs. The upper sample will be taken from a depth of 0 to 6 inches below the surface and the lower sample will be taken from a depth of 12 to 18 inches unless the silty clay observed in many previous cores is encountered within two feet of grade elevation. The lower sample will be collected of the top 3 inches of silty clay if the peat/clay interface is within two feet of grade. One background soil sample will be collected in an area near, but not impacted by, activities associated with the Ludlow Landfill. The soil sample will be analyzed for PCBs to determine the background concentration in the soil.

Areas A, B, and C

Two areas adjacent to the landfill with varying degrees of PCB contamination, designated Areas A and C, and shown on Figure 1, have been identified at the site. Area B, identified in the RI/FS as the southern lobe of the landfill, will be covered by the low permeability RCRA cover as described below.

Area A is characterized by four samples with PCB concentrations of 1.0 to 90 ppm. Area C is characterized by two samples with PCB concentrations between 14 and 97 ppm. Additional sampling to better define the areal and vertical extent of the contamination will be implemented as part of preliminary design.

Areas A and C will be excavated and placed on Area B prior to placement of the RCRA cover over the landfill. All soils with PCB contamination greater than 10 ppm will be removed. Once the final cover is installed, the contaminated soils will be effectively encapsulated with the other landfill wastes beneath the cap.

Leachate Ponds

The leachate ponds adjacent to the southern portion of the landfill are contained by earthen beams. The water from leachate ponds will be pumped to tank trucks for transportation to the Oneida County POTW or pretreated prior to transport to the POTW. Leachate pretreatment is discussed in a later Section. After removal of the leachate, the sediments in the ponds will be excavated to the underlying natural soils and placed on top of the landfill (Area B) prior to the installation of the final cover. Excavation will extend laterally only slightly (2-3 feet) beyond the physical extent of the ponds. Excavation will extend vertically to the natural silty clay underlying the leachate ponds. The clay has consistently demonstrated non-detectable PCBs. The construction methods that will be used to excavate the leachate ponds will be presented in the 30 percent design submission.

Confirmation Sampling and Grading

After the contaminated soils have been excavated from the leachate ponds and Areas A and C, samples will be taken from 0 to 6 inches below the base of the excavated areas and tested for residual PCB contamination. These confirmation samples will be taken at a rate of one sample per

2500 square feet. Areas continuing to exhibit PCB concentrations greater than 10 mg/kg will be excavated for at least an additional 12 inches and retested to determine that PCB concentrations are not greater than 10 mg/kg.

After verification of the removal of PCB-contaminated soils, the excavated areas will be graded with clean fill to promote positive drainage and seeded and mulched to prevent erosion.

A work zone (Figure 1) around the contaminated areas will be established to perform the remedial activities described above. Elements of these proposed remedial activities are expected - to impact portions of the wetland area. The wetland was delineated in the field by NYS DEC personnel and subsequently surveyed by DUNN personnel. The limits of the wetland are shown on Plate 1. Potential impacts will be addressed in the final design plan. Details for typical controls for items such as runon, runoff, sedimentation and work area ingress and egress will be presented in the final design stage. Additionally, prior to initiation of construction activities at the site, an air monitoring plan for control of fugitive dust and organic vapors during construction will be prepared and approved by the state. This plan will be prepared during the 30 percent design submission for this project.

1.2 Final Grading

Prior to placement of the final cover, including the gas collection layer, the surface of the landfill will be graded so that there is positive drainage from the top of the landfill with no closed depressions. Top slopes will have a minimum gradient of 5 percent. Side slopes will have a maximum gradient of 33 percent. Based on the existing site grades shown on Plate 1, the top of the landfill should be approximately elevation 1340 feet.

Erosion control design specifications will be provided in the 30 percent project design phase. The specifications will include appropriate measures for erosion control, dependent on other design features. Staff gauge construction details will also be included during this design phase.

Construction drawings prepared during final design will show erosion controls, such as straw bale beams or silt fences, to be implemented during final closure construction activities.

1.3 Leachate Collection System

A leachate collection system will be installed along the southern perimeter of the landfill. Additionally, leachate seepage currently occurring along the north face of the landfill will be collected. The purpose of the systems will be to collect leachate generated by the landfill, relieve hydraulic pressure beneath the final cover and enhance dewatering of the landfill after the cap is installed.

1.3.1 Leachate Seepage Collection System

As shown on Figure 2, the leachate seepage collection drain along the northern perimeter will consist of a trench at the toe of the cap into which the leachate interceptor layer (sand and gravel) of the cap is extended. The interceptor layer will have a minimum permeability of 10-3 cm/sec. The base of the trench will be above the seasonal high groundwater table. A geomembrane liner will be installed along the base and sides of the trench to minimize exfiltration of leachate into the groundwater. The landfill cap will extend over the collection trench to minimize infiltration of precipitation. A perforated, 4-inch diameter PVC collector pipe, wrapped with filter fabric, will be installed in the bottom of the trench with a slope of approximately 0.5 percent. The proposed system along the northern slope will effectively collect leachate seepage from the fill material which will be collected for management.

1.3.2 Leachate Collection System

As shown in Figure 3, the leachate collection system along the southern landfill perimeter will be keyed into an underlying layer of lower permeability till or lacustrine silt and clay. The sand and gravel envelope surrounding the 4-inch diameter collector pipe will receive leachate from the interceptor layer of the engineered cap and from the natural materials directly beneath the waste and above the low permeability layer. A hydraulic barrier will be placed along the outer wall of the leachate collection trench to minimize inflow of water from the wetland area. The low permeability cap will extend over the top of this system to minimize vertical inflow. Collected leachate will be managed with other leachate as described below.

1.3.3 Leachate Treatment

Leachate for treatment will be generated during remediation of the existing leachate pools. Approximately 400,000 gallons of leachate will be generated initially from the pools. After installation of the low permeability cap, approximately 800 gallons per day of leachate are expected to be collected in the leachate collection systems. This volume was calculated using the HELP model using default values for precipitation of 47.97 inches/year. Actual average precipitation during the period 1956-1985 was 36.79 inches/year (NOAA). Therefore, this value may be somewhat lower than the 800 gallons/day.

Samples of leachate pools and seeps were collected by O'Brien & Gere, Dunn Geoscience, and CDM Inc. The results were summarized in the Draft Feasibility Study prepared by CDM during 1988. Oneida County Public Works Sewer Ordinance contains numerical limits for thirteen parameters. Of these parameters ten were determined on the leachate on at least one occasion. None of the parameters listed in the numerical standards were violated by any of the samples analyzed.

Identified in the Sewer Use Ordinance as "Toxic Substances Prohibited or Accepted Conditionally" are NYS DEC Substances of Concern. Included on this list would be PCBs which have been detected in one or more samples of leachate. Numerical limits are not provided for these substances, therefore the Oneida County Department of Public Works was contacted to identify current policy. Each waste stream is evaluated on a case by case basis. Where Substances of Concern are present ambient water quality criteria are typically used to evaluate acceptable discharge limitations. Other factors to be considered are impact of the waste on the residuals management.

The quality of water within seeps and leachate pools will vary with time. However, samples have been collected on three separate occasions each separated by over one year from the previous analyses. Only three leachate samples from a total of 13 samples collected over a three year time frame exhibit PCBs above 1.0 ug/l and the highest PCB concentration observed in the leachate ponds or seeps was 3.6 ug/l. A material balance was conducted using an anticipated worst case PCB concentration in leachate of 1.0 ug/l. Assuming no removal of PCBs, the resulting effluent from the POTW would have a PCB concentration on the order of 0.0008 ug/l, well below the direct discharge limit reported by the DEC as 0.065 ug/l. In addition, the mass of PCBs discharged to the POTW on an average daily basis in the worst case condition would be 0.00004 lbs (0.02 grams).

A package of data will be submitted to Oneida County to support an application to discharge untreated leachate to the POTW. Analyses conducted as part of the pre-remedial design investigation will also be used to support the permit application. The County has indicated that acceptance of hazardous waste at the POTW will not be considered and DEC concurrence on a non-hazardous determination is required. Testing completed to date support the position that leachate is not a characteristic hazardous waste. If pre-remedial design testing verifies that the

leachate is not a characteristic hazardous waste and it meets Oneida County Sewer Use Ordinance limits then it will be transported off-site directly to the Oneida County POTW for treatment and discharge to the Mohawk River. Otherwise, on-site, pre-treatment will be implemented with subsequent transport of treated wastewater to the Oneida County POTW.

1.4 Final Cover

The material specifications and quality assurance plan for the materials to be utilized for the final cover will be submitted at the 30 percent design submission.

The conceptual design of the proposed final cover is shown in Figure 5. The final cover will consist of up to 5 layers and will be 6.0 feet thick. The layers are described below in ascending order.

The 90 percent design submission will include the implementation of an operating and maintenance plan for the long-term maintenance of the cover, leachate collection, leachate treatment and long-term monitoring. Specifications on grading, contours, vegetative cover, and drainage of the landfill cover will also be included in the 90 percent design submission.

1.4.1 Gas Collection/Lateral Drainage Layer

This layer will be 12 inches thick and will consist of sand and gravel with a minimum permeability of 1×10^{-3} cm/sec. The purpose of this layer is to provide a suitable base for subsequent layers, an avenue of transport for landfill gas to the top of the landfill for venting, and an avenue of transport for leachate to the leachate collection system at the base of the landfill.

1.4.2 Hydraulic Barrier Layer

The hydraulic barrier will minimize the infiltration of water into the underlying wastes, thereby minimizing leachate generation. This layer will consist of 24 inches of clay with a maximum permeability of 1 x 10-7 cm/sec at the minimum specified in-place density. With 24 inches of clay, the total cover will be 6.0 feet thick. During installation of this layer, thin-walled (Shelby) tube samples will be collected at a rate of one per acre per lift for confirmation testing. The permeability of the tube samples will be measured in the laboratory in a flexible membrane (triaxial) permeameter with back-pressure saturation. During final design, detailed materials specifications and compaction specifications will be prepared.

1.4.3 Lateral Drainage Layer

This 6-inch layer of sand and gravel will have a minimum permeability of 1×10^{-3} cm/sec. The function of this layer is to intercept precipitation which infiltrates through the vegetative support layers and transport it from the top of the landfill, thereby reducing the volume of water available to penetrate the hydraulic barrier layer.

During final design, adequate capacity of the lateral drainage layer will be verified based on the final cover materials specifications.

1.4.4 Filter Layer

A 24-inch layer of silt and sand will be placed above the lateral drainage layer. The purpose of this layer is to prevent topsoil from migrating into the lateral drainage layer, provide freeze/thaw protection for the barrier layer, and provide a root zone for vegetation.

1.4.5 Vegetative Support Layer

This 6-inch layer of topsoil will support vegetation to minimize erosion of the cap and to maximize the amount of evapotranspiration. This layer will be seeded with an appropriate mixture of grasses, such as the Soil Conservation Service conservation mix.

During final design, the seed mix will be specified and the soil erosion potential and root penetration depth will be evaluated. If necessary, based on the erosion analysis, additional steps, such as terraces and diversion ditches, will be implemented to divert and/or collect runoff.

1.4.6 Filter Fabric

Filter fabric will be installed between the lateral drainage and vegetative support layer and between the hydraulic barrier layer and gas collection layer. If necessary to maintain separation between layers, filter fabric will also be installed between the waste and gas collection layer (Figure 5). The locations for filter fabric will be established during the final design phase based on laboratory testing of the soil from the proposed borrow sources for the layers identified above. Specifically, the layers will be evaluated for compactive intrusion, grain-size compatibility, and seepage gradients.

1.5 Gas Venting System

A 12-inch layer of sand and gravel with a minimum permeability of 1×10^{-3} cm/sec has been designed (Section 2.4.1) as part of the proposed final cover (Figure 5) to allow migration of landfill-generated gas to the top of the landfill. At the top of the landfill, gas will be vented by the system shown in Figure 6. This system will consist of 4-inch diameter perforated PVC collector pipes in 12-inch by 12-inch collector trenches excavated into the gas collection layer. The trenches will be backfilled with clean sand (less than 5% passing the #200 sieve) and spaced at 100-foot intervals across the top of the landfill. Vent laterals will extend down the side slopes of the landfill and will be spaced at approximately 1 lateral per acre. Four-inch diameter PVC riser pipes will extend from the collector pipes upward through the landfill cap to vent gases to the atmosphere. The gas vent pipes will be sealed by and be exposed at least three feet above the elevation of the landfill cap. During preliminary design the feasibility of manifolding the gas vent pipes to limit atmospheric discharge points will be evaluated.

In order to monitor emissions from the gas venting system, an air monitoring program will be prepared and submitted during the 30 percent design submission.

1.6 Site Drainage

Positive drainage for removing runoff from the final cover will be provided. Drainage ditches leading to natural or modified drainage features will be constructed along the toe of the landfill as shown on Plate 1. Seeding or riprap will be used to minimize erosion and sediment transport.

Cross-sections and plan views of the site drainage will be developed as part of remedial design based upon the results of upgradient groundwater control pre-design activities. These design details will be presented in the final design plan.

1.7 Site Isolation

The site will be isolated by a security fence which will encompass the landfill, leachate ponds, leachate collection system, Areas A and C, and wetland (Plate 1). The fence will consist of 6-foot high chain-link industrial fencing with locking gates to prevent unauthorized access. Appropriate warning signs will be posted at frequent intervals along the fence.

1.8 Upgradient Groundwater Control

Studies will be conducted to determine design criteria for the upgradient groundwater control system and to evaluate the potential impact of the control system on the wetland. These activities include five staff gages, installation of soil borings/piezometers, hydrologic testing and hydraulic analyses.

Four piezometers (small diameter subsurface monitoring devices for groundwater levels only) will be placed in the area of the stream channel located east of the landfill. As shown on Plate 1, two piezometers will be located approximately 20 feet from the eastern side of the stream channel while another two will be placed on the western side, between the stream channel and the landfill boundary. In addition, staff gages will be installed in the bed of the stream channel and in the wetland area south of the landfill.

Three pairs of piezometers will be installed around the landfill perimeter. This array of three piezometer pairs, radiating outward from the landfill, is to gather hydraulic data relevant in establishing the impact of any groundwater mound extending from the landfill. One pair (two separate piezometers) will be completed in the shallow groundwater zone on the north, east and west sides of the landfill (Plate 1). One piezometer of each pair will be installed as close to the landfill perimeter as practical. The second piezometer of each pair will be installed further away from the landfill perimeter and in line with its corresponding perimeter piezometer. The piezometer pairs on the north and east side of the landfill will be installed approximately 20 feet apart, somewhat closer together than the pair on the west side of the landfill. The closer spacing was chosen for the north and east locations because these areas are either hydraulically upgradient or lateral to the direction of groundwater flow. In such areas, the radial extent of impact from any groundwater mound would be expected to be less pronounced than in the hydraulically downgradient direction. The approximate distances between the paired piezometers were selected based on the hydraulic gradients reported in the Supplemental Investigations, Ludlow NPL Site prepared by Dunn Geoscience, in October 1987.

The piezometers and staff gages will be installed during the pre-design phase. Piezometer and staff gage elevations will be established by a licensed surveyor with respect to mean seal level. These piezometer and staff gages will be incorporated into a schedule of monthly monitoring during the pre-design phase and short-term monitoring program.

Data collected will be evaluated to determine whether groundwater is in contact with fill material. An evaluation will also be performed to assess the benefit of the upgradient groundwater control system as compared to environmental impacts associated with diverting groundwater into the wetland.

The decision to implement an upgradient swale to intercept the groundwater table will be made based on the results of the pre-remedial design investigation and the performance monitoring program lasting two years after the closure of the landfill. Upgradient groundwater controls will be implemented unless the cap lowers the groundwater table beneath the fill material or the environmental impacts of such an action out-weigh the benefit. If this control measure is deemed necessary, the groundwater level upgradient (east) of the landfill will be lowered by straightening and deepening the natural drainage swale east of the landfill. The modified drainage swale will intercept the high groundwater table in this area and will gradually lower groundwater levels by acting as a groundwater discharge point. The location of the proposed swale is shown on Plate 1. This swale is within the recently defined designated wetland, therefore, ability to conform to standards contained in 6 NYCRR Part 663.5(a) will be considered. Details such as erosion protection, cross-sections and plan views of the upgradient groundwater control system and the associated site drainage will be developed during the final design.

1.9 Performance Monitoring

A. Introduction

Comprehensive short-term and long-term monitoring programs will be implemented to monitor the performance of the site remediation. Elements of these programs, which include hydrologic monitoring, will incorporate regional precipitation data to account for seasonal variations in the hydrologic regime. The programs are expected to consist of several elements designed to indicate whether or not the remedial system is achieving the desired objective. Data collected for any one element during the programs will be evaluated in context with the other elements. The short-term monitoring program is intended to allow for a reasonable assessment regarding the effectiveness of the implemented remedies. The effectiveness of the conceptual remediation will be assessed by several criteria to ensure that an accurate evaluation of the implemented plan is achieved. A description of each of the above performance monitoring criteria, and the trigger mechanisms for further action, are described in the following sections as they relate to the short-term and long-term monitoring programs.

B. Short-Term Monitoring Program

Following implementation of the conceptual remedial programs outlined in this document, a two year, short-term monitoring program will be implemented. The purpose of the program will be to determine the effectiveness of site remediation during the first two years and to compile a data base from which a long-term monitoring program can be developed. The elements of the short-term monitoring program include:

Cover Inspection; Infiltration Monitoring; Water Level Monitoring; Leachate Quality and Flow Monitoring; Groundwater Quality Monitoring Surface Water Quality Monitoring; and, Risk Assessment

Cover Inspection

The proposed final cover will be inspected to evaluate erosion, settlement and general cover integrity twice a year until the cover vegetation is established and annually after that. Surveying of the surface of the cover will be performed annually to quantify settlement.

Infiltration

The amount of infiltration through the final cover will be measured annually by four (4) lysimeters installed at the approximate locations shown in Plate 1. Data will be obtained quarterly from the lysimeters during the short-term monitoring program and will be compared to predicted infiltration rates (i.e., HELP model data) to determine actual efficiency of the cover. Data obtained from the lysimeters will be evaluated with cover inspection, water level, leachate quality and flow, and risk assessment information. If measured infiltration rates exceed 2 inches per year as calculated by the HELP model, the significance of the excess infiltration will be determined by evaluating this information relative to other performance criteria. If this evaluation indicates that an unacceptable amount of infiltration is occurring as a result of damage to the cover, repair procedures will be implemented.

Water Levels

A schedule of monitoring groundwater and surface water levels will provide data to determine the most effective approach to upgradient groundwater control, if necessary, and assess the hydraulic effectiveness of the proposed remedy. This water level data will be collected from specific monitoring systems in three separate areas. Water elevations will be obtained from the piezometers

described in the section on Upgradient Groundwater Control, after the remedial activities are implemented, on a monthly basis during the short-term monitoring period. the groundwater elevations prior to capping will be compared to post-capping groundwater elevations (taking into account anticipated seasonal variations and precipitation) as one measure of the effectiveness of the remedial program.

The third area identified for water level monitoring is the landfill. Pursuant to comments made by EPA and DEC, six piezometers will be installed into the fill materials after the cap is constructed. The proposed location of these piezometers are shown on Plate 1, As with all the other piezometers discussed in this section, monthly monitoring will be performed during the short-term monitoring period.

Leachate Quantity and Quality

The leachate and seepage collection systems will be installed prior to completion of the cap. The collected leachate will be stored on site prior to disposal. The quantity of leachate generated prior to cap completion will be recorded. Likewise, the quantity of leachate collected following completion of the cap will be recorded during the short-term monitoring period. After the cap is constructed, monitoring of quantity and quality of leachate will continue on a quarterly basis, for two years.

Groundwater

A three phase groundwater monitoring plan is proposed. The initial phase, discussed under Off-site Groundwater, involves a single round of comprehensive analyses prior to cap installation. The second phase (Short-Term Monitoring) presented below, will be implemented on completion of landfill cap and have a duration of two years. The long-term program is presented under Long-Term Monitoring. Short Term Monitoring is scheduled to last two years from the date the landfill is closed. The objective is to monitor the short term impacts on water quality resulting from cap placement over the landfill. In addition, the results will be used to establish long term monitoring locations, frequencies, and parameters. Based on an assumed one year gap between the pre-remedial design monitoring program and final closure of the landfill, an initial round of TCL analyses to begin the phase two program is proposed. Table 1 presents a recommended program for the initial two years after closure.

Volatile organics can be analyzed by a variety of methods. Use of methods commonly applied to drinking water, EPA Methods 502.1 and 503.1, will provide detection limits which are typically 10% of those obtained using CLP protocols. Therefore, for any groundwater or private supply water samples collected, the proposed protocols for volatile organics are EPA Method 502.1 and 503.1 rather than CLP methods. The CLP method detection limit for PCBs is 1.0 microgram/liter for some Aroclors and 0.5 micrograms/liter for others. To achieve the groundwater standard of 0.1 microgram/liter requires an alternate method. The alternate method is capable of achieving the lower detection limit by providing additional cleanup which is specific to PCBs. The disadvantage of this method is that it focuses on PCBs at the expense of a variety of pesticides. Given the analytical results to date and site history the proposed approach is to use EPA Method 8080 and quantify PCBs to a detection limit of 0.1 microgram/liter. If the pre-remedial design monitoring results in detectable pesticides using CLP protocols, then modifications to the program will be warranted to monitor pesticide concentration. CLP protocols will be used for the remainder of substances to be analyzed.

Surface Water

During the RI/FS and the Supplemental Investigation, surface water samples were collected. The samples were analyzed for a variety of inorganic and indicator parameters, PCBs and phenols. During the Supplemental Investigation, the samples collected were analyzed for HSL volatile organic parameters and PCBs. PCBs were detected at a concentration of 0.5 ug/l in one sample using a detection limit of 0.1 ug/l. None of the other parameters tested indicated levels or concentrations of constituents in the surface water which would warrant continued monitoring. Based on the analytical results from these sampling events, surface water samples will be collected quarterly during the two year monitoring period and analyzed only for PCBs. These samples will be collected at the culvert where the wetland discharges beneath Holman City Road to monitor potential off-site migration of PCBs via surface water. A staff gage will be installed near the wetland outlet to monitor fluctuations of the surface water in the wetland which may be caused by diversion of runoff to the, wetland. The surface water elevation in the wetland will be measured monthly.

Risk Assessment

If at the conclusion of post-remedial short-term groundwater monitoring it is determined that 1) New York State Drinking Water Standards have been exceeded, or, in the absence of such a standard, 2) the federal maximum contaminant level (MCL), or, in the absence of an MCL, 3) the New York State Water Quality Standard and Guidance Value for groundwater, an assessment will be performed using the available post-remedial monitoring data to determine the need for and the feasibility of implementing additional corrective measures.

C. Long-Term Monitoring Program

Following completion of the two year short-term monitoring program, a long-term monitoring plan will be developed. Many of the sampling frequencies, analytical parameters, sampling locations and data evaluation methods will be based on the results of the short-term monitoring program. It is anticipated that the long-term monitoring program will include continued monitoring of the following elements:

Cover Inspection; Infiltration; Water Levels; Leachate Quality and Flow; Groundwater; and, Surface Water

This program will be developed in conjunction with the NYS DEC and other involved agencies to ensure the concerns of the State are addressed. A description of the anticipated activities to occur during long-term monitoring relative to the above elements is provided in the following sections.

Cover Inspection

Visual inspection of the cover to revaluate erosion, settlement and integrity will continue on an annual basis. Surveying of the surface of the cover will continue to be performed annually until no significant settlement is indicated by three consecutive surveys. If after discontinuation of surveying, signs of settlement are noted during visual inspection, surveying will be reimplemented to determine the extent of settlement.

Infiltration

Infiltration through the final cover will continue to be measured annually by the lysimeters. These measurements will be compared to previous measurements to determine if significant increases of infiltration through the cover are occurring. If an unacceptable amount of infiltration is occurring as a result of damage to the cover, repair procedures will be implemented.

Water Levels

Once the short-term monitoring program is completed and the effectiveness of the remedial program has been evaluated, a long-term monitoring program will be implemented to ensure the remedy continues to operate in an effective manner. Although this monitoring program may be adjusted pending the effectiveness evaluation the long-term monitoring of surface water (staff gages) and groundwater (piezometers) is expected to occur on a quarterly basis. Furthermore, groundwater elevations will be obtained from existing and new monitoring wells on a quarterly basis. The hydraulic data collected from the staff gages, piezometers and the groundwater monitoring wells will be used to generate quarterly reports containing information on:

- efficiency of any upgradient groundwater controls (including impacts on the wetlands);
- occurrence and impacts of groundwater mounding, if any, (primarily utilizing piezometer pairs outside the landfill perimeters); and,
- regional groundwater flow direction in the shallow and deep saturated zones.

The fourth quarter report of every year will include a formal assessment comparing the system's expected performance to actual measurements.

Leachate Quantity and Quality

At the conclusion of the short-term monitoring period, the number of leachate parameters used to examine leachate quality will be reassessed. If warranted, a proposal will be made to continue monitoring for an indicator list of parameters which is representative of the leachate quality as established during the previous years of monitoring. At this time, the long-term monitoring will be completed on a quarterly basis or pursuant to a specified treatment or disposal schedule. Concurrent with this schedule, the quantity of leachate generated will also be recorded. The quantity and chemical concentrations of the leachate, as well as the mass loadings, will be reported in the quarterly reports. The fourth quarter report of every year will include a formal assessment comparing the system's expected performance to actual measurements.

Groundwater

The details of a long-term groundwater quality monitoring program will be based on the results of the short-term monitoring program. Groundwater quality data collected to date indicate the presence of only a few constituents in the groundwater at low or insignificant concentrations. The proposed remedial plan is designed to protect groundwater quality, therefore, the analytical parameters and frequency of monitoring required by the long-term monitoring program will be tailored to the location monitored and data previously generated from that sampling point. Substances not previously detected or detected at insignificant concentrations, defined as less than 25% of the MCL, will be eliminated from routine monitoring. The proposed long-term monitoring plan will be submitted to the DEC with the fourth quarterly report of the second year of short-term monitoring.

Following each five years of long-term monitoring, the details of the monitoring plan will be modified according to the results of the previous five years of monitoring. Sampling locations, frequencies and analytical parameters will be added or deleted as appropriate. It is anticipated that the long-term groundwater quality monitoring will continue until 30 years following completion of remediation (28 years after the completion of the short-term monitoring program).

Surface Water

The need for continued surface water sampling and analysis will be determined at the conclusion of the short-term monitoring program. The results of previous surface water sampling and analysis indicates that PCBs are not transported via surface water. If PCBs are not detected in surface water samples collected during the short-term monitoring plan, continued monitoring will not be performed.

1.10 North Gravel Pit

Approximately 1,500 cubic yards of sediment from the north gravel pit will be excavated to a depth of approximately two feet and consolidated on the southern portion of the landfill with the other PCB-contaminated soil. One post-excavation sample per 2,500 square feet of excavation will be collected for analysis to confirm the vertical extent of cleanup. Prior to excavation, the water in the pit will be sampled and analyzed for PCBs. If PCBs are not detected using EPA Method 608, then the water will be pumped from the pit for surface infiltration. If PCBs are detected the water will be contained for off site disposal.

Following redevelopment of the three north pit wells to minimize turbidity of the groundwater samples, additional sampling and analysis will be conducted during pre-remedial design activities. Samples will be analyzed for PCBs using a detection limit less than or equal to 0.1 ppb. The results of the resampling and reanalysis will determine whether or not groundwater near the north gravel pit has been impacted by PCBs.

1.11 Ponded Wetland

The designated wetland was evaluated by DEC personnel during May 1989. Based on the DEC staked area the total wetland area equals 21 acres. This designated wetland includes a shallow pond of approximately 3.5 acres, an unnamed intermittent stream and surrounding areas. A portion of the designated wetland abuts the fill area and is encompassed in Areas A and C addressed elsewhere in this document. This section focuses on the pond area located south of the landfill.

The ponded wetland south of the landfill was the subject of much investigation during the RI/FS prepared by O'Brien & Gere Engineers, Inc. Sampling and analysis of wetland biota was also conducted by the DEC subsequent to the RI/FS. Results of these studies showed that PCBs are present in the peat-like pond sediments in concentrations ranging from less than 1 mg/kg to a maximum of 4.7 mg/kg as received. Because of the high moisture content in the peat-like materials the dry weight PCB content is higher. Testing has also shown that the wetland sediments contain a high percentage of total organic carbon which tends to immobilize PCBs through adsorption as discussed in the Feasibility Study. DEC testing demonstrated detectable concentrations of PCBs in biota such as worms and frogs.

An additional investigation focusing on biota sampling and risk assessment will be conducted during pre-remedial design activities. This investigation will determine the impact uncontrolled releases have had on the biota. Details of the biota test program are described in the Approved

Investigatory Program. The evaluation of biota sampling results will be conducted in accordance with the NCP to determine the impact the landfill has had on biota. Any impacts identified are expected to decrease with time once the landfill is properly capped and leachate managed.

A focused Feasibility Study will be conducted with the objective of preserving the existing ponded wetland. Alternatives which will result in the destruction of the ponded wetland such as excavation and off-site disposal will not be considered as environmentally acceptable alternatives during the development of alternatives. Activities included in each remedial alternative will be defined and evaluated against activities contained within the "activities chart" (6 NYCRR Part 663.46(d)) and standards contained in 6 NYCRR 663.5(e).

1.12 Off-site Groundwater

Prior analyses indicate that off-site groundwater quality has not been adversely impacted by the landfill. Remedial measures implemented to protect downgradient groundwater quality include installation of the cap to minimize infiltration of water through the fill material and the installation of a leachate collection system to reduce discharge of leachate into the groundwater. Short term performance monitoring will begin when the cap and leachate collection system is in place. The scope of that study is presented under the Performance Monitoring section of this document. The groundwater results subsequent to remediation of the fill area will be evaluated to determine whether there is a risk to human health or the environment. If the results indicate such a risk then a feasibility study will be conducted to determine appropriate responses.

1.13 Site Maintenance

Site maintenance will consist of several items which will be necessary on a periodic basis. The following items fall under site maintenance:

1. Cover mowing
2. Access road maintenance
3. Building maintenance
4. Fence maintenance

Mowing will include two mowings per year, once in early summer and a second time at the end of the growing season. Access road maintenance will involve repairs to on-site access roads such as filling of settlement areas, leveling as necessary, and maintaining drainage ways. Building maintenance will include repairs necessitated by damage caused by inclement weather and routine maintenance necessary to prevent large capital expenditures due to deterioration. Routine maintenance of fencing and locks is intended to prevent unauthorized entry to the site.

1.14 Schedule

A schedule for the remedial action is attached as Figure 7.

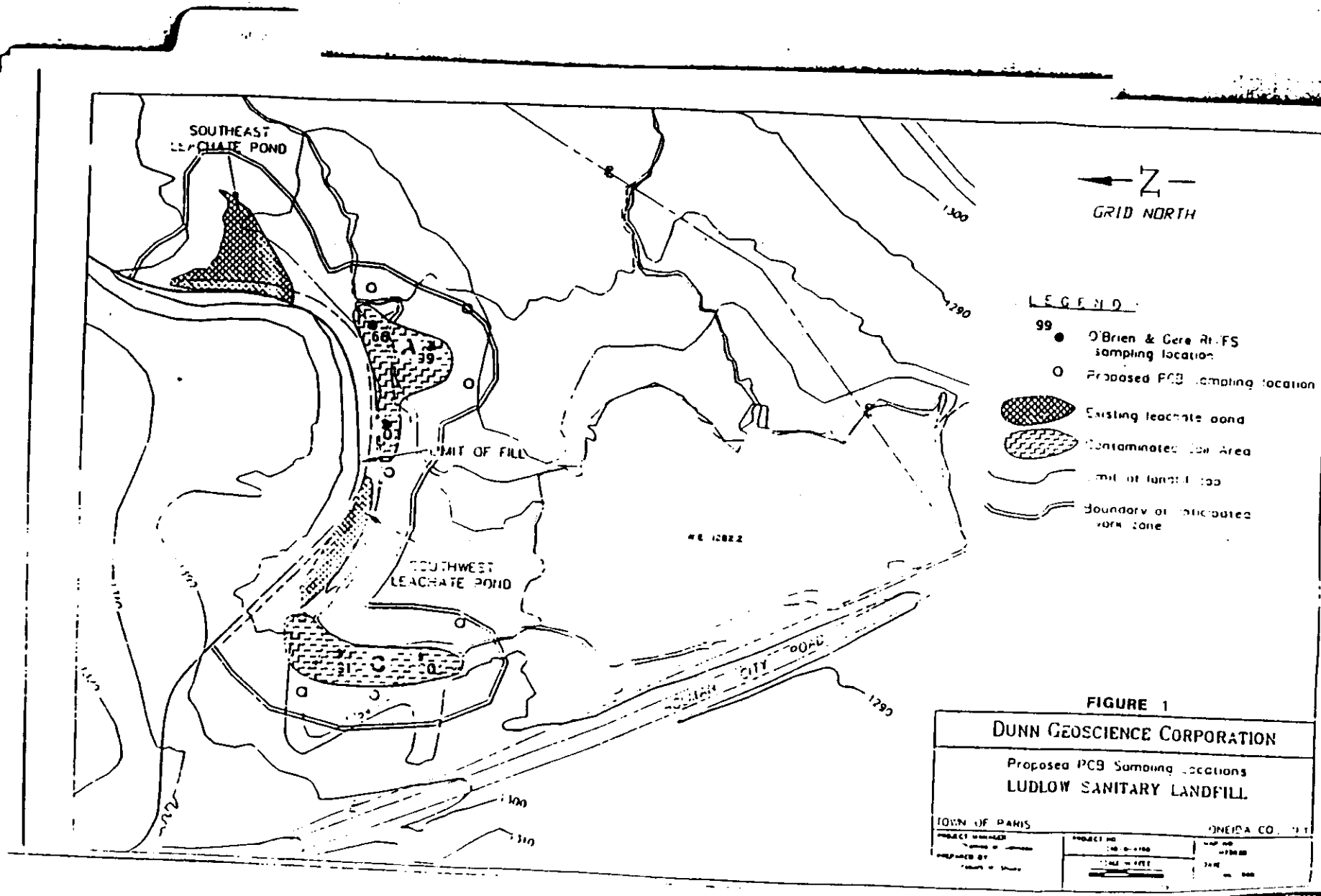


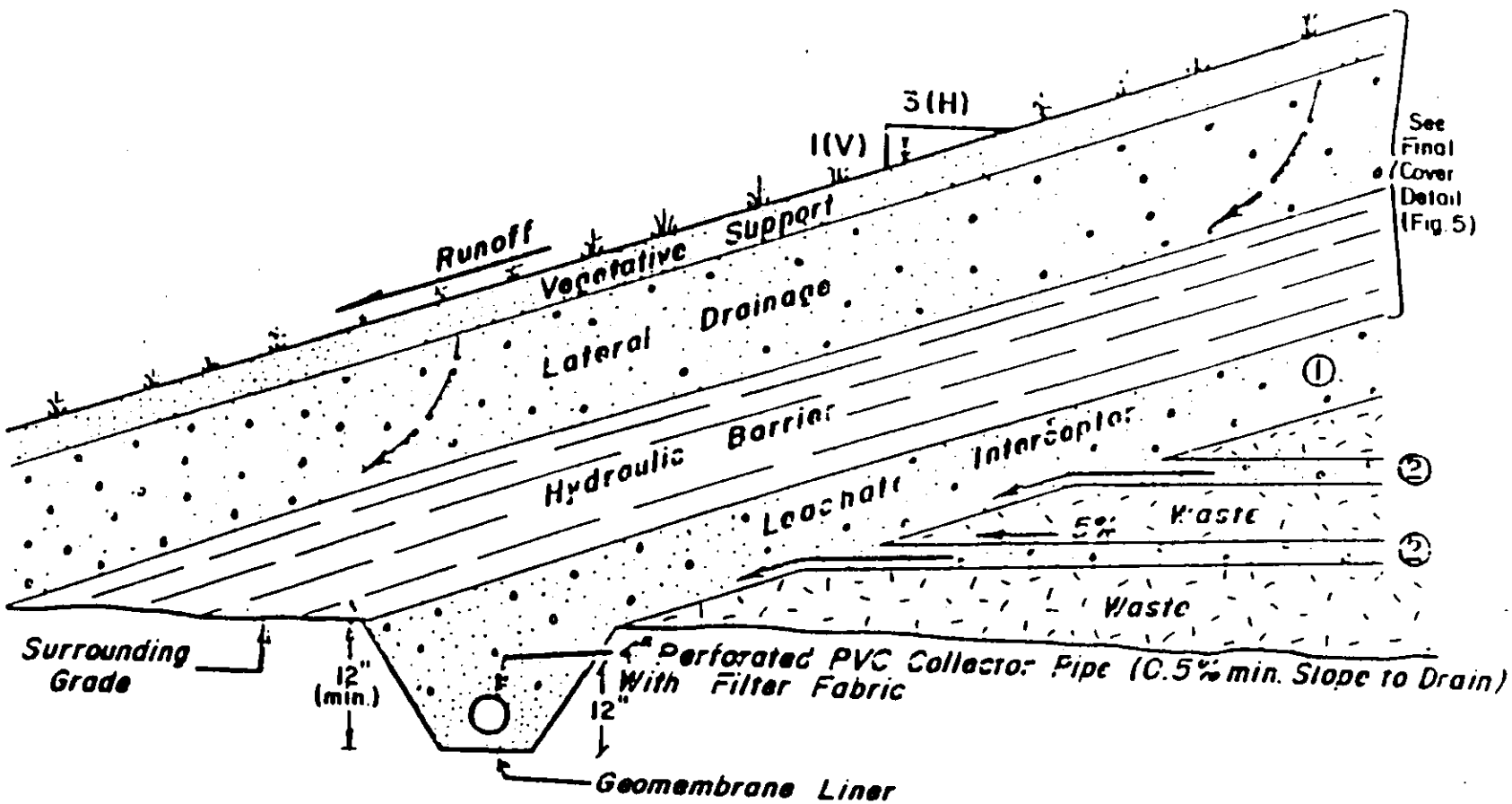
FIGURE 1

DUNN GEOSCIENCE CORPORATION

Proposed PCB Sampling Locations

LUDLOW SANITARY LANDFILL

TOWN OF PARIS ONEIDA CO., N.Y.



① Leachate Interception Blanket (Sand and Gravel)

- permeability $\geq 10^{-3}$ cm/sec

② Daily and Intermediate Cover Layers (Sand and Gravel)

- permeability $\sim 10^{-3}$ cm/sec
- 6 to 12" thick, spaced at 2-foot intervals
- existing

Figure 2

LEACHATE SEEP COLLECTION SYSTEM
LUDLOW SANITARY LANDFILL

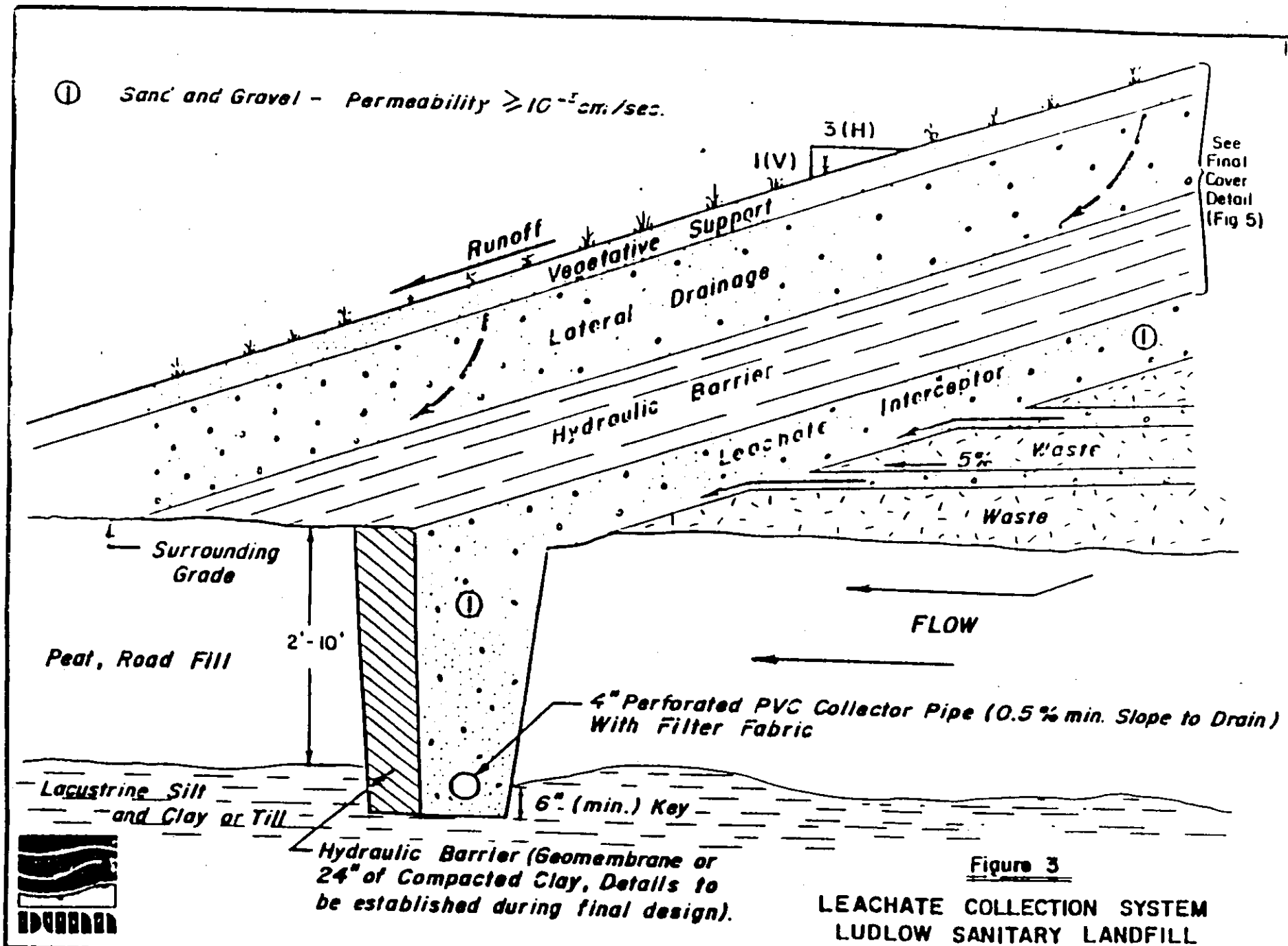
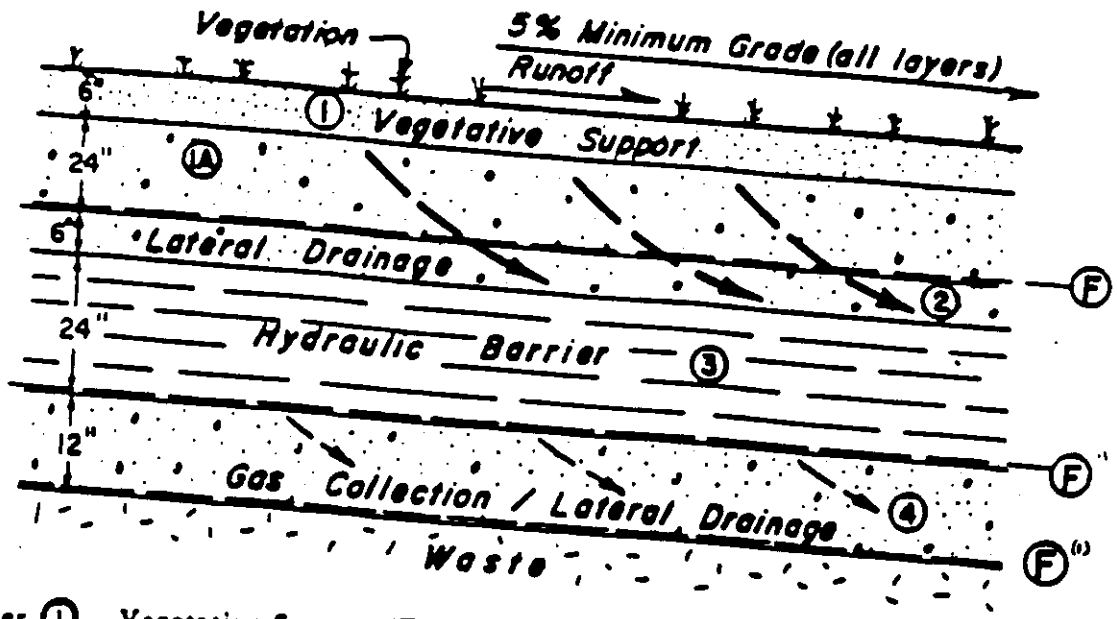


Figure 3

LEACHATE COLLECTION SYSTEM
LUDLOW SANITARY LANDFILL
(Not to Scale)



Layer (1) Vegetative Support (Topsoil)

Layer (1A) Vegetative Support/Filter (Sand and Silt)

- root zone, freeze/thaw protection

Layer (2) Lateral Drainage (Sand and Gravel)

- permeability $\geq 10^{-3}$ cm/sec

Layer (3) Hydraulic Barrier (Compacted Clay)

- permeability $\leq 10^{-7}$ cm/sec
- compaction specifications to be established during final design based on laboratory permeability-density relationship

Layer (4) Gas Collection (Sand and Gravel)

- permeability $\geq 10^{-3}$ cm/sec
- gas collection/secondary lateral drainage

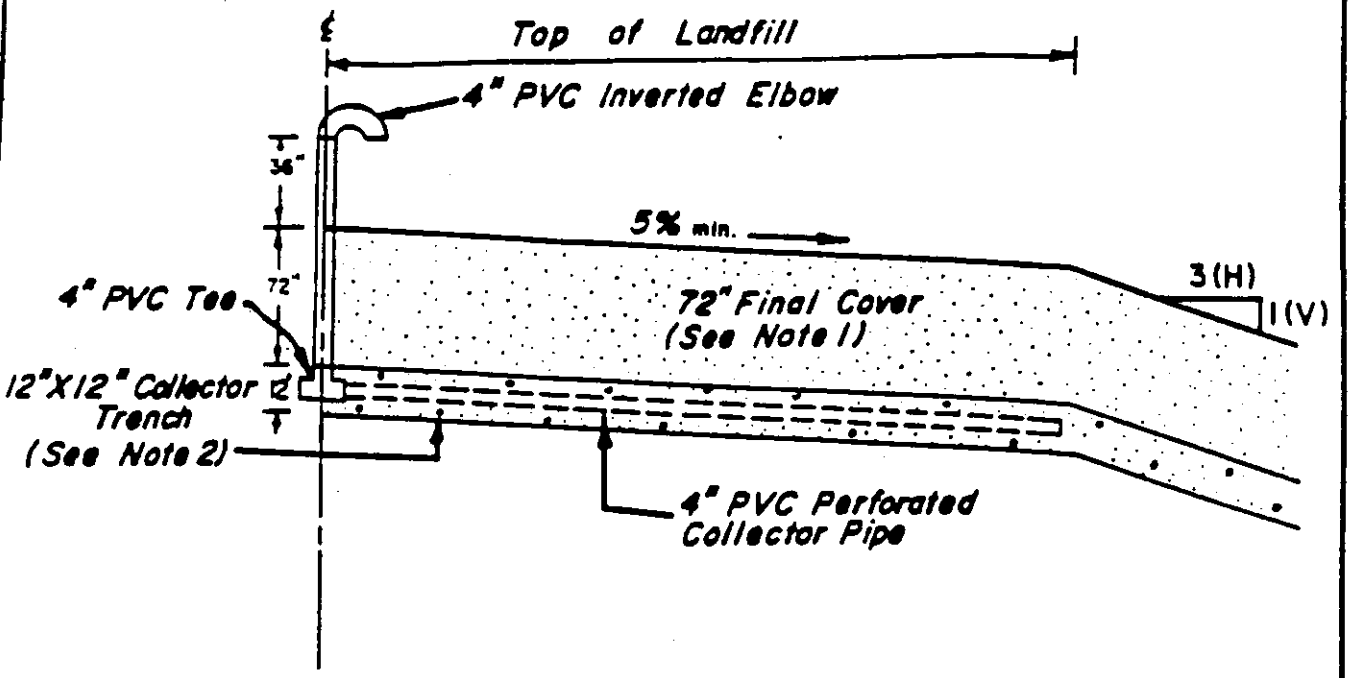
(F) Filter Fabric (a) if necessary)

- evaluated during final design based on compactive intrusion, grain size compatibility and hydraulic gradient of soil layers to be separated

Figure 5

FINAL COVER DETAIL
LUDLOW SANITARY LANDFILL

(Not To Scale)



NOTES:

1. Final cover shall be as per Final Cover Detail (Figure 5)

2. Gas Collector Trenches

   - 12" x 12" trenches shall be excavated into gas collector layer (Layer 4, Figure 5)
   - trenches shall be backfilled with clean sand (<5% passing #200 sieve).
   - trenches shall be spaced at 100-foot intervals across the top of the landfill and at approximately 1 lateral per acre on the side slopes of the landfill.

Figure 6

GAS VENTING SYSTEM
HORIZONTAL COLLECTOR DETAIL
LUDLOW SANITARY LANDFILL

(Not to Scale)

LUDLOW SANITARY LANDFILL
APPROVED REMEDIAL PLAN
SCHEDULE

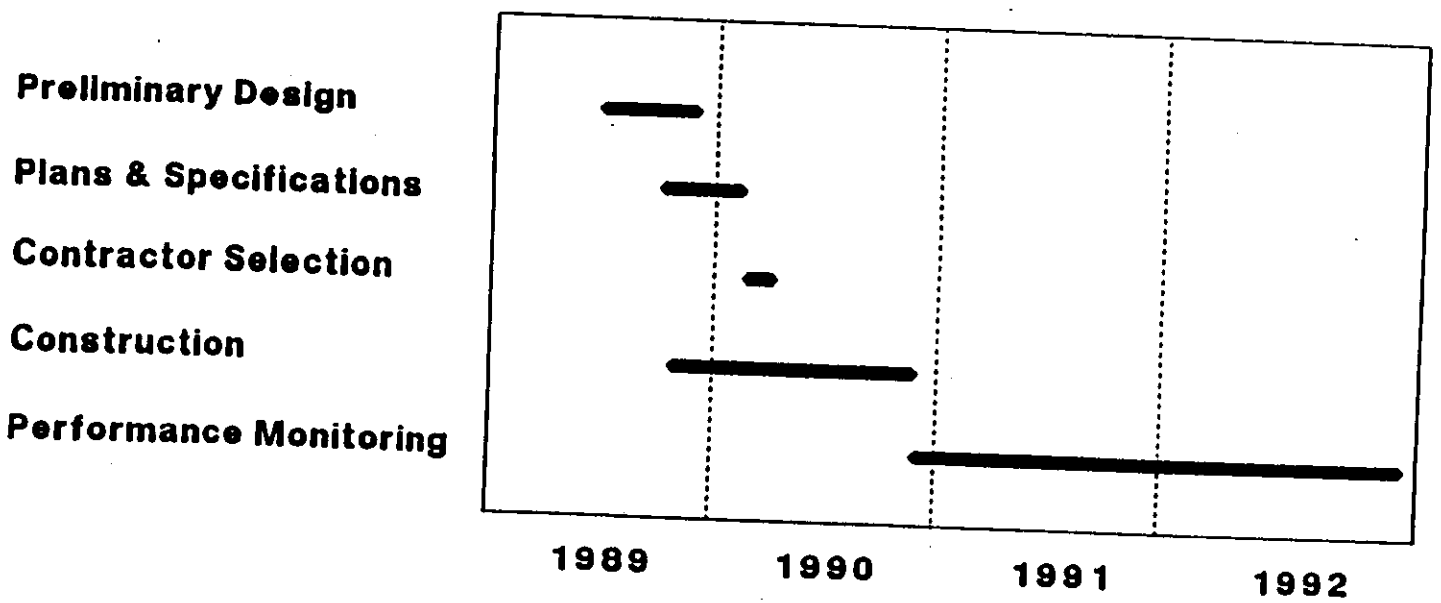


FIGURE 7

TABLE 1
LUDLOW SANITARY LANDFILL
SHORT TERM MONITORING OF GROUNDWATER (1)

Analytical Parameter EPA Method Unit Cost	# of Wells		VOC (502.1, 503.1) $220		PCBs (8080) $150		A/BN (CLP) $640		Metals (CLP) $340	Subtotal
Shallow Landfill Boundary Wells (1S, 5S, 6S, 13S, 14S, 15S, 16S)	7	Q	$12,320	Q	$8,400	(A)	$8,960	(A)	$4,760	$34,440
(1D, 5D, 6D, 13D, 14D, 15D, 16D)	7	(S)	$6,160	S	$4,200	(A)	$8,960	(A)	$4,760	$24,080
Off-Site Wells (7S, 7D, 8S, 8D, 9S, 9D)	6	S	$5,280	S	$3,600	(A)	$7,680	(A)	$4,080	$20,640
Private Wells (PW-1, PW-2, PW-3)	3	(A)	$1,320	A	$900	A	$3,840	A	$2,040	$8,100
Public Well (PU-1)	1	A	$440	(A)	$300	A	$1,280	A	$680	$2,700
Gravel Pit (10, 11, 12)	3	(A)	$1,320	(Q)	$3,600	A	$3,840	A	$2,040	$10,800
Subtotal TOTAL			$26,840		$21,000		$34,560		$18,360	$100,760

Notes: Q = Quarterly, S = Semiannual, A = Annual

(1) Quality Control/Quality Assurance for all samples will be consistent with published DEC or EPA standards for the listed protocol.

* THIS WAS REVISED (JAN. 8, 1990) AND IS NO LONGER ACCURATE.

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF NEW YORK

STATE OF NEW YORK,

Plaintiff,

-against-

LUDLOW'S SANITARY LANDFILL, INC.; G. KEVIN LUDLOW; JAMES LUDLOW and LUDLOW'S SAND AND GRAVEL COMPANY, INC., et al.,

Defendants.

STIPULATION CLARIFYING AND MODIFYING CONSENT JUDGEMENT

Index No. 86-CV-853

Judge McAvoy

LUDLOW'S SANITARY LANDFILL, INC.; G. KEVIN LUDLOW; JAMES LUDLOW and LUDLOW'S SAND AND GRAVEL COMPANY, INC.,

Third-Party Plaintiffs,

-against-

UNITED AUTO SALES OF UTICA, INC.; CHESEBROUGH-POND'S, INC.; SPECIAL METALS CORP.; NORTH MOTOR EQUIPMENT AND MACHINERY COMPANY, INC. and UTICA CUTLERY, INC.,

Third-Party Defendants.

WHEREAS, the complaint in this action was filed in July, 1986 against Ludlow's Sanitary Landfill, Inc., G. Kevin Ludlow, James Ludlow and Ludlow's Sand and Gravel Company, Inc. (Ludlow Defendants) as a result of environmental conditions at the former

Ludlow Landfill in Oneida County (Site). In the complaint, the State alleged that the Ludlow Defendants owned, operated, maintained and controlled the Site and the disposal operations occurring thereon;

WHEREAS, the complaint further alleged that, as a result of the disposal operations, hazardous substances were released into the environment;

WHEREAS, in September, 1986, the Ludlow Defendants filed a third-party complaint against third-party defendants, including Special Metals Corporation (Special Metals), alleging that the third-party defendants disposed of or arranged to be disposed of waste at the Site that contained hazardous substances;

WHEREAS, an Interim Order, dated July 1987, provided for the landfill operation to cease on February 15, 1988;

WHEREAS, the Ludlow Defendants and Special Metals retained independent consultants to investigate the environmental conditions at the Site in order to develop an appropriate remedial plan for the Site;

WHEREAS, third-party defendants, Special Metals and Chesebrough-Pond's USA Co., a division of Conopco, Inc. (the successor to named third-party defendant, Chesebrough-Pond's Inc., and referred to hereafter as Chesebrough-Pond's), commenced a fourth party action against others alleged to have arranged for the disposal of waste at the Site;

WHEREAS, Special Metals committed to undertake and fully fund, along with contributions from the Ludlow Defendants and from third and fourth party defendants, certain remedial measures at the Site;

WHEREAS, in March of 1990, the Court entered a Consent Judgment which settled the State's claims against Special Metals in consideration of its undertaking the implementation of an Approved Remedial Plan to address environmental conditions at the Site (Consent Judgment);

WHEREAS, Special Metals has implemented remedial measures at the landfill portion of the Site (EPA Operable Unit #1), which included the closure and capping of the landfill, along with leachate collection and treatment, and in the wetland area (part of EPA Operable Unit #2), which included the removal of contaminated sediments and restoration of the wetland. These remedial measures were documented in the Construction Documentation Report (dated May 1995) and approved by the State of New York in May of 1995;

WHEREAS, PCB contamination continues to be detected in the North Gravel Pit area (part of EPA Operable Unit #2) despite the implementation of removal measures, to wit, the excavation of PCB contaminated soils in that area in accordance with the Consent Judgment;

WHEREAS, Special Metals and the State agree that additional work needs to be undertaken in the North Gravel Pit area;

WHEREAS, Special Metals and the State agree that it is necessary to determine the extent of PCB contamination in the North Gravel Pit area prior to the implementation of final remedial measures in that area;

WHEREAS, the Consent Judgment provided for the implementation of remedial measures at both EPA Operable Unit #1 and EPA Operable Unit #2 and anticipated that remedial activities could be required in the North Gravel Pit area in addition to those described in the Approved Remedial Plan attached to the 1990 Consent Judgment;

WHEREAS, Special Metals has submitted to the State a SUPPLEMENTAL REMEDIAL INVESTIGATION/FEASIBILITY STUDY (SRI/FS) work plan for the North Gravel Pit area in order to determine the extent of PCB contamination in that area;

WHEREAS, the State has reviewed the SRI/FS work plan and has approved it;

WHEREAS, the State and Special Metals wish to clarify the scope of Special Metals' obligations to undertake remedial measures at the Site, which were established under the Consent Judgment, to include the performance of the SRI/FS work plan and implementation of necessary remedial measures at the North Gravel Pit;

WHEREAS, the Court in December of 1991 approved the discharge of Ludlow Landfill leachate during the period of construction closure and post-closure monitoring to an onsite leach field, provided that the leachate met specified effluent limitations and was treated prior to discharge, as necessary, to meet the effluent limitations;

WHEREAS, following a review of sampling data generated at the Site to date, the sampling frequency of the discharge of the treated leachate is proposed to be revised by agreement between the State and Special Metals;

WHEREAS, Special Metals and the State have agreed to modify the existing sampling frequency to provide for the quarterly monitoring of all parameters except flow, PCBs, total iron and total manganese, which will remain on a monthly frequency. The revised sampling frequency would be implemented, effective August, 1995 (Revised Sampling Frequency);

WHEREAS, it was further agreed by Special Metals and the State to revise the existing limit for total phenolics from 0.002 mg/l to 0.008 mg/l, effective November 1, 1994;

WHEREAS, Paragraph XVII of the Consent Judgment provides that any modification to the Approved Remedial Plan be approved by the Court; and

WHEREAS, Special Metals, with the State's consent, hereby submits this Stipulation to: (a) clarify the scope of remedial action to be undertaken in the North Gravel Pit area and (b) modify the sampling frequency of the treated effluent and the effluent limit for total phenolics.

IT IS HEREBY AGREED AND STIPULATED THAT:

A. SRI /FS Work Plan.

1. Special Metals has submitted a SRI/FS work plan to the State for the area of the Site known as the North Gravel Pit, a portion of EPA Operable Unit #2.

2. The State has reviewed the SRI/FS work plan, finds it to be in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Sections 300 et seq., and guidance documents used by the New York State Department of Environmental Conservation relative to the investigation of inactive hazardous waste disposal sites, and has therefore approved the SRI/FS work plan.

3. The SRI/FS work plan is attached hereto and made a part hereof and shall be implemented in accordance with the schedule therein.

4. Upon completion of the work required in the SRI/FS work plan, the State shall select a final remedy for the North Gravel Pit area consistent with the Comprehensive Environmental Response, Compensation, and Liability Act and amendments thereto (CERCLA/SARA) and the terms of the Consent Judgment.

5. If the State and Special Metals agree on the remedy selected, they shall prepare a final stipulation reflecting that agreement for the Court's approval. If no agreement is reached as to final remedy, Special Metals may proceed to dispute resolution as described in the provisions of the Consent Judgment. Special Metals must make a demand for dispute resolution within 60 days of its receipt of a written demand from the State directing the implementation of a remedy.

B. Sampling at Onsite Wastewater Treatment Facility

1. In accordance with the agreement between Special Metals and the State, the Revised Sampling Frequency is approved, effective as of February 1, 1995, and the total phenolic limit shall be revised from 0.002 mg/l to 0.008 mg/l, effective as of November 1, 1994.

C. Notice

1. Paragraph XVII of the Consent Judgment requires that notice of any proposed modifications to the Approved Remedial Plan shall be given to all Settling Defendants with an opportunity to object.

2. Special Metals has advised Chesebrough-Pond's and the Ludlow Defendants of the proposed modification to the Approved Remedial Plan set forth at paragraph (B) (1) of this Stipulation. By their respective signatures to this Stipulation, Chesebrough Pond's and the Ludlow Defendants approve of the proposed modification and request this Court to approve it.

D. Counterparts

This Stipulation may be executed for the convenience of the parties hereto individually or in combination, in one or more counterparts, each of which for all purposes shall be deemed to have the status of an executed original and all of which shall together constitute one and the same Stipulation.

E. Miscellaneous

1. Nothing in this Stipulation is intended to affect any other provisions of the Consent Judgment or other Orders entered in this action.

Dennis C. Vacco
Attorney General
Attorneys for Plaintiff
State of New York

Dated: ~~February~~ July 9, 1996

By: _____
J. Jared Snyder
Assistant Attorney General

SPECIAL METALS CORPORATION

Dated: February22, 1996

By: _____
Donald R. Muzyka
President

CHESEBROUGH-POND'S USA CO.,
A Division of Conopco, Inc.

Dated: February , 1996

By: _____
Melvin H. Kurtz
Vice President

LUDLOW SANITARY LANDFILL INC.
LUDLOW' S SAND AND GRAVEL
COMPANY, INC.

Dated: February , 1996

By: _____
James Ludlow, individually
and on behalf of the Ludlow
Sanitary Landfill, Inc. and
Ludlow's Sand and Gravel
Company, Inc.

Dated: February , 1996

By: _____
G. Kevin Ludlow

SO ORDERED:

_____
Honorable Thomas McAvoy
United States District Judge

Dated: _____

CHESEBROUGH-POND'S USA CO.,
A Division of Conopco, Inc.

Dated: February , 1996

By: _____
Melvin H. Kurtz
Vice President

LUDLOW SANITARY LANDFILL INC.
LUDLOW' S SAND AND GRAVEL
COMPANY, INC.

Dated: July 1, 1996

By: Grace R. Ludlow, As
James Ludlow, individually
-and on behalf of the Ludlow Sanitary Landfill, Inc. and Ludlow's Sand and Gravel Company, Inc.
EXECUTRIX OF THE ESTATE OF JAMES S. LUDLOW

Dated: July 1, 1996

By: G. Kevin Ludlow
G. Kevin Ludlow

SO ORDERED:

Thomas J McAvoy
Honorable Thomas McAvoy
United States District Judge

Dated: August 3, 1996

3:86-cv-00853

Barry R. Kogut, Esq. ✓
Bond, Schoeneck Law Firm
One Lincoln Center
Syracuse, NY 13202-1355

pta

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-1P
ECT Ludlow Landfill		SHEET 2 OF 2
NT Whiteman, Osterman & Hanna		JOB No. 348-8-4789

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
S-11	6 10 11 11	GP		BrmfG s(-), cmfS, t(+)Cy$	Rec=1.0' WET
S-12	6 11 14 13	GW		BrcmfG 1(+), cmfS, tCy$; mtld	Rec=1.0' WET
S-13	10 14 15 15	GW	Lab Compo-site Sample	BrcmfG 1(+), cmfS, t(-)Cy$; mtld (GLACIO-FLUVIAL) 26.0'	Rec=.9' WET
S-14	7 11 10 12	GM		BrcmfG 1, cmfS, lCy$; mtld	Rec=.6' WET/Moist
S-15	7 10 9 12	GW		Brc(-)mfG 1, cmfS, tCy$; mtld	Rec=.9' WET
S-16	11 10 12 20	GM		Brc(-)mfG 1(+), cmfS, 1(+)Cy$; mtld	Rec=.8' Damp/Moist
S-17	9 18 18 21	GW		BrcmfG 1, cmfS, tCy$; mtld	Rec=.9' WET
S-18	19 25 29 26	GM		BrcmfG 1(+), cmfS, lCy$; mtld	Rec=1.0' Damp/Moist
S-19	25 37 28 26	GM		BrcmfG 1(+), cmfS, 1(+)Cy$; mtld	Rec=.9' Damp/Moist
S-20	25 27 30 31	GM		DO (TILL) 40.0'	Rec=.8' WET/Moist
				End of Boring	

Dunn Geoscience Corp. ... ny, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-1P
C... Ludlow Landfill		SHEET 1 OF 2
T... Whiteman, Osterman & Hanna		JOB No. 348-8-4789
... CONTRACTOR Parratt-Wolff, Inc.		MEAS. PT. ELEV.
DRG.		GROUND ELEV.
... METHOD 4¼" ID HSA	SAMPLE / CORE / CASING	DATUM MSL
RIG TYPE Mobile B-52	TYPE: SS	DATE STARTED 6/3/87
...ATER DEPTH	DIA.: 2"	DATE FINISHED 6/3/87
URING POINT	WEIGHT: 140#	DRILLER Neil Thurston
... MEASUREMENT	FALL: 30"	INSPECTOR Michael Palleschi

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
	11	GW		Br cmfG s(-), cmfS, tCy$; mtld	Rec=.9'
	15				Moist
	12				
	13				
	10	GW		DO	Rec=.8'
	18				Moist
	17				
	19				
	14	GW		DO; not mottled.	Rec=.6'
S-3	16				Moist
	10				
	7				
	7	GW		DO	Rec=.6'
S-4	9				Moist
	5				
	5				
	11	GW		Brc(+)mfG 1(+), cmfS, t(-)Cy$	Rec=.65'
S-5	7				Moist
	4				
	7				
	6	GW		DO; mottled.	Rec=.5'
6	6				Moist
	4				
	4				
	5	GW		DO	Rec=.7'
7	4				Moist
	5				
	5				
	5	GW		DO	Rec=.8'
S-8	7				Moist
	5				
	6				
				(GLACIO-FLUVIAL)	
	5	GW		Brc(+)mfG s(-), cmfS, t(-)Cy$; mtld	Rec=.9'
S-9	9				Moist
	7				
	11				
	8	GW		Brcm(+)fG 1, cmfS, t(-)Cy$	Rec=.8'
S-10	12				Moist
	12				
	10				

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-2P

PROJECT Ludlow Landfill					SHEET 1 OF 2
CLIENT Whiteman, Osterman & Hanna					JOB No. 348-8-4789
DRILLING CONTRACTOR Parratt-Wolff, Inc.					MEAS. PT. ELEV.
PURPOSE					GROUND ELEV.
DRILLING METHOD 4¼" ID HSA		SAMPLE	CORE	CASING	DATUM MSL
DRILL RIG TYPE Mobile B-52	TYPE	SS			DATE STARTED 6/4/87
GROUNDWATER DEPTH	DIA.	2"			DATE FINISHED 6/4/87
MEASURING POINT	WEIGHT	140#			DRILLER Neil Thurston
DATE OF MEASUREMENT	FALL	30"			INSPECTOR Michael Palleschi

DEPTH FT.	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
		2				
	S-1	4	SM		Organic; Rts .6 BrfS, s(+)Cy$, lmfG	Rec=1.0' Dry
		8				
		7				
		6	SM		BrfS, s(+)Cy$, tmfG; mtld	Rec=.7'
	S-2	6				Moist
		7			(FLUVIAL)	
		7				
		3	ML		BrCy$ s(+), fS, t(-)mfG; mtld, pt	Rec=.8'
5	S-3	3				Moist
		3				
		3				
		3	ML		BrCy$ s, fS, t(-)fG; mtld	Rec=1.0'
	S-4	2				Damp
		1			(LACUSTRINE)	
		3				
		3	ML		BrCy$ a(-), fS 8.9'	Rec=1.0'
	S-5	5				
		3	GM		BrmfGl, cmfS, l Cy$	Damp
0		7				
		5	GM		Brc(+)mfG l(+), cmfS, lCy$: mtld	Rec=1.0'
	S-6	7				Moist
		11			(TILL)	
		10				
		12	GM		Brc(+)mfG s(-), cmfS, lCy$; mtld 12.8'	Rec=1.2'
	S-7	13				Moist
		10			Br cmfS, tCy$, t(-)fG	
		14	SW			
		12	SW		BrcmfS, tCy$, smfG,	Rec=1.4'
5	S-8	18			14.6' - cmfGs, cmfS, tCy$; mtld	Moist
		19	CW			
		34				
		19	SW		BrcmfS, t(+)Cy$, s(+)mfG; mtld	Rec=1.0'
	S-9	13				Moist
		21			(GLACIO-FLUVIAL)	
		52				
		12	SW		Brcmf(+)S, t(+)Cy$, t(-)fG;	Rec=1.0'
	S-10	25	GW		18.5' - Brcm(+)fGs, cmfS, tCy$	Moist
		26				
0		28				

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-2P
PROJECT Ludlow Landfill		SHEET 2 OF 2
CLIENT Whiteman, Osterman & Hanna		JOB No. 348-8-4789

DEPTH FT	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
		24	GW		BrmfG s, cmfS, tCy$	
	S-11	16				Rec=1.7'
		14	ML		.6' BrCy$ s(+), fS, l(+)mfG	Moist
22		14				
		13	SM		BrfS, l(+)Cy$, t(+)fG	
	S-12	16				Rec=1.6'
		19				Moist
24		23				
		8	SM		BrfS, l(+)Cy$, l(+)mfG	
	S-13	13				Rec=1.2'
		20				Damp
26		32				
		18	SM		BrfS, l(+)Cy$, l(+)m(+)fG	
	S-14	23				Rec=1.4'
		34		Lab Compo-site Sample		Damp
28		36				
		13	GP		Brcm(-)fG l, cmfS, tCy$	
	S-15	25				Rec=.4'
		29				WET
30		35				
		20	GP		Brm(+)fG a, cmfS, tCy$	
	S-16	21				Rec=1.1'
		23				WET
32		26				
		17	GM		32.0'	
	S-17	26			Br mfG l(+), cmfS, lCy$	Rec=.7'
		24				Moist
34		28				
		24	GM		Brcm(+)fG s(-), cmfS, lCy$	
	S-18	28				Rec=.6'
		13				WET
36		50/1.1			(TILL)	
					36.0'	
					End of Boring	

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-3P
ECT Ludlow Landfill		SHEET 1 OF 1
T Whiteman, Osterman & Hanna		JOB No. 348-8-4789
NG CONTRACTOR Parratt-Wolff		MEAS. PT. ELEV.
OSE		GROUND ELEV.
ING METHOD 4¼" ID HSA	SAMPLE / CORE / CASING	DATUM MSL
RIG TYPE Mobile B-52	TYPE: SS	DATE STARTED 6/5/87
INDWATER DEPTH	DIA.: 2"	DATE FINISHED 6/5/87
URING POINT	WEIGHT: 140#	DRILLER Neil Thurston
OF MEASUREMENT	FALL: 30"	INSPECTOR Michael Palleschi

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
S-1	W.H. 2 5 7	SM		Bio, .6 - BrfS, s(-)Cy$, t(-)fG	Rec=1.4' Damp
S-2	5 13 9 12	SM SW		BrfS, s(-)Cy$, tmfG 2.8' - BrcmfS, tCy$, smfG BrcmfG 1(+), cmfS, tCy$	Rec=2.0' Damp
S-3	10 12 18 21			BrcmfG 1(+), cmfS, tCy$	Rec=.65' Moist
S-4	20 25 31 31			Brc(-)mfG s(+), cmfS, tCy$; mtld	Rec=1.1' Moist Till
S-5	17 16 9 9			Brc(+)mfG 1(+), cmfS, tCy$ 8.5' - BrcmfS, tCy$, t(-)fG	Rec=1.0' Moist
S-6	9 15 14 18			BrmfG 1(+), cmfS, tCy$	Rec=1.0' Moist Till
S-7	15 9 15 17		Lab Composite Sample	BrcmfS, tCy$, tmfG 12.8' - BrmfG 1, cmfS, tCy$; mtld	Rec=1.3' Damp
S-8	8 13 15 12			BrmfG 1(+), cmfS, tCy$; mtld 16.0'	Rec=.8' WET
S-9	6 9 13 16	ML		BrCy$ 1, fS; lns cmfS (LACUSTRINE)	Rec=1.4' Damp
S-10	5 6 10 10	ML		DkgrCy$ t, fS End of Boring 20.0'	Rec=1.9' Damp

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-4P
PROJECT Ludlow Landfill		SHEET 1 OF 3
CLIENT Whiteman, Osterman & Hanna		JOB No. 348-8-4789
DRILLING CONTRACTOR Parratt-Wolff, Inc.		MEAS. PT. ELEV.
PURPOSE		GROUND ELEV.
DRILLING METHOD 4¼" ID HSA	SAMPLE / CORE / CASING	DATUM MSL
DRILL RIG TYPE Mobile B-52	TYPE: SS	DATE STARTED 6/8/87
GROUNDWATER DEPTH	DIA.: 2"	DATE FINISHED 6/8/87
MEASURING POINT	WEIGHT: 140#	DRILLER Neil Thurston
DATE OF MEASUREMENT	FALL: 30"	INSPECTOR Michael Palles

DEPTH FT.	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSI-FICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
	S-1	2 3 4 3	SM		Bio; .2' - BrfS, l(+)Cy$, lmfG	Rec=.8' Moist
	S-2	3 4 4 4	SM		BrfS, l(+)Cy$, tfG; mtld	Rec=2.0' Moist
5	S-3	3 2 1 2	SM		BrfS, l(+)Cy$, tmfG; mtld	Rec=.8' Damp
	S-4	2 5 5 2	SM		BrfS, l(+)Cy$, t(-)fG; (LACUSTRINE) 8.0'	Rec=.5' Damp
	S-5	2 2 15 25	GM GM		BrmfGS(+), cmf(+)S, lCy$ BrcmfG s, cmf(+) S, l(+)Cy$	Rec=.7' Damp Till like
10	S-6	4 20 23 33	GM		BrmfG s, cmfS, lCy$; mtld	Rec=1.2' Moist Till like
	S-7	10 50/.3	GM GM		Brmf(+)G s, cmfS, lCy$ 12.3' - BrfS, l(+)Cy$, tfG	Rec=.8' Damp Cobble
15	S-8	7 13 23 22	SM GM		BrfS, t(+)Cy$, am(+)fG; 14.8' - mfG s, cmfs, lCy$; mtld	Rec=1.3' Damp Till
	S-9	18 20 31 24	GM		BrcmfG s, cmfS, lCy$; mtld.	Rec=1.0' Moist Till
	S-10	17 23 25 21	GM		BrmfG s, cmfS, lCy$; mtld (TILL)	Rec=1.2' Dry Till
20						

CONTINUED

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-4P
PROJECT Ludlow Landfill		SHEET 2 OF 3
CLIENT Whiteman, Osterman & Hanna		JOB No. 348-8-4789

DEPTH FT	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
	S-11	13 20 17 18	GM		BrmfG 1(+), cmfS, tCy$; mtld	Rec=1.0' Dry Till
	S-12	14 18 30 25	GM		DO	Rec=1.3' Dry Till
25	S-13	19 28 17 16	GM		DO	Rec=1.0' Dry Till
	S-14	30 22 22 18	GM		BrcmfG s(+), cmfS, 1Cy$; mtld	Rec=1.5' Dry Till
	S-15	4 7 19 28	GM		BrmfG s, cmfS, 1Cy$; mtld	Rec=1.2' WET Till
30	S-16	17 33 37 21	GM	Lab Compo-site Sample	DO	Rec=1.3' WET Till
	S-17	33 34 33 23	GM		DO (TILL)	Rec=1.7' WET Till
35	S-18	3 7 19 21	GM		DO	Rec=.7' WET
	S-19	16 23 26 21	GM		Brm(+)fG s(+), cmfS, 1Cy$; mtld	Rec=.9' Damp
	S-20	22 22 28 22	GM		BrmfG s, cmfS, 1Cy$ .65 - Br cm(+) fS, 1Cy$	Rec=1.3' Damp
40	S-21	5 11 10 13	SW	Lab Compo-site Sample	Brcm(+)fS, tCy$	Rec=.9' WET
	S-22	7 21 21 30	SW		DO (GLACIO-FLUVIAL)	Rec=1.0' WET
44						

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-4P
OJECT Ludlow Landfill		SHEET 3 OF 3
LIENT Whiteman, Osterman & Hanna		JOB No.348-8-4789

DEPTH IN FEET	SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
		16	SW	Lab	Brcm(+)fS, tCy$, tfG 45.0'	Rec=1.6'
	S-23	22		Compo-	Br mf(+)G a, cmfs, lCy$	WET/Moist
		29	GM	site		
		33		Sample		
		24			No Recovery	Rec=0
	S-24	40				
		44				
		48			(TILL) 48.0'	
					End of Boring	

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-5P

OJECT Ludlow Landfill						SHEET 1 OF 2
ENT Whiteman, Osterman & Hanna						JOB No. 348-8-4789
LLING CONTRACTOR Parratt-Wolff						MEAS. PT. ELEV.
RPOSE						GROUND ELEV.
LLING METHOD 4¼" ID HSA		SAMPLE	CORE	CASING		DATUM MSL
LL RIG TYPE Mobile B-52	TYPE	SS				DATE STARTED 6/9/87
OUNDWATER DEPTH	DIA.	2"				DATE FINISHED 6/9/87
ASURING POINT	WEIGHT	140#				DRILLER Neil Thurston
TE OF MEASUREMENT	FALL	30"				INSPECTOR Michael Palleschi

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
S-1	1 2 3 2	SM		Bio, .2' - BrfS, l(+)Cy$, s(+)m(+)fG	Rec=.9' Damp
S-2	5 4 3 3	GW		Brm(+)fG s, cmfS, tCy$	Rec=.5' Moist
S-3	2 2 2 2	SM		BrfS, l(+)Cy$, sm(+)fG; mtld	Rec=5.5' Damp
S-4	2 1 1 2	SW/SP		Brc(-)mfS, t(+)Cy$, lmf(-)G; mtld (GLACIO-FLUVIAL)	Rec=1.3' Damp
S-5	1 3 5 12	SW GM		Brcm(+)fS, tCy$, t(-)fG; mtld 8.5' Brm(+)fG l(+), cmfS, lCy$; mtld	Rec=1.1' Damp Till
S-6	10 17 15 14	GM		Brm(+)fG l(+), cmfS, lCy$; mtld	Rec=1.0' Moist Till
S-7	18 20 20 21	GM		Brmf(+)G s, cmfS, lCy$	Rec=1.3' Dry Till
S-8	10 14 17 14	GM		Brmf(+)G a, cmfS, lCy$	Rec=1.3' Dry
S-9	10 7 7 10	GM SM		Brm(-)fG a, cmfS, lCy$ 15.6' - Brcm(+)fS, lCy$, t(-)fG	Rec=1.9' Dry
S-10	27 30 30 25	GM	Lab Compo-site Sample	Brc(-)mfG s, cmfS, lCy$ (TILL)	Rec=1.3' Moist

Dunn Geoscience Corp.
Albany, NY 12205 (518)458-1313

TEST BORING LOG

BORING No. DB-5P

PROJECT Ludlow Landfill

SHEET 2 OF 2

CLIENT Whiteman, Osterman & Hanna

JOB No. 348-8-4789

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSIFICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
	20	GM	Lab	Brm(+)fG s(-), cmfS 1Cy$	Rec=1.7'
S-11	22				WET
	30				
	34		Compo-		
	40	GM	site	BrmfG s(+), cmfS, 1(+)Cy$	Rec=1.3'
S-12	35				Damp
	24				Till
	23	GM	Sample	Brm(+)fG s(+), cmf(+)S, 1(+)Cy$	Rec=1.3'
	18				Moist
S-13	24				Till
25	32			(TILL)	
	38			26.0'	
				End of Boring	

Dunn Geoscience Corp. Albany, NY 12205 (518)458-1313	TEST BORING LOG	BORING No. DB-6P
		SHEET 1 OF 1
CT Ludlow Landfill		JOB No. 348-8-4789
T Whiteman, Osterman & Hanna		MEAS. PT. ELEV.
NG CONTRACTOR Parratt-Wolff, Inc.		GROUND ELEV.
OSE		DATUM MSL
ING METHOD 4¼" ID HSA	SAMPLE / CORE / CASING	DATE STARTED 6/9/87
RIG TYPE Mobile B-52	TYPE: SS	DATE FINISHED 6/9/87
JNDWATER DEPTH	DIA.: 2"	DRILLER Neil Thurston
URING POINT	WEIGHT: 140#	INSPECTOR Michael Palleschi
OF MEASUREMENT	FALL: 30"	

SAMPLE NUMBER	BLOWS ON SAMPLE SPOON PER 6"	UNIFIED CLASSI-FICATION	GRAPHIC LOG	GEOLOGIC DESCRIPTION	REMARKS
S-1	2 5 7 8	SM		BrfS, l(+)Cy$, lm(+)fG; o, rts	Rec=1.6' Moist
S-2	2 7 28 12	SM GP		BrfS, l(+)Cy$, tfG; 2.8' - BrmfG a, cmfS, tCy$	Rec=1.3' Damp
S-3	7 14 21 35	GP		BrmfG s(+), cmfS, tCy$	Rec=1.3' Moist
S-4	45 28 25 20	GP		Brm(+)fG l(+), cmfS, tCy$ (GLACIO-FLUVIAL)	Rec=1.3' Damp
S-5	13 22 27 33	GP GM	Lab Compo-site Sample	BrmfG s(-), cmfS, tCy$ 8.8'	Rec=1.7' WET Till
S-6	20 13 12 35	GM		BrmfG s, cmfS, lCy$; mtld	Rec=1.5' Moist Till
S-7	17 25 20 14	GM GM		BrmfG s(+), cmfS, lCy$ (TILL) 13.0' - BrmfG s(+), cmfS, lCy$; mtld 14.0'	Rec=1.4' Dry
S-8	5 6 6 9	SW ML	Lab Compo-site Sample	BrcmfS, tCy$ 15.2' - BrCy$ l(+), fS	Rec=1.7' WET
S-9	7 12 18 14	ML GP ML		Br Cy$l(+), fS 16.2' - Brmf(+)G s, cmfS, tCy$ 16.8' - Br Cy$t(+), fS	Rec=1.0' Damp
S-10	14 13 17 21	ML ML		BrCy$ t(+), fS 18.4' - DkgrCy$ t, fs (LACUSTRINE) End of Boring at 20.0'	Rec=1.4' Damp

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-191
PAGE 1 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 22-24 ft.
ANALYSIS - PCB's

LOCATION: 101 ft. North, 59 degrees West of MW-12
START DATE: 6/27/91 1110
END DATE: 6/27/91

ELEVATION - 1284.4 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	8-6-6-7	1.0	12	Dry, light brown/brown fine to coarse SAND and round to subround GRAVEL (matrix-supported), trace silt and clay, massive			0
1									
2	2	2-4'	5-5-4-5	0.8	9	Damp, brown/gray silty CLAY, little fine, gravel and fine to coarse sand, massive			0
3									
4	3	4-6'	2-2-1-2	1.2	3	Damp, brown/light brown SAND and fine to medium GRAVEL, little silt, trace clay, massive			0
5									
6	4	6-8'	3-7-7-11	0.7	14	As above, damp, round to subround, faceted and striated gravel			0
7									
8	5	8-10'	10-11-10-17	0.9	21	Damp, brown to gray GRAVEL with sand, silt and green to red, faintly laminated clay			0
9									
10	6	10-12'	18-21-11-10	0.6	32	As above, damp gravel, saturated in some fractures			0
11									
12	7	12-14'	14-16-14-15	0.8	30	Damp, brown to gray, sandy GRAVEL with little silt and clay, massive			0
13									
14	8	14-16'	8-22-12-8	1.3	34	As above, dry with tan clay horizontal laminations (flow till ?)			0
15									
16	9	16-18'	18-12-10-13	1.2	22	As above, damp silt and clay, massive			0
17									
18	10	18-20'	5-15-10-12	1.0	25	Damp, brown to gray SILT and rust-colored to greenish/brown to gray CLAY, massive			1
19									
20	11	20-22'	12-9-19-8	1.6	28	As above, damp with saturated fractures			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-191
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 22-24 ft.
ANALYSIS - PCB's

LOCATION: 101 ft. North, 59 degrees West of MW-12
START DATE: 6/27/91 1110
END DATE: 6/27/91

ELEVATION - 1284.4 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
21									
22	12	22-24'	11-12-	1.4	33	As above, damp			
			21-22					Submitted to lab for PCB's Analyses	1
23									
24	13	24-26'	12-12-	1.8	22	Saturated brown to gray GRAVEL with sand, silt and clay (no odor or sheen)			
			10-12						0
25									
26									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-291
PAGE 1 OF 1

:NT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 43 ft. North, 75 degrees West of MW-12
START DATE: 6/27/91 1400
END DATE: 6/27/91

ANALYTICAL SAMPLES

DEPTH - 14-16 ft.

ANALYSIS - PCB's

ELEVATION - 1277.4 ft.

:RING COMPANY: Parratt-Wolff, Inc.
EMAN: Doug Richmond
GEOLOGIST: Paul Gottler

TH OW DE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	1-2-3-4	1.0	5	Dry to damp, brown to gray GRAVEL and SAND with little silt and clay, matrix-supported, massive			0
1									
2	2	2-4'	7-5-7-4	0.9	12	As above, damp fine sand, dry gravel			0
3									
4	3	4-6'	6-5-6-5	1.6	11	(4-4.7') As above, damp (4.7-5.2') Damp, brown, fine well-sorted SAND (5.2-5.8') Saturated, brown to white medium, well-sorted SAND			2
5									
6	4	6-8'	6-5-5-7	1.6	10	(5.8-6') Damp, brown SAND and GRAVEL with clay and silt (6-8') As above, damp, brown GRAVEL with less sand, silt and clay, massive			10
7									
8	5	8-10'	9-8-4-4	1.1	12	As above, dry brown/gray GRAVEL and SAND			0
9									
10	6	10-12'	3-5-8-10	1.0	13	As above, damp			0
1									
2	7	12-14'	8-6-8-7	—	14	No recovery			—
13									
4	8	14-16'	6-6-11-7	0.9	17	Saturated, brown/light brown GRAVEL and SAND with silt and brown clay, massive		Submitted to lab for PCB's Analyses	0
15									
6	9	16-18'	8-8-9-13	1.1	17	As above, saturated			0
7									
18									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-391
PAGE 1 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 18–20 ft.
ANALYSIS – PCB's

LOCATION: 26 ft. South, 36 degrees West of MW-12
START DATE: 6/28/91 0630
END DATE: 6/28/91

ELEVATION – 1280.4 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0–2'	2–4–7–11	0.4	11	(0–0.4') Dry, brown/black to white medium SAND			0
1						(0.4–3.4') Saturated, brown, medium to coarse SAND with angular to round, fine gravel, massive			
2	2	2–4'	10–10– 6–13	1.1	16	(3.4–4') Damp to saturated, gray to brown SILT and CLAY with fine to medium gravel and coarse to very coarse sand			0
3									
4	3	4–6'	21–19– 13–11	0.6	32	(4–5') As above, damp black to white SAND			0
5						(5–6') Damp SILT and CLAY with gravel, trace sand, massive			
6	4	6–8'	11–10– 10–8	1.1	20	As above, damp with zones of pure SILT and red/brown CLAY, some gray/yellow to red clay spots			0
7									
8	5	8–10'	5–9– 10–15	1.0	19	Damp, brown GRAVEL in clay matrix, some sand, deformed clay lamination, peat zone			0
9									
10	6	10–12'	21–10– 10–10	0.7	20	As above, dry, mostly green to white marbled, GRAVEL, matrix-supported			0
11									
12	7	12–14'	12–9– 15–14	0.8	24	As above, dry with red sandstone pebbles, A-axis random, facets common, subrounded gravel			0
13									
14	8	14–16'	15–16– 18–18	0.4	34	Damp, brown sandy SILT with clay, trace fine gravel and fine to medium sand, massive			1
15									
16	9	16–18'	16–9– 9–13	1.2	18	Damp with wet zone at 17.5', brown to rust-colored GRAVEL with silt and clay matrix, some sand			0
17									
18	10	18–20'	12–10– 11–15	2.0	21	As above, damp with no wet zone, 55% GRAVEL, 20% sand, 15% silt, 10% clay		Submitted to lab for PCB's Analyses	0
19									
20	11	20–22'	16–15– 21–36	1.1	36	As above, saturated at 20.1'			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-391
PAGE 2 OF 2

ENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

E NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 18–20 ft.
ANALYSIS – PCB's

LOCATION: 28 ft South, 36 degrees West of MW-12
START DATE: 8/28/91 0630
END DATE: 8/28/91

ELEVATION – 1280.4 ft.

BORING COMPANY: Parratt-Wolff, Inc.
EMAN: Doug Richmond
GEOLOGIST: Paul Gottlier

DEPTH OW DE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
21									
22	12	22–24'	16–16–15–14	1.8	31	As above, saturated (no odor or sheen)			0
23									
24									

ES: Split sample with DEC Representative
Mostly fine gravel up auger
Completed boring 0845 to 24'

RIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-491
PAGE 1 OF 2

CLIENT: Special Metals

JECT LOCATION: Ludlow Landfill
Paris, New York

LE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 143 ft. North, 78 degrees West of MW-12
START DATE: 6/28/91 1000
END DATE: 6/28/91

ANALYTICAL SAMPLES

DEPTH – 22-24 ft.

ANALYSIS – PCB's

ELEVATION – 1284.9 ft.

NG COMPANY: Parratt-Wolff, Inc.
OREMAN: Doug Richmond
P GEOLOGIST: Paul Gottler

ELOW E	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	10-34- 23-46	1.0	57	Dry, gray/brown, fine to medium, subround and faceted GRAVEL and very fine to coarse SAND, little silt, trace clay, massive			0
2	2	2-4'	49-65/.4	0.3	—	As above, damp, browner, more silt and clay			0
4	3	4-6'	8-7-7-8	1.1	14	As above, dry			0
7	4	6-8'	9-8-7-6	0.6	15	As above, damp with 60% GRAVEL, 20% sand, 15% silt, 5% clay, sandier than above			0
9	5	8-10'	15-16- 16-18	0.7	32	As above, damp with more silt and clay			0
12	6	10-12'	4-13- 14-11	2.0	27	As above, damp with more sand			0
15	7	12-14'	18-16- 16-15	0.4	32	As above, dry, 70-80% GRAVEL, fossiliferous limestone pebbles			0
15	8	14-16'	11-7- 10-11	1.1	17	(14-14.6') Damp, brown GRAVEL with silt and clay, trace sand (14.6-16') Dry, brown/gray GRAVEL with sand, trace silt and clay			0
17	9	16-18'	11-18- 18-10	0.4	36	As above, dry with large sandstone pebble			1
20	10	18-20'	11-11- 10-8	1.6	21	(18-18.4') Dry, light brown/brown GRAVEL and SAND (18.4-20') Dry, gray to white medium SAND, well-sorted, grades to brown, fine SAND, well-sorted			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-491
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 143 ft. North, 78 degrees West of MW-12
START DATE: 6/28/91 1000
END DATE: 6/28/91

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

ANALYTICAL SAMPLES
DEPTH - 22-24 ft.
ANALYSIS - PCB's

ELEVATION - 1284.9 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTIN
20	11	20-22'	6-5-7-8	1.9	12	Damp, brown/white to black, medium, very well sorted SAND, trace gravel			H 0
21									
22	12	22-24'	11-10-8-8	1.9	18	As above, damp, trace silt and clay		Submitted to lab for PCB's Analyses	p
23									
24	13	24-26'	8-6-6-11	2.0	12	(24-24.4') As above, damp (24.4-25.8') As above, saturated (25.8-26') Saturated GRAVEL, with sand, trace silt and clay (no odor or sheen)			
25									
26									

NOTES: Split sample with DEC Representative
Completed boring 1145 to 26'

BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-591
PAGE 2 OF 2

CLIENT: Special Metals

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 186 ft. North, 79 degrees West of MW-12
START DATE: 6/28/91 1300
END DATE: 6/28/91

OJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

ANALYTICAL SAMPLES

DEPTH - 22-24 ft.

ANALYSIS - PCB's

ELEVATION - 1284.4 ft.

RING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
ORG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	11	20-22'	7-7-8-11	0.6	15	Round to angular PEBBLES, A-axis random, trace sand			0
21									
22	12	22-24'	54/.4	0.4	—	As above, damp to saturated gray SILT and GRAVEL		Submitted to lab for PCB's Analysos	0
23									
24	13	24-26'		2.0		(24-25') As above, damp			—
25						(25-26') Damp to saturated, brown SILT and GRAVEL with sand and brown clay, saturated at 25.2' (no odor or sheen)			0
26									

OTES: Split sample with DEC Representative
Completed boring 1440 to 26'

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-691
PAGE 1 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 24–26 ft.
ANALYSIS – PCB's

LOCATION: 46 ft. South, 57 degrees East of MW-11
START DATE: 7/1/91 0845
END DATE: 7/1/91

ELEVATION – 1283.1 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TEST
0	1	0–2'				Dry SAND and GRAVEL (road)			
1									
2	2	2–4'	6–8–7–6	0.6	15	Dry, brown, fine SAND and GRAVEL, with trace silt and clay, massive			0
3									
4	3	4–6'	4–3–3–3	0.8	6	As above, damp, brown, fine SAND with gravel, clay laminations			
5									
6	4	6–8'	4–4–4–4	1.1	8	As above, damp			
7									
8	5	8–10'	2–2–2–3	1.8	4	Damp, brown, fine SAND, little clay and silt, trace gravel, laminated			0
9									
10	6	10–12'	2–1–2–4	1.7	3	(10–10.4') As above, damp			
11						(10.4–10.8') Saturated, brown SILT, trace clay			0
12	7	12–14'	7–15–	1.3	27	(10.8–11.6') Damp, brown, fine SAND and CLAY			
13			12–14			(11.6–12.8') Damp, well–sorted, medium SAND			
14	8	14–16'	4–9–9–8	1.5	18	(12.8–14') Dry, gray to brown GRAVEL, trace silt, sand and clay			
15						As above, dry, clast–supported			
16	9	16–18'	11–15–	1.1	27	As above, dry with sand matrix			0
17			12–11						
18	10	18–20'	10–10–		18	(18–18.7') As above, damp			
19			8–11			(18.7–20') Damp, brown, fine GRAVEL with sand, silt and clay, matrix–supported (flow till ?)			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-691
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES

DEPTH - 24-26 ft.

ANALYSIS - PCB's

LOCATION: 45 ft. South, 57 degrees East of MW-11

START DATE: 7/1/91 0845

END DATE: 7/1/91

ELEVATION - 1283.1 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	11	20-22'	15-12-		59	(20-21.7') As above, damp			0
			47-30			(21.7-22') Damp, gray GRAVEL, trace sand, clast-supported			
21									
22	12	22-24'	15-30-		61	Damp, brown/gold brown SAND and GRAVEL with trace red/brown clay, trace silt, laminated (lodgement till ?)			0
			31-29						
23									
24	13	24-26'	27-30-		61	(24-26') As above, damp			
			31-27			As above, saturated (no odor or sheen)		Submitted to lab for PCB's Analyses	0
25									
26	14	26-28'	19-27-		56	As above with purple CLAY			
			29-28						0
27									
28									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-591
PAGE 1 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER 6plit Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 22-24 ft.
ANALYSIS - PCB's

LOCATION: 186 ft. North, 79 degrees West of MW-12
START DATE: 6/28/91 1300
END DATE: 6/28/91

ELEVATION - 1284.4 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'				Dry GRAVEL and SAND (road surface)			
1									
2	2	2-4'	5-5-6-5	1.1	11	Dry, brown/light brown fine to medium, round to subround GRAVEL and fine to coarse SAND, little brown to red to green clay, little silt			0
3									
4	3	4-6'	6-7-7-12	1.3	14	As above, dry, brown, subangular to round GRAVEL and SAND			0
5									
6	4	6-8'	15-9-8-8	1.0	17	(6-6.7') As above, dry			0
7						(6.7-8') Dry, brown, fine well-sorted SAND with gravel, appears massive			
8	5	8-10'	6-6-7-3	1.4	13	As above, dry with trace fine gravel only, massive			0
9									
10	6	10-12'	4-7-4-5	1.1	11	As above, damp with very fine SAND and SILT, 1 large sandstone pebble			1
11									
12	7	12-14'	2-2-3-4	0.9	5	Damp with saturated zones, brown/light brown, very fine to medium, laminated SAND, some coarse sand horizontal, trace fine gravel, saturated at 13.3'			0
13									
14	8	14-16'	8-10-	1.1	20	(14-15.6') As above, with A-axis horizontal			
			10-8			(15.6-16') Damp, brown/red brown SILT and GRAVEL with sand and clay			0
15									
16	9	16-18'	13-14-	0.8	28	(16-16.9') As above, damp with fine gravel, flow till			0
			14-12			(16.9-17.1') Damp, tan SILT, horizontal			
17						(17.1-18') Damp SILT, fine sand and gravel, trace sand and clay			
18	10	18-20'	9-6-	2.0	19	(18-19.6') As above, damp with saturated silt, saturated coarse sand horizons			0
			13-10			(19.6-20') Sharp contact with gray SILT and GRAVEL			
19									

BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-791
PAGE 1 OF 1

CLIENT: Special Metals

OJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 73 ft. North, 25 degrees East of GP-4
START DATE: 7/1/91 1300
END DATE: 7/1/91

ANALYTICAL SAMPLES

DEPTH – 2-4 ft.

ANALYSIS – PCB's

ELEVATION – 1258.0 ft.

RING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
ORG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	2-4-4-5	0.6	8	Saturated, gray SILT and CLAY, trace gravel, parallel laminations (~18/.1')			
1									
2	2	2-4'	5-5-4-3	0.6	9	As above, saturated gold to brown CLAY and SILT (HNU did not deflect down hole) (no sheen)		Submitted to lab for PCB's Analyses	
3									
4									

NOTES: Immediately east of boring was orange/brown seep

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-891
PAGE 1 OF 1

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 125 ft. North, 10 degrees West of GP-4
START DATE: 7/1/91 1430
END DATE: 7/1/91

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

ANALYTICAL SAMPLES

DEPTH - 4-6 ft.

ANALYSIS - PCB's

ELEVATION - 1258.4 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	2-2-6-6	0.9	8	Saturated, brown/gold brown, fine, well-sorted SAND and SILT, sharp contact with gold silt, trace clay, laminated			
1									
2	2	2-4'	6-4-3-4	1.3	7	Saturated, black to brown, medium SAND, trace gravel			
3									
4	3	4-6'	9-10-9-9		19	Saturated, brown/gold brown, fine, well-sorted SAND and SILT, trace gravel and clay, parallel laminations (no sheen)		Submitted to lab for PCB's Analyses	
5									
6									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-991
PAGE 1 OF 1

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 6–8 ft.
ANALYSIS – PCB's

LOCATION: 135 ft. North, 28 degrees West of GP–4
START DATE: 7/2/91 0800
END DATE: 7/2/91

ELEVATION – 1260.8 ft.

BORING COMPANY: Parratt–Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0–2'	2–2–3–3	1.4	5	Saturated, black to gray to green to brown CLAY and SILT with peat, parallel laminations present			6
1									
2	2	2–4'	5–3–4–4	0.9	7	Saturated, brown to black SAND and well–rounded GRAVEL, matrix–supported, visible sheen			4
3									
4	3	4–6'	9–5–6–10		11	(4–5') Saturated, gray/brown SAND and GRAVEL with silt and clay			1
5						(5–6') Saturated, gold brown/light brown, very fine SAND and SILT, trace clay, trace fine, well–rounded gravel			
6	4	6–8'	9–10–7–9		17	As above, saturated (no sheen)		Submitted to lab for PCB's Analyses	1
7									
8									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1091
PAGE 1 OF 1

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 6-8 ft.
ANALYSIS - PCB's

LOCATION: 61 ft. North, 34 degrees West of GP-4
START DATE: 7/1/91 1645
END DATE: 7/1/91

ELEVATION - 1258.2 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottlier

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	WOH-3-3	1.3	—	Saturated, brown to gray SAND and GRAVEL, trace silt and clay			20
1									
2	2	2-4'	WOH-2-3-3	1.6	5	As above, saturated			10
3									
4	3	4-6'	6-5-6-6	1.1	11	(4-4.5') As above, saturated (4.5-6') Saturated, light brown to gold/brown SILT and fine SAND, some clay, trace gravel, laminated			1
5									
6	4	6-8'	9-9-12-9	1.3	21	As above, saturated (no sheen)		Submitted to lab for PCB's Analyses	1
7									
8									

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1191
PAGE 1 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - NA
ANALYSIS - NA

LOCATION: 51 ft. West of GP-4

START DATE: 7/2/91 1520
END DATE: 7/3/91

ELEVATION - 1281.3 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	5-4-9-13	0.7	13	Dry, brown/dark brown SAND and SILT and round to subround GRAVEL, very humus, matrix-supported			0
5	2	5-7'	6-5-3-3	0.6	8	Dry, brown/light brown SILT with sand and subrounded gravel, matrix-supported, some clay, faintly laminated within silt unit, appears massive			0
10	3	10-12'	7-7-9-10	1.1	16	(10-11.5') As above, dry (11.5-12') Dry, gray, fine GRAVEL and fine to coarse SAND with silt and clay, faintly laminated, fine to medium gravel up auger			1
15	4	15-17'	10-10-9-7	1.0	19	Damp, gray/brownish red to green SILT and CLAY with sand, trace gravel, faintly laminated, fine gravel up auger			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1191
PAGE 2 OF 2

LIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

LE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 51 ft. West of GP-4

START DATE: 7/2/91 1520
END DATE: 7/3/91

ANALYTICAL SAMPLES
DEPTH - NA
ANALYSIS - NA

ELEVATION - 1281.3 ft.

ORING COMPANY: Parratt-Wolff, Inc.
OREMAN: Doug Richmond
3G GEOLOGIST: Paul Gottler

EPTH ELOW RADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	5	20-22'	17-19-	0.6	38	Damp, gray to brown SILT and GRAVEL, some clay and sand, faint laminations			1
21			19-11						
22	6	22-24'	9-9-	0.9	20	Saturated, gray to brown GRAVEL with sand and silt, some clay, oily odor, visible sheen			3
23			11-12						
24	7	24-26'	10-11-	0.7	22	(24-25.7') As above, saturated (oily and odiferous)			6
25			11-11			(25.7-26') Damp, gray to green CLAY and SILT with well-rounded gravel, faint laminations			
26	8	26-28'	22-14-	0.7	24	Saturated, gray to brown, fine GRAVEL with sand, silt and gray to red to tan to rust-colored clay, faintly laminated, oily and odiferous			5
27			10-10						
28	9	28-30'	13-15-	0.5	32	As above, saturated with coarse sand layer, ~0.2' thick, oily and odiferous			6
29			17-13						
30	10	30-32'	7-8-8-10	—	16	No recovery			
31									
32	11	32-34'	9-12-	1.1	26	As above, saturated, also some coarse sand layer, oily and odiferous			4
33			14-11						
34	12	34-36'	27-25-	0.3	44	As above, saturated, oily and odiferous			
35			19-9						
36									

TES: Standard sampling, OK'd by DEC Representative @ 1430 on 7/2/91.
Sands ran 4' up auger, halted drilling, no sample to be submitted.

N & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1291
PAGE 1 OF 2

NT: Special Metals

LOCATION: Ludlow Landfill
Paris, New York

2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 92.8 ft. South, 75 degrees East of MW-11 (48 ft. from SB-691)

START DATE: 7/3/91 1330
END DATE: 7/3/91

ANALYTICAL SAMPLES

DEPTH - 22-24 ft.

ANALYSIS - PCB's

ELEVATION - 1283.9 ft.

No COMPANY: Parratt-Wolff, Inc.
MAN: Doug Richmond
LOGIST: Paul Gottier

H W IO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
1	0-2'				GRAVEL, road, no sample			
2	2-4'	9-10-9-6	1.2	19	Dry, brown to gray, matrix-supported, A-axis horizontal, round to subround GRAVEL and fine to coarse SAND with silt and clay, faintly laminated			0
3	5-7'	9-11-6-8	0.9	17	As above, damp with increased amount of sand, green to red to gray to brown clay			0
4	10-12'	4-5-6-6	1.3	11	(10-11.3') As above, damp (11.3-12') Damp, brown to orange/brown, fine SAND with trace silt and clay, laminated			0
5	15-17'	6-9-14-16	1.9	23	As above, damp, fine GRAVEL A-axis horizontal, coarse GRAVEL A-axis vertical			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1291
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 22-24 ft.
ANALYSIS – PCB's

LOCATION: 92.8 ft. South, 75 degrees East of MW-11 (48 ft. from SB-691)
START DATE: 7/3/91 1330
END DATE: 7/3/91

ELEVATION – 1283.9 ft.

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	6	20-22'	4-10-	1.9	21	(20-21.1') As above, damp			
			11-15			(21.1-22') Dry, gray to green to red GRAVEL with sand, silt and clay (calcite cement ?)			1
21									
22	7	22-24'	12-15-	1.8	30	(22-22.2') As above, dry			
			15-17			(22.2-22.8') Dry, brown to gray, well-sorted, fine to medium SAND		Submitted to lab for PCB's Analyses	0
23									
24	8	24-26'	6-5-5-4	0.7	10	(22.8-24') As above, dry, gray/green to red GRAVEL			
25						As above, saturated, brown GRAVEL (no odor or sheen)			0
26									

NOTES: Saturated at 24'

EN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1391
PAGE 1 OF 2

ENT: Special Metals

T LOCATION: Ludlow Landfill
Paris, New York

NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 46 ft. North, 47 degrees West of MW-12 (32 ft. from SB-2)

START DATE: 7/8/91 1415
END DATE: 7/8/91

ANALYTICAL SAMPLES

DEPTH - 20-22 ft.

ANALYSIS - PCB's

ELEVATION - 1283.4 ft

COMPANY: Parratt-Wolff, Inc.
EMAN: Doug Richmond
EOLOGIST: Paul Gottler

OW	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
	1	0-2'	8-7-7-6		14	Dry to damp, brown/light brown to gray, very fine to coarse, well-rounded GRAVEL with fine to coarse SAND, little silt, trace clay			0
	2	5-7'	4-3-2-3	0.4	5	Damp, brown to gray GRAVEL as above, finer, with sand, trace silt and clay			1
	3	10-12'	5-5-5-5	1.0	10	(10-11.7') Damp, gray to dark gray, fine to medium, well-rounded GRAVEL and silt and clay, little sand, a-axis horizontal (flow till ?) (11.7-12') Sharp contact with damp, gray and brown SILT and brown CLAY, parallel laminations, ~18/.2' very regular			1
	4	15-17'	11-12-16-10	0.9	28	(15-15.5') As above, damp (15.5-17') Damp, gray to red to brown, calcite-cemented SAND and GRAVEL, little silt, trace clay			2

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1391
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Doug Richmond
OBG GEOLOGIST: Paul Gottler

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 20-22 ft.
ANALYSIS - PCB's

LOCATION: 46 ft. North, 47 degrees West of MW-12 (32 ft. from SB-2)
START DATE: 7/8/91 1415
END DATE: 7/8/91

ELEVATION - 1283.4 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	5	20-22'	16-18-	1.7	30	Damp to saturated, gray to brown GRAVEL and SAND, little silt and clay, matrix-supported (oily odor, visible sheen)		Submitted to lab for PCB's Analyses	5
			12-17						
21									
22	6	22-24'	20-24-	0.8	48	As above, saturated, gray/dark brown GRAVEL and SAND			7
			24-19						
23									
24									

BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1491
PAGE 1 OF 2

ENT: Special Metals

OJECT LOCATION: Ludlow Landfill
Paris, New York

NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES

DEPTH – 24–26 ft.
28–30 ft.
ANALYSIS – PCB's

LOCATION: 28.7 ft. South of SB-1191

START DATE: 7/10/91 1030
END DATE: 7/11/91

ELEVATION – 1289.2 ft.

ING COMPANY: Parratt-Wolff, Inc.
EMAN: Barney Waters
GEOLOGIST: Paul Gottler

TH OW DE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0–2'	NO SAMPLE TAKEN			Dry, brown/dark brown GRAVEL and SAND with high root/organic content			
5	2	5–7'	8–12–10–8	1.7	22	Dry, brown/light brown SAND and SILT with clay, trace fine, well–rounded gravel, faintly laminated			0
0	3	10–12'	11–7–8–8	1.8	15	As above, dry, brown/light brown SAND and SILT, with well–sorted sand horizons, increased clay and gravel			0
15	4	15–17'	12–14–12–10	1.5	26	(15–16.2') As above, dry with deformed laminations of medium to very fine sand (16.2–17') Dry, brown to gray GRAVEL and SAND			0

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1491
PAGE 2 OF 2

LIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

LE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 28.7 ft. South of SB-1191

START DATE: 7/10/91 1030
END DATE: 7/11/91

ANALYTICAL SAMPLES

DEPTH – 24–28 ft.
28–30 ft.
ANALYSIS – PCB's

ELEVATION – 1289.2 ft.

ORING COMPANY: Parratt-Wolff, Inc.
OREMAN: Barney Waters
BG GEOLOGIST: Paul Gottler

EPTH ELOW RADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	5	20–22'	11–13–	1.8	33	(20–20.7') As above, dry, fine gravel up augers			0
			20–19						
21						(20.7–22') Damp, brown, well–sorted medium SAND, fine sand laminations			
22									
23									
24	6	24–26'	12–50/.2	0.7	—	As above, damp with red/brown clay			
25								Submitted to lab for PCB's Analyses	0
26	7	26–28'	34–14–	1.1	32	Damp to moist, brown GRAVEL and SAND with brown, well–sorted, medium sand horizons which contain trace silt and clay			
			18–33						0
27									
28	8	28–30'	48–41–	1.2	74	(28–28.9') As above, dry to damp, gray/ brown GRAVEL and SAND		Submitted to lab for PCB's Analyses	0
			33–22			(28.9–29.7') Damp, green SAPROLITE			
29						(29.7–30') As above, saturated, green SAPROLITE with brown gravel and sand (no odor or sheen)			
30									

TES: 28–30' sample split with DEC Representative

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1591
PAGE 1 OF 1

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Barney Waters
OBG GEOLOGIST: Paul Gottler

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH - 6-8 ft.
ANALYSIS - PCB's

LOCATION: 132.5 ft. North, 70 degrees East of MW-10
START DATE: 7/10/91 1345
END DATE: 7/10/91

ELEVATION - 1266.9 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0									
1									
2									
3									
4	1	4-6'	12-12-	1.9	33	Damp, light brown/gold brown, fine, well-sorted SAND and GRAVEL with silt and trace clay, faintly laminated, matrix-supported			0
			21-19						
5									
6	2	6-8'	19-28-	1.7	51	As above, moist with less well-rounded gravel and more clay		Submitted to lab for PCB's Analyses	0
			23-19						
7									
8	3	8-10'	7-8-13-9	1.0	21	(8-8.4') As above, saturated			0
9						(8.4-10') Saturated, gray/gray black angular to more round GRAVEL and SAND, trace silt and clay, organic swampy odor			0
10	4	10-12'		1.9		(10-11.2') As above, saturated			
11						(11.2-12') Damp, light brown/brown, very fine SAND and SILT with very fine gravel, trace clay, A-axis horizontal			
12									

NOTES: DEC Representative sampled entire 10-12' spoon for PCB's, volatiles and semi-volatiles

'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1691
PAGE 1 OF 2

J : Special Metals

IOJECT LOCATION: Ludlow Landfill
Paris, New York

J O.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES
DEPTH – 22-24 ft.
ANALYSIS – PCB's

LOCATION: 13 ft. North, 51 degrees East of SB-1391
START DATE: 7/10/91 1515
END DATE: 7/10/91

ELEVATION – 1284.0 ft.

'G COMPANY: Parratt-Wolff, Inc.
AN: Barney Waters
EOLOGIST: Paul Gottler

	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0									
5	1	5-7'	3-4-3-3	1.6	7	Damp, brown/dark brown 70% SAND, 25% gravel, trace silt and clay, laminated, wet, very fine sand and silt up auger			0
10	2	10-12'	3-3-17-5	1.7	20	Damp to saturated, gray to brown SILT and CLAY with gravel, laminated, some sandstone pebbles, roots and branches present			0
15	3	15-17'	7-6-6-8	1.2	12	Damp, brown to white to gray to red, coarse SAND, some gravel, trace silt and clay, calcite cement			0
18	4	18-20'	8-8-10-11	1.6	18	As above, damp with red, fine GRAVEL			0

EN & GERE ENGINEERS, INC.

T: Special Metals

CT LOCATION: Ludlow Landfill
Paris, New York

O.: 2290.039.760

S COMPANY: Parratt-Wolff, Inc.
IAN: Barney Waters
EOLOGIST: Paul Gottler

TEST BORING LOG

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

ANALYTICAL SAMPLES

DEPTH – 22–24 ft.

ANALYSIS – PCB's

REPORT OF BORING SB-1691
PAGE 2 OF 2

LOCATION: 13 ft. North, 51 degrees East of SB-1391
START DATE: 7/10/91 1515
END DATE: 7/10/91

ELEVATION – 1284.0 ft.

NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
5	20–22'	7–8–9–17	1.8	17	(20–21.8') As above, damp to moist CLAY (21.8–22') Dry, gray/brown GRAVEL with sand			0
6	22–24'	24–22–19–17	1.0	41	As above, dry, clast–supported		Submitted to lab for PCB's Analyses	0
7	24–26'	14–18–27–17	1.7	45	As above, saturated, brown/brown gray, clast–supported GRAVEL, little sand, trace silt and brown clay			0

RIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1791
PAGE 1 OF 2

ENT: Special Metals

JECT LOCATION: Ludlow Landfill
Paris, New York

NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 32 ft. South, 40 degrees West of GP-4
START DATE: 7/11/91 1130
END DATE: 7/11/91

ANALYTICAL SAMPLES

DEPTH - 24-26 ft.

ANALYSIS - PCB's

ELEVATION - 1286.8 ft.

ING COMPANY: Parratt-Wolff, Inc.
EMAN: Barney Waters
GEOLOGIST: Paul Gottler

TH OW DE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
0	1	0-2'	NO SAMPLE TAKEN			Dry, brown/orange brown SAND and GRAVEL, trace silt and clay, highly organic			
5	2	5-7'	5-6-5-4	1.8	11	(5-6') As above, dry (6-7') Dry, brown/dark brown SAND and fine, well-rounded GRAVEL, trace silt and clay, faintly laminated, A-axis horizontal			0
)	3	10-12'	12-15-12-13	1.9	27	Damp, gray/gray brown SILT, fine SAND and fine, well-rounded GRAVEL, trace clay, matrix-supported			0
						Boulder at 13-14'			
5	4	15-17'	24-22-18-15	1.7	40	(15-16.6') As above, damp (16.6-17') Dry, gray to brown GRAVEL with some sand, clast-supported, trace silt and clay			0
						Augering through gravel to 19', medium gravel up auger to 19.5'			

O'BRIEN & GERE ENGINEERS, INC.

TEST BORING LOG

REPORT OF BORING SB-1791
PAGE 2 OF 2

CLIENT: Special Metals

PROJECT LOCATION: Ludlow Landfill
Paris, New York

FILE NO.: 2290.039.760

SAMPLER Split Spoon
HAMMER: 140 lbs.
FALL: 30"

LOCATION: 32 ft. South, 40 degrees West of GP-4
START DATE: 7/11/91 1130
END DATE: 7/11/91

BORING COMPANY: Parratt-Wolff, Inc.
FOREMAN: Barney Waters
OBG GEOLOGIST: Paul Gottler

ANALYTICAL SAMPLES

DEPTH - 24-26 ft.

ANALYSIS - PCB's

ELEVATION - 1286.8 ft.

DEPTH BELOW GRADE	NO.	DEPTH (FEET)	BLOWS /6"	PENETR/ RECOVERY	"N" VALUE	SAMPLE DESCRIPTION	STRATUM CHANGE GENERAL DESCRIPT	EQUIPMENT INSTALLED	FIELD TESTING HNU
20	5	20-22'	9-9-8-10	1.9	17	Dry, brown/red/gray, calcite-cemented SAND and GRAVEL, trace silt and clay			0
21									
22	6	22-24'	10-11-10-9	1.5	21	As above, dry with some green sand and medium, well-rounded gravel			0
23									
24	7	24-26'	28-20-15-22	1.6	35	As above, dry with 1 zone of clast-supported gravel and sand at 25'		Submitted to lab for PCB's Analyses	0
25									
26	8	26-28'	25-17-19-20	1.7	36	(26-27') As above, damp (27-28') Saturated, brown, coarse SAND, some well-rounded gravel, trace silt and clay, faintly laminated, well-sorted sands (no odor or sheen)			0 0
27									
28									

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

FAX

May 31, 1991

Mr. Richard Thurston
Special Metals Corporation
Middle Settlement Road
New Hartford, NY 13413

Dear Mr. Thurston:

Re: Site #6-33-014
Ludlow Sand & Gravel
Oneida County

This letter is in regards to your telephone conversation of May 31, 1991 with Jim Drumm of my staff in regards to the north gravel pit. Any visible increase in the oily substance in the north gravel pit soil requires additional sampling. Should you feel that the sampling is not warranted, the Department's representative may take samples. We recommend that you segregate any soil excavated that appears to have an increased quantity of oily substance. Should the soil be shown to contain greater than 500 parts per million (ppm) PCBs it must be disposed in a TSCA approved facility. If the aforementioned soil has been placed with other soils, all the soil would then be contaminated with soil containing PCBs at a level greater than 500 ppm, and therefore must be disposed in a TSCA approved facility.

If you have any questions, please call Jim Drumm at (518) 457-9279.

Sincerely,

James G. Van Hoesen

James G. Van Hoesen, P.E.
Chief, Western Field Services Section
Bureau of Construction Services
Division of Hazardous Waste Remediation

cc: A. Bolensz - NYSDOL
D. Sommer - NYSDOL
M. Hudson - Rizzo Associates
R. Montione - NYSDOH
F. Hale - OBG
R. Slizy - USEPA Region II

RECEIVED
JUN - 6 1991
O'Brien & Gere Engineers, Inc.
Virginia Beach, VA

O'BRIEN & GERE
ENGINEERS, INC.

September 27, 1996

John Stawski, P.E.
NYSDEC
50 Wolf Road
Albany, NY 12233-7017

File: 2290.046

Re: Special Metals - Field Program for the North Gravel Pit

Dear John:

As we discussed earlier this week, Special Metals Corporation has directed O'Brien & Gere Engineers, Inc. (O'Brien & Gere) to begin to implement the May 1994 Work Plan for the Supplemental Remedial Investigation/Feasibility Study for the North Gravel Pit (Ludlow Sand & Gravel Pit site).

The field program is scheduled to begin on October 14, 1996. This field program will consist of the following activities:

- The installation of three new monitoring wells (MW-17, MW-18, and MW-19) and one replacement well (MW-11R), as described in section 2.02.1 of the Work Plan (page 16).

- The development and first sampling of the four newly - installed wells and one existing well MW-10, as described in Section 2.02.2 of the Work Plan (pages 16-17).

Other Work Plan activities will occur at a later time:

- The second sampling of the wells will occur in January/February 1997, and the third sampling in May 1997.

- A portion of the residual soil investigation, as described in Section 2.03 of the Work Plan (pages 18-19). Specifically, the five perimeter borings will be installed, and soil samples will be collected for analysis. Special Metals proposes to perform the soil investigation after the results from the ground water sampling have been received, to evaluate whether migration has occurred from the pit. It may be appropriate to modify the number or locations of proposed soil borings, based on the extent of migration, if migration has occurred.

- The remainder of the residual soil investigation (Section 2.03 of the Work Plan, pages 18-19) consists of the collection of 8 samples from the bottom of the North Gravel Pit. For safety reasons, the pit sampling will be performed in colder weather, when the pit soils are firmer. We anticipate this will be December 1996 or January 1997. NYSDEC will be notified at least one week prior to the sampling event.

Special Metals proposes the other remaining task, the Bench-Scale Tests described in Section 2.07 of the Work Plan (pages 20-23), would be re-evaluated once the data from the other tasks have been collected. At that time, it may be appropriate to modify the bench-scale testing program, or even to re-evaluate the need for it. This phased approach is proposed for two reasons: 1) First, it is possible that there will be no need to consider these alternatives. Depending on the findings of the previous tasks, it is possible that no remediation will be necessary. It is also possible that the results of the other tasks will indicate that remediation is necessary, but that excavation is the preferred alternative. In either case, the bench-scale testing would not be warranted. 2) If the results of the field program indicate that testing is warranted, it would be more effective to perform the testing at a time closer to the actual remediation. Even in the two years since the development of this Work Plan, there have been rapid advances in the application of these technologies (and others) to the treatment of PCB-contaminated soils. In the event that remediation is necessary for the North Gravel Pit, Special Metals would want to utilize the most current technology.

Using this phased approach to the bench-scale testing program assumes that soil samples will still be collected during the field program, and will archived.

Lastly, Special Metals is evaluating the use of an immunoassay technique to analyze PCBs during the field program, rather than collecting samples for laboratory analysis. This approach was actually suggested by NYSDEC in 1993-1994, during review of an earlier version of the Work Plan. At the time, Special Metals was not comfortable with utilizing immunoassay technology. Since that time, Special Metals has been monitoring the increasing use of immunoassay techniques and their increasingly wide acceptance by regulatory agencies. Special Metals now believes that immunoassay techniques offer advantages of flexibility when used during field programs. We expect to have this decision made by October 5, 1996, but request, in the meantime, for NYSDEC to provide its input regarding whether it would permit immunoassays for this project, since they represent the engineering equivalent of the traditional analytical methods specified in the Work Plan.

Special Metals is eager to initiate the field program, especially in light of the delay which occurred during the signing of the Stipulation Order. To that end, and since work is scheduled to begin shortly, Special Metals requests approval of the minor modifications described in this letter:

- Using a phased approach for the field program schedule.
- Possibly using immunoassay techniques for on-site PCB analyses, rather than traditional analytical methods.

Special Metals does not believe that either of these modifications is significant enough to merit revision of the Work Plan.

We look forward to hearing from NYSDEC regarding this request. Please contact Bob DiFondi or me if you would like further information.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Cheryl Cundall, P.E., Esq.
Managing Engineer

CLC:saz\110\projects\genInfo\clc\specmet.wpd

cc: Robert DiFondi - Special Metals
Barry R. Kogut, Esq. - Bond, Schoeneck, & King
Pete McMaster, P.E. - O'Brien & Gere

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

Michael D. Zagata
Commissioner

October, 10, 1996

cc: RWW
PWM
DKM
CBM
File: 2290.046

Cheryl Cundall, P.E., Esq.
Managing Engineer
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

Dear Ms. Cundall;

RE: Ludlow North Gravel Pit Site # 633014

As we discussed, the modifications to the RIFS field program for the North Gravel Pit as proposed in your letter of September 27, 1996 and submitted on the behalf of Special Metals has been reviewed by the Department. While a phased field program usually allows for more informed decision making, the following must be addressed before the proposed modifications can be found acceptable by the Department. In that the fieldwork you propose to undertake on October 14, 1996 is the same as that stated in the original plan, the submittal of this additional information should not delay its start.

1. A revised schedule with specific dates for the proposed work elements must be submitted. Table 7 of the work plan must be revised to show start and end dates of the phased activities. In the event of unforeseeable delays such as those caused by changed site conditions or bad weather, time extensions may be agreed to by the Department provided work is resumed as quickly as possible. Interim letter reports should be submitted after the results of each phase is known. It is likely that some treatability study will be necessary therefore an allotment of time should be shown in Table 7 for this purpose. The Draft RIFS report should not be submitted later than August 1997.

2. The Standard Operating Procedures and Field Analyst Qualifications for Immunoassay Field Screening must be submitted as described in the Quality Assurance guidelines sent to you under different cover. Include a description of how samples will be handled during archiving and examples of where such procedures have been used successfully in the past for treatability study. Note soil samples for purposes of site characterization must follow protocol holding times and cannot be archived if they are to be considered valid.

3. Though additional borings would be warranted if groundwater migration of contaminants was found, the number of borings agreed to in the work plan, as written, is necessary and should not be changed. Since these initial borings must be accomplished regardless of the groundwater sampling outcome, consider installing them at the same time the pit PCB samples are collected. This will provide information that will assist in locating additional borings based on groundwater sampling.

4. To clarify how the phased information to be gathered will be incorporated into and support the Feasibility Study, a draft table of contents and proposed appendices should be submitted with OBG's first progress letter report. What data and documentation in addition to that obtained under this work plan will be used to support the remedies for groundwater and the wetlands cleanup?

We should receive the requested information within 30 days of your receipt of this letter. Please contact me at (518) 457-5677 if you have any questions in this regard.

Sincerely,

John Stawski

John Stawski P.E.
Environmental Engineer
Bureau of Central Remedial Action
Division of Environmental Remediation

enclosure

JS/js

cc: Robert DiFondi, Special Metals Inc
Mark Purcell, USEPA.
J. Synder, Project Attorney NYS Office of the Attorney General
B. Davidson, Senior Geologist DER-BCRA
D. Smith, Chief DER-BCRA-Section C

bcc

J. Peralta, EPA Region 2
D. Sweredoski, HWRE DEC Region 6
G. Litwin / B. Montione, State Department of Health
G. Bobersky, DER-BERA
C. McGrath, Chemist BHSC
C. Dowd, Division of Fish and Wildlife
J. Drum, DER-BCS

File: 6LT10OBG.LUD

O'BRIEN & GERE
ENGINEERS, INC.

July 11, 1997

Mr. John Stawski, P.E.
NYSDEC
50 Wolf Road
Albany, NY 12233-7017

Re: Special Metals Field Program Status Report #3

File: 2290.046

Dear Mr. Stawski:

This letter presents the third status report on the progress of the Special Metals field investigation of the North Gravel Pit (Ludlow Sand & Gravel Pit site). As mentioned in the second status report dated March 17, 1997, perimeter borings and shallow corings were installed and samples collected on January 13-14, 1997 in accordance with the SRI/FS Work Plan. A second round of ground water samples was collected on February 20, 1997 from the wells in the vicinity of the North Gravel Pit. You and Brian Davidson of the New York State Department of Environmental Conservation (NYSDEC) were present at various times during the field work. This letter report includes a summary of the soil analytical results from the January 13-14, 1997 field effort and a summary comparison between the February 20, 1997 ground water sampling results and the first round water sampling results. The first round of ground water samples was collected on November 6, 1996.

Enclosed are copies of the data validation reports from the January 13-14, 1997 soil sampling, and from the February 20, 1997 ground water sampling. Copies of the analytical results from this sampling were sent to you on June 16, 1997. With respect to this sampling, please note the following:

January 13-14, 1997 shallow corings and perimeter borings

1. A sampling location map is attached as Figure 1. Concentrations of Aroclor 1254 were detected in the eight shallow coring samples (ranging from 1.5 to 540 mg/kg). Shallow coring sample SED 6 contained the highest concentration of 540 mg/kg, and SED 8 contained the lowest concentration of 1.5 mg/kg.

2. Concentrations of Aroclor 1254 were detected in four of the five perimeter borings (ranging from 0.057 mg/kg to 10 mg/kg). Boring sample B5 (0-2') contained the highest concentration of 10 mg/kg, and boring sample B3 (6-8') contained the lowest concentration of 0.057 mg/kg. Boring B4 did not contain detectable concentrations (<0.020 mg/kg).

Comparison of November 6, 1996 and February 27, 1997 ground water sampling results

1. PCBs. Concentrations of Aroclor 1248 were detected in four of the five unfiltered ground water samples collected on November 6, 1996 (ranging from 0.078 μg/L to 0.39 μg/L). MW-10 did not contain detectable concentrations (<0.055 μg/L), and MW-11R had the highest concentration of 0.39 μg/L. The filtered ground water samples collected on November 6, 1996 did not contain detectable concentrations of PCBs.

PCBs, including Aroclor 1248, were not detected in either the filtered or unfiltered ground water samples collected on February 20 ,1997.

2. VOCs. In the ground water samples collected on November 6, 1996, 1,1-dichloroethane and 1,1,1-trichloroethane were detected at estimated concentrations ranging from 1 to 4 μg/L in MW-11R, MW-17, and MW-18.

1,1-dichloroethane was not detected in the ground water samples collected on February 20, 1997. 1,1,1-trichloroethane and tetrachloroethene were detected at estimated concentrations ranging from 1 to 2 μg/L in MW-17 and MW-18. Methylene chloride was detected in one well, MW-10. However, methylene chloride was also detected in the blank, and therefore, the presence of this parameter appears to be related to laboratory contamination.

Ground water flow direction

A round of ground water elevations was conducted at the monitoring wells sampled on February 20, 1997. In addition, the ground water elevation in MW-9S (located west of Holman City Road) was measured and the surface water elevation in the North Gravel Pit was measured from a staff gauge (which was installed in the pit during the January 13-14, 1997 soil sampling activities). The ground water and staff gauge elevation data indicate that ground water flows primarily to the north, and slightly to the west at the site. Historical sampling data have indicated a more westerly ground water direction at the site. Additional ground water sampling and elevation measurements will be used to further evaluate ground water flow conditions at the site.

June 10-11, 1997 ground water sampling

The next round of ground water sampling was scheduled to be performed in May, 1997, while the Ludlow Landfill short-term monitoring program was scheduled to begin the first week of June. As you discussed with Dave Meixell, these sampling events were combined for efficiency, and to provide a common sampling event for the site as a whole. The data from this ground water sampling will be forwarded to you when the associated data validation report is available.

Upcoming activities

Based on the results of the soil boring and shallow coring sampling discussed in this letter, Special Metals intends to collect additional samples. The horizontal area of contamination appears to be limited to the bottom of the north gravel pit within the area of the shallow corings. However, the vertical extent of the contamination has not been adequately determined by the sampling conducted to date. Therefore, four additional borings will be placed in the vicinity of the shallow corings previously collected (see Figure 1). These borings would be collected by split spoon sampling via a tripod-mounted rig. Because water appears to be present in the bottom of the north gravel pit throughout the year, a floating dock will be used to support the tripod rig.

Split spoon samples will be collected every two feet, and analyzed via EPA Method 8080-ASP. It is estimated that samples will be able to be collected to a depth of approximately ten feet. We would like your approval of this testing procedure.

In view of the additional sampling, we ask that a decision pertaining to the need for bench scale testing (see section 2.07 of the SRI/FS Work Plan) be postponed pending the results of the additional sampling. If contaminated soils are found to be relatively shallow, excavation and off-site disposal may be the most cost-effective alternative. Also, since the time of the preparation of the current Work Plan, soil washing is a more proven technology for this type of application. Therefore, bench-scale testing may not be needed to the extent originally anticipated.

Due to the additional sampling, it is also requested that the project schedule, which was originally forwarded to you under cover of our letter of December 30, 1996, be adjusted to provide for the submission of a draft RI/FS by the end of November, 1997 instead of the end of August. This will allow for the collection of the soil samples in the pit during anticipated low water levels in mid to late summer. Each of the subsequent tasks in the schedule would also be adjusted by three months.

Should you have any questions on these matters, please contact Dave Meixell.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Peter W. McMaster, P.E.
Senior Vice President

DKM:saz\I:\DIV10\PROJECTS\2290046\STATRPT3.WPD

Figure 1: Previous and Proposed Corings Location Map
Attachment 1: Validation Reports

cc: Robert DiFondi - Special Metals
Damien E. Hughes - USEPA
Peter S. Ouderkirk - NYSDEC
J. Jared Snyder, Esq. - Office of the Attorney General
David K. Meixell - O'Brien & Gere

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-7010

Michael D. Zagata
Commissioner

August 15, 1997

cc: D. Miesel
R. DiFondi? — SPEC, MET
D. Campola
R. Draplin

Peter W. McMaster, P.E.
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, New York 13221

Dear Mr McMaster;

RE: Ludlow North Gravel Pit Site # 633014

The Department has reviewed OBG's third interim status report which requests that the project schedule be amended to allow for the collection of additional soil samples. The additional work as proposed is acceptable to the Department. We will agree to the requested time extension, however bench scale testing, if needed, also must be completed and incorporated into the RI/FS by the end of November.

Note that the RI/FS should include an ecological analysis that takes into account the possibility of groundwater discharging to surface waters with possible effects on biota. Some prediction should be made pertaining to the length of time it will take groundwater to reach surface waters and the concentrations of PCBs at the discharge point. The RI/FS should follow NYSDEC guidance for Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites. Special attention should be given to Step III of the guidance which discusses evaluation of remedial alternatives.

We have not yet received data from the June sampling event which, in addition to groundwater samples associated with the North Gravel Pit, also included groundwater samples from monitoring wells associated with the Landfill. Please submit the requested information within 30 days of receipt of this letter. Should you or your staff have questions in this regard I can be contacted at (518) 457-5677.

Sincerely,

John Stawski

John Stawski P.E.
Environmental Engineer
Bureau of Central Remedial Action
Division of Environmental Remediation

enclosure w/o referenced data validation report

cc: Robert DiFondi, Special Metals Inc
Damien Hughes, EPA Region 2
J. Synder, Project Attorney NYS Office of the Attorney General
B. Davidson, Senior Geologist DER-BCRA
D. Smith, Chief DER-BCRA-Section C

O'BRIEN & GERE
ENGINEERS, INC.

July 11, 1997

Mr. John Stawski, P.E.
NYSDEC
50 Wolf Road
Albany, NY 12233-7017

Re: Special Metals Field Program Status Report #3

File: 2290.046

Dear Mr. Stawski:

This letter presents the third status report on the progress of the Special Metals field investigation of the North Gravel Pit (Ludlow Sand & Gravel Pit site). As mentioned in the second status report dated March 17, 1997, perimeter borings and shallow corings were installed and samples collected on January 13-14, 1997 in accordance with the SRI/FS Work Plan. A second round of ground water samples was collected on February 20, 1997 from the wells in the vicinity of the North Gravel Pit. You and Brian Davidson of the New York State Department of Environmental Conservation (NYSDEC) were present at various times during the field work. This letter report includes a summary of the soil analytical results from the January 13-14, 1997 field effort and a summary comparison between the February 20, 1997 ground water sampling results and the first round water sampling results. The first round of ground water samples was collected on November 6, 1996.

Enclosed are copies of the data validation reports from the January 13-14, 1997 soil sampling, and from the February 20, 1997 ground water sampling. Copies of the analytical results from this sampling were sent to you on June 16, 1997. With respect to this sampling, please note the following:

January 13-14, 1997 shallow corings and perimeter borings

1. A sampling location map is attached as Figure 1. Concentrations of Aroclor 1254 were detected in the eight shallow coring samples (ranging from 1.5 to 540 mg/kg). Shallow coring sample SED 6 contained the highest concentration of 540 mg/kg, and SED 8 contained the lowest concentration of 1.5 mg/kg.

2. Concentrations of Aroclor 1254 were detected in four of the five perimeter borings (ranging from 0.057 mg/kg to 10 mg/kg). Boring sample B5 (0-2') contained the highest concentration of 10 mg/kg, and boring sample B3 (6-8') contained the lowest concentration of 0.057 mg/kg. Boring B4 did not contain detectable concentrations (<0.020 mg/kg).

Comparison of November 6, 1996 and February 27, 1997 ground water sampling results

1. PCBs. Concentrations of Aroclor 1248 were detected in four of the five unfiltered ground water samples collected on November 6, 1996 (ranging from 0.078 μg/L to 0.39 μg/L). MW-10 did not contain detectable concentrations (<0.055 μg/L), and MW-11R had the highest concentration of 0.39 μg/L. The filtered ground water samples collected on November 6, 1996 did not contain detectable concentrations of PCBs.

PCBs, including Aroclor 1248, were not detected in either the filtered or unfiltered ground water samples collected on February 20 ,1997.

2. VOCs. In the ground water samples collected on November 6, 1996, 1,1-dichloroethane and 1,1,1-trichloroethane were detected at estimated concentrations ranging from 1 to 4 μg/L in MW-11R, MW-17, and MW-18.

1,1-dichloroethane was not detected in the ground water samples collected on February 20, 1997. 1,1,1-trichloroethane and tetrachloroethene were detected at estimated concentrations ranging from 1 to 2 µg/L in MW-17 and MW-18. Methylene chloride was detected in one well, MW-10. However, methylene chloride was also detected in the blank, and therefore, the presence of this parameter appears to be related to laboratory contamination.

Ground water flow direction

A round of ground water elevations was conducted at the monitoring wells sampled on February 20, 1997. In addition, the ground water elevation in MW-9S (located west of Holman City Road) was measured and the surface water elevation in the North Gravel Pit was measured from a staff gauge (which was installed in the pit during the January 13-14, 1997 soil sampling activities). The ground water and staff gauge elevation data indicate that ground water flows primarily to the north, and slightly to the west at the site. Historical sampling data have indicated a more westerly ground water direction at the site. Additional ground water sampling and elevation measurements will be used to further evaluate ground water flow conditions at the site.

June 10-11, 1997 ground water sampling

The next round of ground water sampling was scheduled to be performed in May, 1997, while the Ludlow Landfill short-term monitoring program was scheduled to begin the first week of June. As you discussed with Dave Meixell, these sampling events were combined for efficiency, and to provide a common sampling event for the site as a whole. The data from this ground water sampling will be forwarded to you when the associated data validation report is available.

Upcoming activities

Based on the results of the soil boring and shallow coring sampling discussed in this letter, Special Metals intends to collect additional samples. The horizontal area of contamination appears to be limited to the bottom of the north gravel pit within the area of the shallow corings. However, the vertical extent of the contamination has not been adequately determined by the sampling conducted to date. Therefore, four additional borings will be placed in the vicinity of the shallow corings previously collected (see Figure 1). These borings would be collected by split spoon sampling via a tripod-mounted rig. Because water appears to be present in the bottom of the north gravel pit throughout the year, a floating dock will be used to support the tripod rig.

Split spoon samples will be collected every two feet, and analyzed via EPA Method 8080-ASP. It is estimated that samples will be able to be collected to a depth of approximately ten feet. We would like your approval of this testing procedure.

In view of the additional sampling, we ask that a decision pertaining to the need for bench scale testing (see section 2.07 of the SRI/FS Work Plan) be postponed pending the results of the additional sampling. If contaminated soils are found to be relatively shallow, excavation and off-site disposal may be the most cost-effective alternative. Also, since the time of the preparation of the current Work Plan, soil washing is a more proven technology for this type of application. Therefore, bench-scale testing may not be needed to the extent originally anticipated.

Due to the additional sampling, it is also requested that the project schedule, which was originally forwarded to you under cover of our letter of December 30, 1996, be adjusted to provide for the submission of a draft RI/FS by the end of November, 1997 instead of the end of August. This will allow for the collection of the soil samples in the pit during anticipated low water levels in mid to late summer. Each of the subsequent tasks in the schedule would also be adjusted by three months.

Should you have any questions on these matters, please contact Dave Meixell.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Peter W. McMaster, P.E.
Senior Vice President

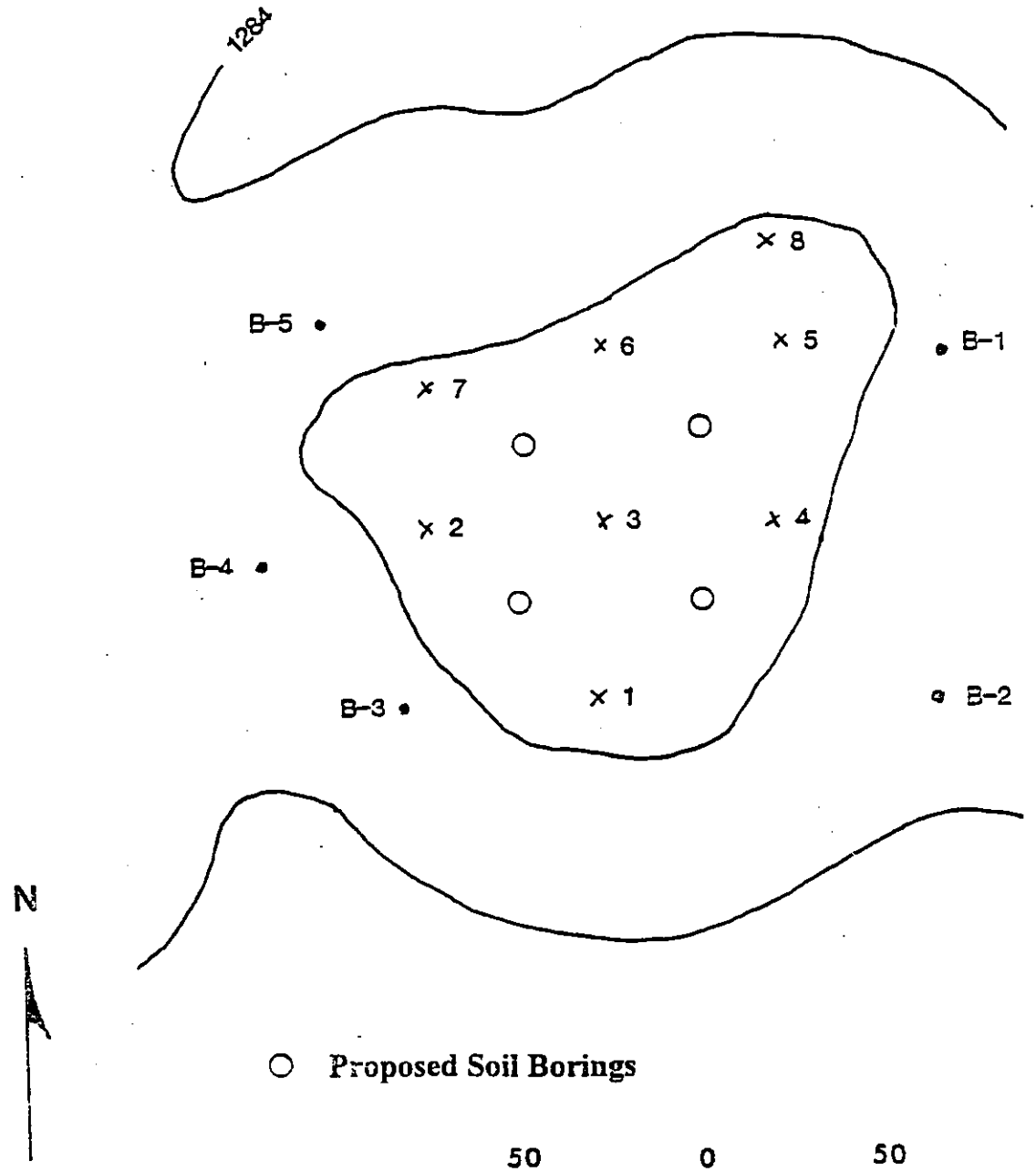
DKM:saz\I:\DIV10\PROJECTS\2290046\STATRPT3.WPD

Figure 1: Previous and Proposed Corings Location Map
Attachment 1: Validation Reports

cc: Robert DiFondi - Special Metals
Damien E. Hughes - USEPA
Peter S. Ouderkirk - NYSDEC
J. Jared Snyder, Esq. - Office of the Attorney General
David K. Meixell - O'Brien & Gere

Soil Sample Locations

North Gravel Pit



ONEIDA COUNTY SOIL AND WATER CONSERVATION DISTRICT
121 SECOND ST.
ORISKANY, NY 13424
Phone: (315) 736-3334 or 3335
Fax: (315) 736-5782

January 15, 1998

Dave Meixell
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
PO Box 4873
Syracuse, NY 13221

Dear Mr. Meixell:

Please find enclosed the West Winfield Orthophotoquad (soil map) and nontechnical soils descriptions for your site southeast of Ludlow Corners in the Town of Paris. It appears that the only soil type on your site is 20 - sand and gravel pits, but I included the descriptions of the surrounding soil groups for your information.

Please also find enclosed the invoice for this service for $21. Checks can be made payable to Oneida County SWCD.

If you have any questions or need any further information, please feel free to contact me at (315) 736-3334 or 3335.

Sincerely,

Jo-Anne M. Faulkner

USDA NRCS Nontechnical Soils Descriptions

Ludlow Corners Site

20 PITS, SAND AND GRAVEL

24B HOWARD GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES Deep, gently sloping, well drained, medium lime, gravelly loam soil formed in outwash. The available water capacity is high. Permeability is moderate to very rapid. These soils are considered to be prime farmland. Non Highly Erodible Land.

31 HALSEY GRAVELLY SILT LOAM,Deep level to nearly level, very poorly drained, medium to high lime, loamy soil formed in gravelly glacial outwash. The Available water capacity is moderate. Permeability is moderate to rapid. Halsey soils are Hydric.

34D HOWARD AND ALTON SOILS, 15 TO 25 PERCENT SLOPES Deep, moderately steep, well drained, high lime, gravelly loamy soil formed in glacial outwash sand and gravel. The available water capacity is moderate. Permeability is moderate to rapid.

OFFICE OF PARKS, RECREATION, HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

November 5, 1997

Stephen E. Mooney, Scientist
O'Brien & Gere Engineers, Inc.
5000 Brittonfield Parkway
P.O. Box 4873
Syracuse, NY 13221

Dear Mr. Mooney:

RE: Info Request
Site on Holman City Road
Paris, Oneida County
97PR2369

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Director, Historic Preservation
Field Services Bureau

RLP:cm

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

LETTER OF TRANSMITTAL

TO: Dave Meixell

COMPANY: OBG

FROM: Judy Harry

DATE: 2-6-97

ENCLOSED: Validation report for Special Metals
Invoice for same

COMMENTS:

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

February 6, 1997

Dave Meixell
O'Brien & Gere
5000 Brittonfield Parkway
P. O. Box 5240
Syracuse, NY 13220

RE: Validation of data packages for the Special Metals Corporation Site
OBG Labs data packages

Dear Mr. Meixell:

Review has been completed on the data packages generated by OBG Labs pertaining to samples collected at the Special Metals Site. Five aqueous samples were processed for TCL volatiles and filtered and unfiltered PCBs. A field blank, trip blank, and sample matrix spikes were also processed. Methodologies utilized are those of the 1991 NYSDEC ASP 91-1 and EPA-8080.

Data validation was performed in accordance with the NYSDEC RI/FS Validation Scope of Work, with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USAEPA SOP HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate Recoveries
* Matrix Spike Recoveries
* Duplicate Correlation
* Preparation/Calibration Blanks
* Instrument Tunes
* Laboratory Control Samples
* Calibration Standards
* Internal Standard Areas
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherance to quality criteria. Certain edits to, and qualification of, reported results are indicated. These issues are discussed below in the following sections. A compliance chart, laboratory case narratives and preparation/analysis tracking forms are attached to this report.

General

The report forms for the samples show the laboratory number ID in the field for NYSDEC (Client) Sample ID, and the NYSDEC (Client) Sample ID in the field for laboratory number ID.

Volatile Analyses

Holding times, surrogate recoveries, accuracy and precision on MW-10, and instrument parameters were all within required/recommended limits. The sample results are usable as reported, with the exception that:

Detections of methylene chloride and acetone in the samples should be considered contamination (as shown by the associated blank levels). Results for these analytes in the samples should be edited to reflect nondetection at CRDL

It was noted that the calibration standards required numerous manual analyst integrations. In order to meet protocol requirements, and to ensure proper sample processing, the instrument software should be properly programmed to detect the analytes.

PCB Analyses

Holding times, accuracy and precision of MW-10, and instrument parameters met protocol requirements.

The unfiltered samples showed low recovery for surrogate DCB (below the recommended limit of 46%). With the exception of that of sample MW-17, all DCB recoveries were above 30%, and no qualification is recommended. The recoveries of both surrogates TCX and DCB were low (40% and 24%) for sample MW-17 (unfiltered); the results for the unfiltered fraction of this sample should therefore be considered estimated ("J" qualifier flag).

Reported PCB results for all samples except MW-17 are usable as reported.

Please do not hesitate to contact me if you have any questions regarding this report.

Very truly yours,

Judy Harry

COMPLIANCY CHART

Project: OBG Special Metals Corporation

SDG Nos. OBG Labs data packages

Protocol: 1991 NYSDEC ASP 91-1 and EPA8080

Rec. Date	Sample ID	Matrix	VOA	PCB	Noncompliancy
11-06-96	MW-10	Aqueous	OK	OK	
11-06-96	MW-11R	Aqueous	OK	OK	
11-06-96	MW-17	Aqueous	OK	OK	
11-06-96	MW-18	Aqueous	OK	OK	
11-06-96	MW-19	Aqueous	OK	OK	
11-06-96	EQBLK	Aqueous	OK	OK	
11-06-96	TRPBLK	Aqueous	OK	NR	
11-06-96	MW-10F	Aqueous	NR	OK	
11-06-96	MW-11RF	Aqueous	NR	OK	
11-06-96	MW-17F	Aqueous	NR	OK	
11-06-96	MW-18F	Aqueous	NR	OK	
11-06-96	MW-19F	Aqueous	NR	OK	
11-06-96	EQBLKF	Aqueous	NR	OK	

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation Ludlow, North Pit project located in Paris, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted.

The analytic results for the PCB analysis are presented in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
Volatile Organics	91-1	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes surrogates, internal standards, matrix spike (MS), matrix spike duplicate (MSD), matrix spike blank, laboratory control sample (LCS), equipment blank, prep blank and QC trip blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

Volatile Organics

There were no excursions to note, all QC results were within established control limits.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Superfund order of data requirements.

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation Ludlow, North Pit project located in Paris, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted.

Analytic results for volatile organic analyses are presented in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes surrogates, matrix spike (MS), matrix spike duplicate (MSD), matrix spike blank, laboratory control sample (LCS), equipment blank and prep blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

PCBs

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Samples

All spike recoveries met method and/or project specific QC criteria.

MS/MSD

All spike recovery and RPD data met method and/or project specific QC criteria.

Surrogates

The following samples did not meet criteria for surrogate recoveries for Tetrachloro-m-xylene (TCMX) and Decachlorobiphenyl (DCBP):

Sample Description	Sample #	Column	Corrective Action
MW-17	B7221	DB-608	1

1. The sample was reanalyzed to confirm failed surrogate recovery. Both sets of data are included. No further corrective action was taken.

Calibrations
All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks
All preparation blanks met method and/or project specific QC criteria.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	Pest PCBs Method #	Metals	Other
MW-10	B7212	91-1					
MW-10	B7212MS	91-1					
MW-10	B7212MSD	91-1					
MW-11R	B7213	91-1					
MW-17	B7214	91-1					
MW-18	B7215	91-1					
MW-19	B7216	91-1					
Equipment Blank	B7217	91-1					
QC Trip Blank	B7218	91-1					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
B7212	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7212MS	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7212MSD	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7213	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7214	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7215	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7216	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7217	Water	11/6/96	11/6/96	11/8/96	11/8/96
B7218	Water	11/6/96	11/6/96	11/11/96	11/11/96

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Low Level Med Level	Date Analyzed
B7212	Water	11/6/96	11/6/96	Low	11/8/96
B7212MS	Water	11/6/96	11/6/96	Low	11/8/96
B7212MSD	Water	11/6/96	11/6/96	Low	11/8/96
B7213	Water	11/6/96	11/6/96	Low	11/8/96
B7214	Water	11/6/96	11/6/96	Low	11/8/96
B7215	Water	11/6/96	11/6/96	Low	11/8/96
B7216	Water	11/6/96	11/6/96	Low	11/8/96
B7217	Water	11/6/96	11/6/96	Low	11/8/96
B7218	Water	11/6/96	11/6/96	Low	11/11/96

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	Pest PCBs Method #	Metals	Other
MW-10	B7219				8080-PCB		
MW-10	B7219MS				8080-PCB		
MW-10	B7219MSD				8080-PCB		
MW-11R	B7220				8080-PCB		
MW-17	B7221				8080-PCB		
MW-18	B7222				8080-PCB		
MW-19	B7223				8080-PCB		
Equipment Blank	B7224				8080-PCB		
MW-10 (filtered)	B7225				8080-PCB		
MW-10 (filtered)	B7225MS				8080-PCB		
MW-10 (filtered)	B7225MSD				8080-PCB		
MW-11R (filtered)	B7226				8080-PCB		
MW-17 (filtered)	B7227				8080-PCB		
MW-18 (filtered)	B7228				8080-PCB		
MW-19 (filtered)	B7229				8080-PCB		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
B7219	WATER	11/06/96	11/06/96	11/07/96	11/15/96
B7220	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7221	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7222	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7223	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7224	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7225	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7226	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7227	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7228	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7229	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7219MS	WATER	11/06/96	11/06/96	11/07/96	11/14/96
B7219MSD	WATER	11/06/96	11/06/96	11/07/96	11/15/96
B7225MS	WATER	11/06/96	11/06/96	11/07/96	11/15/96
B7225MSD	WATER	11/06/96	11/06/96	11/07/96	11/14/96
PB110796W2	WATER	11/06/96	11/06/96	11/07/96	11/14/96
PS110796W2	WATER	11/06/96	11/06/96	11/07/96	11/14/96
L110796W2	WATER	11/06/96	11/06/96	11/07/96	11/14/96

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

LETTER OF TRANSMITTAL

TO: Dave Meixell

COMPANY: OBG

FROM: Judy Harry

DATE: 2-27-97

ENCLOSED: Validation report for Special Metals
Invoice for same

COMMENTS:

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

February 27, 1997

Dave Meixell
O'Brien & Gere
5000 Brittonfield Parkway
P. O. Box 5240
Syracuse, NY 13220

RE: Validation of data packages for the Special Metals Corporation Site
OBG Labs data packages

Dear Mr. Meixell:

Review has been completed on the data packages generated by OBG Labs pertaining to samples collected at the Special Metals Site. Thirty four soil samples, collected 1/13/97 and 1/14/97, were processed for PCBs. Five samples were analysed for TOC by subcontract with ITS. Equipment blanks, and sample matrix spikes were also processed. Methodologies utilized are those of the EPA-8080.

Data validation was performed in accordance with the NYSDEC RI/FS Validation Scope of Work, with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USAEPA SOP HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate Recoveries
* Matrix Spike Recoveries
* Duplicate Correlation
* Preparation/Calibration Blanks
* Instrument Tunes
* Laboratory Control Samples
* Calibration Standards
* Internal Standard Areas
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherance to quality criteria. With the exception of qualification due to matrix effect (interference and/or weathering), which are outlined below, sample reported results are usable as reported.

Laboratory case narratives and preparation/analysis tracking forms are attached to this report.

Custody Documentation

Although requested by OBG, no internal chain-of-custody documentation was kept for the Inchcape Testing Labs TOC analyses. However, sample login and analyst initials are present on the provided data.

One of the equipment blanks was listed as a soil on the chain-of-custody. The correction was noted upon login at OBG Labs.

PCB Analyses

Holding times and instrument parameters met protocol requirements. Surrogate recoveries, when not diluted beyond detection, were acceptable.

Due to poor correlation of individual isomer proportions, and/or dual column correlations, the following sample results should be considered estimated:

Aroclor 1254 in B3 (16-18), B1(10-12), and B1(14-16).

Samples SED03, SED05, and matrix spikes of SED05 produced a gellike product during acid cleanup, which was centrifuged to two layers. There is a possibility that the reported results for these samples are therefore biased low due to possible analyte losses.

The Aroclor 1016/1260 matrix spikes of SED05 and B1 (4-6) could not be evaluated due to the relatively high concentrations of PCBs in the samples. The spiked compounds were diluted out. Aroclor 1016/1260 matrix spikes of B5 (4-6) produced acceptable accuracy and precision values.

Method Detection Limits are outdated and should be regenerated.

TOC Analyses

Accuracy and precision of E0610 was acceptable. Duplicate correlation was somewhat elevated, at 39%RPD, but below the action limit for qualification.

Please do not hesitate to contact me if you have any questions regarding this report.

Very truly yours,

Judy Harry

COMPLIANCY CHART

Project: OBG Special Metals Corporation

SDG Nos. OBG Labs data packages

Protocol: EPA8080

PCB 2-27-97

Rec. Date	Sample ID	Matrix	~~VOA~~	TOC	Noncompliancy
01-14-97	SED01	Soil	OK	NR	
01-14-97	SED08	Soil	OK	NR	
01-14-97	SED02	Soil	OK	NR	
01-14-97	SED03	Soil	OK	NR	
01-14-97	SED09	Soil	OK	NR	
01-14-97	SED04	Soil	OK	NR	
01-14-97	SED05	Soil	OK	NR	
01-14-97	SED06	Soil	OK	NR	
01-14-97	SED07	Soil	OK	NR	
01-14-97	B4 4-6'	Soil	OK	NR	
01-14-97	B4 8-10'	Soil	OK	NR	
01-14-97	B4 14-16'	Soil	OK	NR	
01-14-97	B4 16-18'	Soil	OK	NR	
01-14-97	B4 20-22'	Soil	OK	NR	
01-14-97	B4 24-26'	Soil	OK	NR	
01-14-97	B3 2-4'	Soil	OK	NR	
01-14-97	B3 6-8'	Soil	OK	NR	
01-14-97	B3 8-10'	Soil	OK	NR	
01-14-97	B3 12-14'	Soil	OK	NR	
01-14-97	B3 16-18'	Soil	OK	NR	
01-14-97	B5 0-2'	Soil	OK	NR	
01-14-97	B5 4-6'	Soil	OK	NR	
01-14-97	B5 6-8'	Soil	OK	NR	
01-14-97	B5 10-12'	Soil	OK	NR	
01-14-97	B5 14-16'	Soil	OK	NR	
01-14-97	B2 4-6'	Soil	OK	NR	
01-14-97	B2 10-12'	Soil	OK	NR	
01-14-97	B2 14-16'	Soil	OK	NR	
01-14-97	B2 20-22'	Soil	OK	NR	
01-14-97	B2 24-26'	Soil	OK	NR	
01-14-97	B2 28-30'	Soil	OK	NR	
01-14-97	B1 4-6'	Soil	OK	NR	
01-14-97	B1 10-12'	Soil	OK	NR	
01-14-97	B1 14-16'	Soil	OK	NR	
01-14-97	EQPBLK	Aqueous	OK	NR	
01-14-97	EQPBLK1	Aqueous	OK	NR	
01-14-97	EQPBLK2	Aqueous	OK	NR	
01-17-97	B4 18-20'	Soil	NR	OK	
01-17-97	B3 4-6'	Soil	NR	OK	
01-17-97	B5 8-10'	Soil	NR	OK	
01-17-97	B2 18-20'	Soil	NR	OK	
01-17-97	B1 6-8'	Soil	NR	OK	

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

Facsimile Transmission

TO: James Madison

COMPANY: ITS

FAX NUMBER: 802 655 1248

FROM: Judy Harry

DATE: 2-25-97

No. of pages (including cover): 1

COMMENTS: RE: OBG Project

Case # 97000

SDG # 63551

TOC analyses on 5 samples.

Please provide copies of the internal laboratory chain-of-custody documentation for this project. These were not present in the data package.

It is important that this information be forwarded ASAP. Fax to the number above is acceptable, with copies to Dave Meixell at OBG. Thank you,

Judy Harry

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation Ludlow, North Pit project located in Paris, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The coolers were received intact. When the coolers were received by the laboratory, the sample custodian(s) opened and inspected the shipments for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

Discrepancies noted upon receipt are documented on the case file form included in the chain of custody section. Samples collected for Total Organic Carbon analysis were subcontracted to Inchcape Laboratories and are included in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes surrogates, matrix spike (MS), matrix spike duplicate (MSD), matrix spike blank, laboratory control sample (LCS), equipment blank and prep blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

PCBs

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Samples

All spike recoveries met method and/or project specific QC criteria.

MS/MSD

The following compounds did not meet matrix spike/matrix spike duplicate percent recovery :

Sample Description	Sample #	Compound	Corrective Action
SED 05	E0553	AR1016	1
		AR1260	1
B1 4-6'	E0601	AR1016	1
		AR1260	1

1. The spike was diluted out due to the high concentration of AR1254 in the sample. The matrix spike blank was within control limits. No further corrective action was taken.

Surrogates

The following samples did not meet criteria for surrogate recoveries for Tetrachloro-m-xylene (TCMX) and/or Decachlorobiphenyl (DCBP):

Sample Description	Sample #	Surrogate	Corrective Action
Equipment Blank	E0556	Decachlorobiphenyl	1

1. One of the two surrogates was within control limits. No further corrective action was taken.

Calibrations

All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks

All preparation blanks met method and/or project specific QC criteria.

Wet Chemistry

There were no excursions to note, all QC results were within established control limits.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	Pest PCBs Method #	Metals	Other
SED 01	E0547				8080-PCB		2540-G
SED 08	E0548				8080-PCB		2540-G
SED 02	E0549				8080-PCB		2540-G
SED 03	E0550				8080-PCB		2540-G
SED 09	E0551				8080-PCB		2540-G
SED 04	E0552				8080-PCB		2540-G
SED 05	E0553				8080-PCB		2540-G
SED 05	E0553D				8080-PCB		2540-G
SED 05	E0553MS				8080-PCB		2540-G
SED 05	E0553MSD				8080-PCB		2540-G
SED 06	E0554				8080-PCB		2540-G
SED 07	E0555				8080-PCB		2540-G
Equipment Blank	E0556				8080-PCB		
B4 4-6'	E0579				8080-PCB		2540-G
B4 8-10'	E0580				8080-PCB		2540-G
B4 14-16'	E0581				8080-PCB		2540-G
B4 16-18'	E0582				8080-PCB		2540-G
B4 20-22'	E0583				8080-PCB		2540-G
B4 24-26'	E0584				8080-PCB		2540-G
B3 2-4'	E0585				8080-PCB		2540-G
B3 6-8'	E0586				8080-PCB		2540-G
B3 8-10'	E0587				8080-PCB		2540-G
B3 12-14'	E0588				8080-PCB		2540-G

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	Pest PCBs Method #	Metals	Other
B3 16-18'	E0589				8080-PCB		2540-G
B5 0-2'	E0590				8080-PCB		2540-G
B5 4-6'	E0591				8080-PCB		2540-G
B5 4-6'	E0591D				8080-PCB		2540-G
B5 4-6'	E0591MS				8080-PCB		2540-G
B5 4-6'	E0591MSD				8080-PCB		2540-G
B5 6-8'	E0592				8080-PCB		2540-G
B5 10-12'	E0593				8080-PCB		2540-G
B5 14-16'	E0594				8080-PCB		2540-G
B2 4-5'	E0595				8080-PCB		2540-G
B2 10-12'	E0596				8080-PCB		2540-G
B2 14-16'	E0597				8080-PCB		2540-G
B2 20-22'	E0598				8080-PCB		2540-G
B2 24-26'	E0599				8080-PCB		2540-G
B2 28-30'	E0600				8080-PCB		2540-G
B1 4-6'	E0601				8080-PCB		2540-G
B1 4-6'	E0601D				8080-PCB		2540-G
B1 4-6'	E0601MS				8080-PCB		2540-G
B1 4-6'	E0601MSD				8080-PCB		2540-G
B1 10-12'	E0602				8080-PCB		2540-G
B1 14-16'	E0603				8080-PCB		2540-G
Equipment Blank #1	E0604				8080-PCB		
Equipment Blank #2	E0605				8080-PCB		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
E0547	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0548	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0549	SOIL	1/14/97	1/14/97	1/15/97	1/22/97
E0550	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0551	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0552	SOIL	1/14/97	1/14/97	1/15/97	1/22/97
E0553	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0553MS	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0553MSD	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0554	SOIL	1/14/97	1/14/97	1/15/97	1/22/97
E0555	SOIL	1/14/97	1/14/97	1/15/97	1/21/97
E0556	WATER	1/14/97	1/14/97	1/16/97	1/24/97
E0579	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0580	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0581	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0582	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0583	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0584	SOIL	1/13/97	1/14/97	1/16/97	1/22/97
E0585	SOIL	1/13/97	1/14/97	1/16/97	1/23/97
E0586	SOIL	1/13/97	1/14/97	1/16/97	1/23/97
E0587	SOIL	1/13/97	1/14/97	1/16/97	1/23/97
E0588	SOIL	1/13/97	1/14/97	1/16/97	1/23/97
E0589	SOIL	1/13/97	1/14/97	1/15/97	1/23/97
E0590	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0591	SOIL	1/14/97	1/14/97	1/16/97	1/23/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
E0591MS	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0591MSD	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0592	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0593	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0594	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0595	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0596	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0597	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0598	SOIL	1/14/97	1/14/97	1/16/97	1/23/97
E0599	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0600	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0601	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0601MS	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0601MSD	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0602	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0603	SOIL	1/14/97	1/14/97	1/16/97	1/24/97
E0604	WATER	1/13/97	1/14/97	1/16/97	1/24/97
E0605	WATER	1/14/97	1/14/97	1/16/97	1/24/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PCB)
ANALYSIS

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
E0547	SOIL	8080	SONICATION	ACID	200
E0548	SOIL	8080	SONICATION	ACID	20
E0549	SOIL	8080	SONICATION	ACID	2000
E0550	SOIL	8080	SONICATION	ACID	50
E0551	SOIL	8080	SONICATION	ACID	200
E0552	SOIL	8080	SONICATION	ACID	250
E0553	SOIL	8080	SONICATION	ACID	200
E0553MS	SOIL	8080	SONICATION	ACID	200
E0553MSD	SOIL	8080	SONICATION	ACID	200
E0554	SOIL	8080	SONICATION	ACID	5000
E0555	SOIL	8080	SONICATION	ACID	200
E0556	WATER	8080	CONT.		1
E0579	SOIL	8080	SONICATION	ACID	1
E0580	SOIL	8080	SONICATION	ACID	1
E0581	SOIL	8080	SONICATION	ACID	1
E0582	SOIL	8080	SONICATION	ACID	1
E0583	SOIL	8080	SONICATION	ACID	1
E0584	SOIL	8080	SONICATION	ACID	1
E0585	SOIL	8080	SONICATION	ACID	1
E0586	SOIL	8080	SONICATION	ACID	1
E0587	SOIL	8080	SONICATION	ACID	10
E0588	SOIL	8080	SONICATION	ACID	10
E0589	SOIL	8080	SONICATION	ACID	10
E0590	SOIL	8080	SONICATION	ACID	100
E0591	SOIL	8080	SONICATION	ACID	1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PEST)
ANALYSIS

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
E0591MS	SOIL	8080	SONICATION	ACID	1
E0591MSD	SOIL	8080	SONICATION	ACID	1
E0592	SOIL	8080	SONICATION	ACID	1
E0593	SOIL	8080	SONICATION	ACID	1
E0594	SOIL	8080	SONICATION	ACID	1
E0595	SOIL	8080	SONICATION	ACID	50
E0596	SOIL	8080	SONICATION	ACID	10
E0597	SOIL	8080	SONICATION	ACID	2
E0598	SOIL	8080	SONICATION	ACID	1
E0599	SOIL	8080	SONICATION	ACID	1
E0600	SOIL	8080	SONICATION	ACID	1
E0601	SOIL	8080	SONICATION	ACID	10
E0601MS	SOIL	8080	SONICATION	ACID	10
E0601MSD	SOIL	8080	SONICATION	ACID	10
E0602	SOIL	8080	SONICATION	ACID	100
E0603	SOIL	8080	SONICATION	ACID	20
E0604	WATER	8080	CONT.		1
E0605	WATER	8080	CONT.		1

Inchcape Testing Services
Environmental Laboratories

55 South Park Drive
Colchester, VT 05446
Tel. 802-655-1203
Fax. 802-655-1248

January 30, 1997

Ms. Jaye Lubey
O'Brien & Gere Laboratories
5000 Brittonfield Parkway
PO Box 4942
Syracuse, NY 13221

Re: Laboratory Project No. 97000
Case No.97000; SDG 63551

Dear Ms. Lubey:

Enclosed are the analytical results of samples received intact by ITS Environmental Laboratories on January 17, 1997. Laboratory numbers and quality control samples have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 01/17/97	COR No: 63551	
324187	E0606	01/13/97	Solid
324188	E0607	01/13/97	Solid
324189	E0608	01/14/97	Solid
324190	E0609	01/14/97	Solid
324191	E0610	01/14/97	Solid
324191MS	E0610MS	01/14/97	Solid
324191DP	E0610REP	01/14/97	Solid

For the benefit of interested parties, documentation of sample handling and preparation is included at the end of the "Sample Data Package." Colored sheets of paper entitled "Sample Preparation" and "Sample Handling" have been used to explicitly mark the location of these documents.

If there are any questions regarding this submittal, please contact James W. Madison at (802) 655-1203.

Sincerely,

Martha Roy

for Karen R. Chirgwin
Laboratory Operations Director

O'BRIEN & GERE
LABORATORIES, INC.

January 16, 1997

Mr. James Madison
Aquatech
55 South Park
Colchester, VT 05446

Re: TOC Analysis
File: 2290.046.517

Dear Jim:

Please find enclosed five (5) solid samples to be analyzed for Total Organic Carbon by the Lloyd Kahn Method. Please report the data (in 2 unbound copies) according to the NYSDEC ASP Category B format (it is our understanding that this is your Level 4). Please follow NYSDEC ASP chain of custody and internal custody requirements.

It is my understanding that the cost of analysis is $65.00 per sample, with a turnaround time of two to three weeks from your receipt of the samples. Please reference # 2290.046.517 when billing.

If there are any questions, please feel free to contact Tom Alexander or me.

Very truly yours,
O'BRIEN & GERE LABORATORIES, INC.

Jaye C. Lubey
Chemist II

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

LETTER OF TRANSMITTAL

TO: Dave Meixell

COMPANY: OBG

FROM: Judy Harry

DATE: 4-17-97

ENCLOSED: Validation report for Special Metals samples collected 2/97

Associated invoice

COMMENTS:

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

April 16, 1997

Dave Meixell
O'Brien & Gere
5000 Brittonfield Parkway
P. O. Box 5240
Syracuse, NY 13220

RE: Validation of data packages for the Special Metals Corporation Site
OBG Labs data packages of 2/97

Dear Mr. Meixell:

Review has been completed on the data packages generated by OBG Labs pertaining to samples collected at the Special Metals Site. Five aqueous samples were processed for TCL volatiles and filtered and unfiltered PCBs. A field blank, trip blank, and sample matrix spikes were also processed. Methodologies utilized are those of the 1991 NYSDEC ASP 91-1 and EPA-8080.

Data validation was performed in accordance with the NYSDEC RI/FS Validation Scope of Work, with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USAEPA SOP HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate Recoveries
* Matrix Spike Recoveries
* Duplicate Correlation
* Preparation/Calibration Blanks
* Instrument Tunes
* Laboratory Control Samples
* Calibration Standards
* Internal Standard Areas
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted with compliance to protocol requirements and with adherance to quality criteria. Only minimal qualification was necessary, due to low level volatile blank contamination (discussed below) A compliance chart, laboratory case narratives and preparation/ analysis tracking forms are attached to this report.

General

The report forms for the samples show the laboratory number ID in the field for NYSDEC (Client) Sample ID, and the NYSDEC (Client) Sample ID in the field for laboratory number ID.

The trip blank was not denoted on the chain-of-custody submitted to the laboratory. This omission was noted at the time of receipt.

Volatile Analyses

Holding times, surrogate recoveries, accuracy and precision on MW-11R, and instrument parameters were all within required/recommended limits. The sample results are usable as reported, with the exception that:

Detections of methylene chloride in the samples should be considered contamination (as shown by the associated spiked blank level of 2 ug/L). Results for that analyte in the samples should be edited to reflect nondetection at CRDL

PCB Analyses

Holding times, surrogate recoveries, accuracy and precision of MW-11R (filtered and unfiltered), and instrument parameters met protocol requirements.

Reported results for the filtered and unfiltered PCB results of all samples are usable as reported.

Please do not hesitate to contact me if you have any questions regarding this report.

Very truly yours,

Judy Harry

COMPLIANCY CHART

Project: OBG --Special Metals Corporation Project

SDG Nos. OBG Labs data packages

Protocol: 1991 NYSDEC ASP 91-1 and EPA8080

Rec. Date	Sample ID	Matrix	VOA	PCB	Noncompliancy
02-20-97	MW-10	Aqueous	OK	OK	
02-20-97	MW-11R	Aqueous	OK	OK	
02-20-97	MW-17	Aqueous	OK	OK	
02-20-97	MW-18	Aqueous	OK	OK	
02-20-97	MW-19	Aqueous	OK	OK	
02-20-97	EQBLK	Aqueous	OK	OK	
02-20-97	TRPBLK	Aqueous	OK	NR	
02-20-97	MW-10F	Aqueous	NR	OK	
02-20-97	MW-11RF	Aqueous	NR	OK	
02-20-97	MW-17F	Aqueous	NR	OK	
02-20-97	MW-18F	Aqueous	NR	OK	
02-20-97	MW-19F	Aqueous	NR	OK	
02-20-97	EQBLKF	Aqueous	NR	OK	

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation Ludlow, North Pit project located in Paris, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted.

The analytic results for the PCB analysis are presented in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
Volatile Organics	91-1	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes surrogates, internal standards, matrix spike (MS), matrix spike duplicate (MSD), matrix spike blank, laboratory control sample (LCS), equipment blank, prep blank and QC trip blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

Volatile Organics

There were no excursions to note, all QC results were within established control limits.

Sample E3127 [Storage Blank] failed surrogate recovery criteria for 1,2-dichloroethane-d4. The sample was analyzed at the end of the analytical run on sequence. The sample was not reanalyzed.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Superfund order of data requirements.

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation Ludlow, North Pit project located in Paris, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted.

Analytic results for volatile organic analyses are presented in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes surrogates, matrix spike (MS), matrix spike duplicate (MSD), matrix spike blank, laboratory control sample (LCS), equipment blank and prep blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

PCBs

There were no excursions to note, all QC results were within established control limits.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*Pest PCBs Method #	*Metals	*Other
11R	E3140	91-1					
11R	E3140MS	91-1					
11R	E3140MSD	91-1					
18	E3141	91-1					
10	E3142	91-1					
17	E3143	91-1					
19	E3144	91-1					
Equipment Blank	E3145	91-1					
QC Trip Blank	E3146	91-1					
Sample Blank	E3147	91-1					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
E3140	WATER	2/20/97	2/20/97	-	2/21/97
E3140MS	WATER	2/20/97	2/20/97	-	2/21/97
E3140MSD	WATER	2/20/97	2/20/97	-	2/21/97
E3141	WATER	2/20/97	2/20/97	-	2/21/97
E3142	WATER	2/20/97	2/20/97	-	2/21/97
E3143	WATER	2/20/97	2/20/97	-	2/21/97
E3144	WATER	2/20/97	2/20/97	-	2/21/97
E3145	WATER	2/20/97	2/20/97	-	2/21/97
E3146	WATER	-	2/20/97	-	2/21/97
E3147	WATER	-	2/20/97	-	2/21/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Low Level Med Level	Date Analyzed
E3140	WATER	2/20/97	2/20/97	LOW	2/21/97
E3140MS	WATER	2/20/97	2/20/97	LOW	2/21/97
E3140MSD	WATER	2/20/97	2/20/97	LOW	2/21/97
E3141	WATER	2/20/97	2/20/97	LOW	2/21/97
E3142	WATER	2/20/97	2/20/97	LOW	2/21/97
E3143	WATER	2/20/97	2/20/97	LOW	2/21/97
E3144	WATER	2/20/97	2/20/97	LOW	2/21/97
E3145	WATER	2/20/97	2/20/97	LOW	2/21/97
E3146	WATER	-	2/20/97	LOW	2/21/97
E3147	WATER	-	2/20/97	LOW	2/21/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	PCBs Method #	Metals	Other
11R	E3148				8080A		
11R	E3148MS				8080A		
11R	E3148MSD				8080A		
18	E3149				8080A		
10	E3150				8080A		
17	E3151				8080A		
19	E3152				8080A		
Equipment Blank	E3153				8080A		
11R (filtered)	E3154				8080A		
11R (filtered)	E3154MS				8080A		
11R (filtered)	E3154MSD				8080A		
18 (filtered)	E3155				8080A		
10 (filtered)	E3156				8080A		
17 (filtered)	E3157				8080A		
19 (filtered)	E3158				8080A		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample iD	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
E3148	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3148MS	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3148MSD	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3149	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3150	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3151	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3152	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3153	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3154	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3154MS	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3154MSD	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3155	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3156	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3157	WATER	02/20/97	02/20/97	02/24/97	02/26/97
E3158	WATER	02/20/97	02/20/97	02/24/97	02/26/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PCB)
ANALYSIS

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
E3148	WATER	8080	CONT.	FLORSIL	1
E3148MS	WATER	8080	CONT.	FLORSIL	1
E3148MSD	WATER	8080	CONT.	FLORSIL	1
E3149	WATER	8080	CONT.	FLORSIL	1
E3150	WATER	8080	CONT.	FLORSIL	1
E3151	WATER	8080	CONT.	FLORSIL	1
E3152	WATER	8080	CONT.	FLORSIL	1
E3153	WATER	8080	CONT.	FLORSIL	1
E3154	WATER	8080	CONT.	FLORSIL	1
E3154MS	WATER	8080	CONT.	FLORSIL	1
E3154MSD	WATER	8080	CONT.	FLORSIL	1
E3155	WATER	8080	CONT.	FLORSIL	1
E3156	WATER	8080	CONT.	FLORSIL	1
E3157	WATER	8080	CONT.	FLORSIL	1
E3158	WATER	8080	CONT.	FLORSIL	1

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

LETTER OF TRANSMITTAL

TO: Dave Meixell

COMPANY: OBG

FROM: Judy Harry

DATE: 8-1-97

ENCLOSED: Validation report for Special Metals
OBG Lab report of 6/97

Associated invoice

COMMENTS:

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

August 1, 1997

Dave Meixell
O'Brien & Gere
5000 Brittonfield Parkway
P. O. Box 5240
Syracuse, NY 13220

RE: Validation of data packages for the Special Metals Corporation Site
OBG Labs data packages of 6/97

Dear Mr. Meixell:

Review has been completed on the data packages generated by OBG Labs pertaining to samples collected at the Special Metals Site. Five aqueous samples were processed for TCL volatiles and filtered and unfiltered PCBs. A field blank, trip blank, and sample matrix spikes were also processed. Methodologies utilized are those of the 1991 NYSDEC ASP 91-1 and EPA-8080.

Data validation was performed in accordance with the NYSDEC RI/FS Validation Scope of Work, with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USAEPA SOP HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate Recoveries
* Matrix Spike Recoveries
* Duplicate Correlation
* Preparation/Calibration Blanks
* Instrument Tunes
* Laboratory Control Samples
* Calibration Standards
* Internal Standard Areas
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was conducted with compliance to protocol requirements and with adherance to quality criteria. Only minimal qualification was necessary, due to low level volatile blank contamination (discussed below) A compliance chart, laboratory case narratives and preparation/ analysis tracking forms are attached to this report.

General

The report forms for the samples show the laboratory number ID in the field for NYSDEC (Client) Sample ID, and the NYSDEC (Client) Sample ID in the field for laboratory number ID.

The trip blank was not denoted on the chain-of-custody submitted to the laboratory. This omission was noted at the time of receipt.

Volatile Analyses

Holding times, surrogate recoveries, blank responses, and instrument parameters were all within required/recommended limits. Accuracy and precision on samples "18" and "17" were also acceptable.

The sample results are usable as reported, with the exception that:

Detections of acetone and the Tentatively Identified Compound (TIC) at 3.2' in the samples should be considered contamination (as shown by the associated trip and equipment blanks). Results for acetone in the samples should be edited to reflect nondetection at CRDL, and the TIC at 3.2' in the samples should be rejected (this TIC should have flagged as "B" by the laboratory due to copresence in the method blanks).

The elevated response for carbon disulfide in the Laboratory Control Sample (144%) does not affect sample reported results.

PCB Analyses

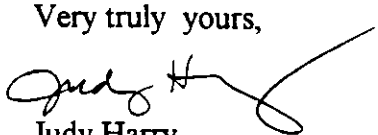
Holding times, blank responses, and instrument parameters met protocol requirements. Sample "11R" produced a low surrogate recovery for DCB (40%, below the recommended limit of 43%); recovery of surrogate TCX was acceptable. No qualification is necessary.

Accuracy and precision values for sample "17 filtered" were acceptable. Those for sample "17" showed one elevated recovery for Aroclor 1016 (134%, above 125% limit) and one low recovery for Aroclor 1260 (68%, just below the 69% limit). The other two recovery values were acceptable, and sample results are unaffected.

Reported results for the filtered and unfiltered PCB results of all samples are usable as reported.

Please do not hesitate to contact me if you have any questions regarding this report.

Very truly yours,



Judy Harry

COMPLIANCY CHART

Project: OBG Special Metals Corporation

SDG Nos. OBG Labs data packages

Protocol: 1991 NYSDEC ASP 91-1 and EPA8080

Rec. Date	Sample ID	Matrix	VOA	PCB	Noncompliancy
06-11-97	10	Aqueous	OK	OK	
06-11-97	11R	Aqueous	OK	OK	
06-11-97	17	Aqueous	OK	OK	
06-10-97	18	Aqueous	OK	OK	
06-11-97	19	Aqueous	OK	OK	
06-10-97	EB061097	Aqueous	OK	OK	
06-10-97	QC TRPBLK	Aqueous	OK	NR	
06-11-97	10F	Aqueous	NR	OK	
06-11-97	11RF	Aqueous	NR	OK	
06-11-97	17F	Aqueous	NR	OK	
06-10-97	18F	Aqueous	NR	OK	
06-11-97	19F	Aqueous	NR	OK	

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Ludlow Sanitary Landfill.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The coolers were received intact. When the coolers were received by the laboratory, the sample custodian(s) opened and inspected the shipments for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

Discrepancies noted upon receipt are documented on the case file form included in the chain of custody section. The cooler temperatures were 4° & 5°.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
Volatile Organics	91-1	1
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the December 1991 and September 1993 updates.

QUALITY CONTROL

The quality control for this program includes internal standards, surrogates, matrix spike (MS), matrix spike duplicate (MSD), equipment blank, laboratory control sample (LCS), prep blank and QC trip blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

Volatile Organics

The GC/MS Volatile instruments used a J&W DB-VRX, 75 m x 0.45 mm ID capillary column and a Vocarb 3000 trap.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements. Samples had a pH of less than 2.

Laboratory Control Sample

The following compound did not meet laboratory control sample recovery criteria:

LCS No.	Compound	Corrective Action
L061197W1	Carbon Disulfide	1

1. This compound failed marginally high and was not detected in the associated samples. No corrective action was taken.

MS/MSD
All spike recovery and RPD data met method and/or project specific QC criteria.

Surrogate
All surrogate recoveries met method and/or project specific QC criteria.

Internal Standards
All internal standard areas met method and/or project specific QC criteria.

Calibrations
All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks
All preparation blanks met method and/or project specific QC criteria.

PCBs

The GC Semivolatile instruments used a RTX5, 30 m X .32 mm ID capillary column.

Holding Times
All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Samples
All spike recoveries met method and/or project specific QC criteria.

MS/MSD
The following compounds did not meet matrix spike/matrix spike duplicate percent recovery and/or RPD criteria:

Sample Description	Sample #	Compound	% REC	RPD	Corrective Action
17	E9788	PCB-1016	X	X	1
		PCB-1260	X		1

1. The matrix spike blank met criteria. No corrective action was taken.

Surrogates
The following samples did not meet criteria for surrogate recoveries for Tetrachloro-m-xylene (TCMX) and/or Decachlorobiphenyl (DCBP):

Sample Description	Sample #	Surrogate	Corrective Action
11R	E9790	TCMX	1
Instrument Blank - 1	PIBLK1	DCBP	1,2
Instrument Blank - 2	PIBLK2	DCBP	1,2
Instrument Blank - 3	PIBLK3	DCBP	1,2

1. One of the two surrogates met criteria. No corrective action was required.

2. The recovery failed high and no target compounds were detected in the blank. No corrective action was taken.

Calibrations
All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks
All preparation blanks met method and/or project specific QC criteria.

RAW DATA

The raw data for is organized in a format similar to the NYS DEC Contract Laboratory Program and Catagory B order of data requirements.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL REQUIREMENT SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		VOA GC/MS Method #	BNA GC/MS Method #	VOA GC Method #	Pest PCBs Method #	Metals	Other
18	E9625	91-1			8080		
18 (filtered)	E9626				8080		
EB061097	E9627	91-1			8080		
QC Trip Blank	E9628	91-1					
17	E9788	91-1			8080		
17	E9788MS	91-1			8080		
17	E9788MSD	91-1			8080		
10	E9789	91-1			8080		
11R	E9790	91-1			8080		
19	E9791	91-1			8080		
QC Trip Blank	E9792	91-1					
17 (filtered)	E9793				8080		
17 (filtered)	E9793MS				8080		
17 (filtered)	E9793MSD				8080		
10 (filtered)	E9794				8080		
11R (filtered)	E9795				8080		
19 (filtered)	E9796				8080		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOLATILE (VOA)
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Low Level Med Level	Date Analyzed
E9625	Water	6/10/97	6/11/97	Low	6/11/97
E9625MS	Water	6/10/97	6/11/97	Low	6/12/97
E9625MSD	Water	6/10/97	6/11/97	Low	6/12/97
E9627	Water	6/10/97	6/11/97	Low	6/11/97
E9628	Water	6/10/97	6/11/97	Low	6/11/97
E9788	Water	6/11/97	6/12/97	Low	6/12/97
E9788MS	Water	6/11/97	6/12/97	Low	6/12/97
E9788MSD	Water	6/11/97	6/12/97	Low	6/12/97
E9789	Water	6/11/97	6/12/97	Low	6/12/97
E9790	Water	6/11/97	6/12/97	Low	6/12/97
E9791	Water	6/11/97	6/12/97	Low	6/12/97
E9792	Water	6/11/97	6/12/97	Low	6/12/97

I:OBG3959.WPD

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
E9625	WATER	6/10/97	6/11/97	6/12/97	6/18/97
E9626	WATER	6/10/97	6/11/97	6/12/97	6/18/97
E9627	WATER	6/10/97	6/11/97	6/12/97	6/18/97
E9788	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9789	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9790	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9791	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9793	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9794	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9795	WATER	6/11/97	6/12/97	6/16/97	6/19/97
E9796	WATER	6/11/97	6/12/97	6/16/97	6/19/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PCB)
ANALYSIS

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
E9625	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9626	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9627	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9788	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9789	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9790	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9791	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9793	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9794	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9795	WATER	8080-PCB	CONTINUOUS	ACID WASH	1
E9796	WATER	8080-PCB	CONTINUOUS	ACID WASH	1

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

November 19, 1997

Dave Meixell
O'Brien & Gere
5000 Brittonfield Parkway
P. O. Box 5240
Syracuse, NY 13220

RE: Validation of data packages for the Special Metals Corporation Site
OBG Labs data packages

Dear Mr. Meixell:

Review has been completed on the data packages generated by OBG Labs pertaining to samples collected at the Special Metals Site. Twenty one soil samples collected 9/17/97, and two aqueous samples collected 9/30/97, were processed for PCBs. Two soil samples were analysed for TOC by subcontract with ITS. An equipment blank and sample matrix spikes were also processed. Methodologies utilized are those of the EPA-8080.

Data validation was performed in accordance with the NYSDEC RI/FS Validation Scope of Work, with guidance from the most current editions of the USEPA CLP National Functional Guidelines for Organic Data Review and the USAEPA SOP HW-6. The following items were reviewed:

* Data Completeness
* Custody Documentation
* Holding Times
* Surrogate Recoveries
* Matrix Spike Recoveries
* Duplicate Correlation
* Preparation/Calibration Blanks
* Instrument Tunes
* Laboratory Control Samples
* Calibration Standards
* Internal Standard Areas
* Instrument IDLs
* Method Compliance
* Sample Result Verification

Those items showing deficiencies are discussed in the following sections of this report. All others were found to be acceptable as outlined in the above-mentioned validation procedures, and as applicable for the methodology. Unless noted specifically in the following text, reported results are substantiated by the raw data, and generated in compliance with protocol requirements.

In summary, sample processing was primarily conducted with compliance to protocol requirements and with adherance to quality criteria. However, the soil results were initially reported with an incorrect factor; only the addendum resubmitted results for the samples should be utilized for this project. With the exception of qualifications due to matrix effect (interference and/or weathering), which are outlined below, sample reported results are usable as re-reported.

Laboratory case narratives and preparation/analysis tracking forms are attached to this report.

PCB Analyses

As noted earlier, the initially reported soil results required correction and were resubmitted as an addendum report. The values were initially reported thirty times higher than actual, and the reporting units are clarified as being mg/kg.

Certain of the samples required great dilutions due to elevated concentrations of the PCBs. In some cases this prohibited evaluation of surrogate recovery, and exceeded the solvency of the extraction. The reported results (detected values and detection limits) for those samples should therefore be considered estimated ("J"):

Sample ID	PCB	Dilution
B-7(6-8)	1254	500
B-9(0-2)	1254	5000
B-9(2-4)	1254	5000
B-9(4-6)	1254	10000
B-9(6-8)	1254	2000
B-9(8-10)	1254	2000

Due to poor correlation of individual congener proportions, and/or dual column correlations, the following sample results should be considered estimated ("J" qualifier) (those listed above as qualified due to dilution are not reiterated here):

Aroclor 1242 in both of the aqueous Gravel Pit Pond samples (Shallow and Deep).

The reported detection limit for the Aroclors in the Equipment Blank (and its associated preparation blank) should be "0.2 ug/L", not "0.1 ug/L", (based upon the final extract volume conversion).

Field duplicate correlation for B-6(4-6) was acceptable.

Holding times and instrument parameters met protocol requirements. Surrogate recoveries, when not diluted beyond detection, were acceptable.

The Aroclor 1016/1260 matrix spikes of B-9 (6-8) and Gravel Pit Pond-Shallow Surface could not be evaluated due to the relatively high concentrations of PCBs in the samples. The spiked compounds were diluted out. The spike blanks and QC Check samples processed with the samples showed acceptable accuracy and precision values.

Method Detection Limits have been reported for soil and aqueous using the same data points. The method detection limit should reflect the method used (i.e. different extraction procedures).

TOC Analyses

Accuracy and precision of G1635 was acceptable.

Reported results are substantiated by the raw data.

Please do not hesitate to contact me if you have any questions regarding this report.

Very truly yours,

Judy Harry

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, NY 12853
Phone and Fax (518) 251-4429

November 10, 1997

Tom Alexander
O'Brien & Gere Labs
5000 Brittonfield Pkwy
Syracuse, NY 13221

RE: OBG -Special Metals Site; OBG Report of 9-26-97 Job# 2290.046.517

Dear Mr. Alexander:

Review has been performed for the above data package, and the following issue requires resolution.

1. The volume 1 of this package (summary volume) shows units of mg/kg for sample PCB results. The volume 2, which includes the raw data, show the same values, but with ug/kg as units. Please provide clarification, as an alert for the end-user of the data.

2. Using the extraction log information for sample volume and extract volume, and the reported dilution factors from the injection log and report forms, I have not been able to duplicate the calculation for sample detected results. Example:

B-6 (0-2) (G0612) 1254 Peak #1 on DB-608

$$\frac{1224430}{1316699.0} \times \frac{10{,}000\ ul}{2\ ul} \times \frac{1\ ug}{1000\ ng} \times 100 \times \frac{}{.03\ kg} \times \frac{}{.479} = 32300\ ug/kg$$

Lab reported (based on 5 peaks) 760 mg/kg or ug/kg (See item 1)

neither match

No indication is present that GPC was performed, so that twofold factor has not been incorporated.

It is noted that the raw integration report shows extract volumes of 300, although the prep logs do not, and surrogates would be diluted beyond detection in all samples (i.e. G0617). Is this a quant calculation factor only?

Thank you in advance for a prompt response to this request. Please provide copies of all communications to Dave Meixell at OBG.

Very truly yours,

Judy Harry

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This is an addendum to the report submitted for samples collected from the Special Metals Corporation, Ludlow Sand & Gravel project located in Clayville, NY on September 17, 1997.

QUALITY CONTROL

PCBs

The raw data for solid samples and QC samples was corrected to reflect the correct extract volume of 10 mL. The report forms were corrected to reflect the correct concentration and the correct units.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements. The calibration data is not included in the addendum. The calibration data from the original report should be used.

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation, Ludlow Sand & Gravel project located in Clayville, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted. Cooler temperature was 3 °C.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the October 1995 update.

QUALITY CONTROL

The quality control for this program includes surrogates, matrix spike (MS), matrix spike duplicate (MSD), laboratory duplicate (D), matrix spike blank, laboratory control sample (LCS), equipment blank and prep blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

PCBs

The GC Semivolatile instruments used a RTX5, 30 m X .32 mm ID capillary column for primary analysis and a DB-608, 30 m X .53 mm ID capillary column for confirmation analysis.

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Samples

All spike recoveries met method and/or project specific QC criteria.

MS/MSD

The following compounds did not meet matrix spike/matrix spike duplicate percent recovery criteria:

Sample Description	Sample #	Compound	Corrective Action
B-9 (6-8')	G0628	PCB-1016	1
		PCB-1260	1

1. Due to the high concentration of PCB-1254 in the sample, the spike was diluted out. No corrective action was required.

Surrogates
The following samples did not meet criteria for surrogate recoveries for Tetrachloro-m-xylene (TCMX) and/or Decachlorobiphenyl (DCBP):

Sample Description	Sample #	Surrogate	Corrective Action
B-6 (8-10')	G0615	TCMX	1

1. Confirmation analysis used for qualitative identification only. One of the two surrogates met criteria. No corrective action was required.

Calibrations
The following continuing calibration compounds exceeded method percent difference criteria:

Calibration Date	Time	Column	Compound	Corrective Action
09/25/97	00:34	DB-608	PCB-1016	1
			PCB-1260	1

1. Confirmation analysis used for qualitative identification only, therefore no further corrective action was taken.

Preparation Blanks
All preparation blanks met method and/or project specific QC criteria.

RAW DATA

The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*PCBs Method #	*Metals	*Other
B-6 (0-2')	G0612				8080A		2540G
B-6 (2-4')	G0613				8080A		2540G
B-6 (4-6')	G0614				8080A		2540G
B-6 (8-10')	G0615				8080A		2540G
Blind Duplicate	G0616				8080A		2540G
B-7 (0-2')	G0617				8080A		2540G
B-7 (2-4')	G0618				8080A		2540G
B-7 (4-6')	G0619				8080A		2540G
B-7 (6-8')	G0620				8080A		2540G
B-7 (8-10')	G0621				8080A		2540G
B-8 (0-2')	G0622				8080A		2540G
B-8 (6-8')	G0623				8080A		2540G
B-8 (8-10')	G0624				8080A		2540G
B-9 (0-2')	G0625				8080A		2540G
B-9 (2-4')	G0626				8080A		2540G
B-9 (4-6')	G0627				8080A		2540G
B-9 (6-8')	G0628				8080A		2540G
B-9 (6-8')	G0628MS				8080A		2540G
B-9 (6-8')	G0628MSD				8080A		
B-9 (6-8')	G0628D						2540G
B-9 (8-10')	G0629				8080A		2540G
Equipment Blank	G0630				8080A		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSIS

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
G0612	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0613	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0614	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0615	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0616	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0617	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0618	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0619	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0620	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0621	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0622	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0623	SOLID	09/17/97	09/18/97	09/19/97	09/23/97
G0624	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0625	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0626	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0627	SOLID	09/17/97	09/18/97	09/19/97	09/25/97
G0628	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0628MS	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0628MSD	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0629	SOLID	09/17/97	09/18/97	09/19/97	09/24/97
G0630	WATER	09/17/97	09/18/97	09/22/97	09/26/97

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PEST)
ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
G0612	SOLID	8080	SONICATION	ACID WASH	100
G0613	SOLID	8080	SONICATION	ACID WASH	100
G0614	SOLID	8080	SONICATION	ACID WASH	100
G0615	SOLID	8080	SONICATION	ACID WASH	5
G0616	SOLID	8080	SONICATION	ACID WASH	50
G0617	SOLID	8080	SONICATION	ACID WASH	2
G0618	SOLID	8080	SONICATION	ACID WASH	10
G0619	SOLID	8080	SONICATION	ACID WASH	10
G0620	SOLID	8080	SONICATION	ACID WASH	500
G0621	SOLID	8080	SONICATION	ACID WASH	5
G0622	SOLID	8080	SONICATION	ACID WASH	200
G0623	SOLID	8080	SONICATION	ACID WASH	100
G0624	SOLID	8080	SONICATION	ACID WASH	10
G0625	SOLID	8080	SONICATION	ACID WASH	5000
G0626	SOLID	8080	SONICATION	ACID WASH	5000
G0627	SOLID	8080	SONICATION	ACID WASH	10000
G0628	SOLID	8080	SONICATION	ACID WASH	2000
G0628MS	SOLID	8080	SONICATION	ACID WASH	2000
G0628MSD	SOLID	8080	SONICATION	ACID WASH	2000
G0629	SOLID	8080	SONICATION	ACID WASH	2000
G0630	WATER	8080	CONT.	ACID WASH	1

NARRATIVE

INTRODUCTION/ANALYTICAL RESULTS

This report summarizes the laboratory results for samples from the Special Metals Corporation, Ludlow Sand & Gravel project located in Clayville, NY.

CONDITION UPON RECEIPT/CHAIN OF CUSTODY

The cooler was received intact. When the cooler was received by the laboratory, the sample custodian(s) opened and inspected the shipment for damage, custody inconsistencies and proper preservation. Chain of custodies documenting receipt are presented in the chain of custody section. Each sample was assigned a unique laboratory number and a custody file created. The samples were placed in a secured walk-in cooler and signed in and out by the chemists performing the tests. The sign out record, or lab chronicle, is presented in the chain of custody section.

No discrepancies were noted. Cooler temperature was 7°C.

The sediment sample analysis for TOC will be reported in a separate report.

METHODOLOGY

The following methods were used to perform the analyses:

PARAMETER	METHOD	REFERENCE
PCBs	8080A	1

1) New York State Department of Environmental Conservation Analytical Services Protocol, September 1989 including the October 1995 update.

QUALITY CONTROL

The quality control for this program includes surrogates, matrix spike (MS), matrix spike duplicate (MSD), laboratory control sample (LCS) and prep blank samples. QA/QC results are summarized in the Laboratory Report and are also included in the raw data.

PCBs

The GC Semivolatile instruments used a RTX5, 30 m X .32 mm ID capillary column for primary analysis and a DB-608, 30 m X .53 mm ID capillary column for confirmation analysis.

Holding Times

All samples were prepared and analyzed within the method and/or QAPP specified holding time requirements.

Laboratory Control Samples

All spike recoveries met method and/or project specific QC criteria.

MS/MSD
The following compounds did not meet matrix spike/matrix spike duplicate percent recovery:

Sample Description	Sample #	Compound	Corrective Action
Gravel Pit Pond Shallow Surface	G1637	PCB-1016	1

1. The high recovery is due to an interference from the high concentration of a target analyte present in the sample. No corrective action was taken.

Surrogates
All surrogate recoveries met method and/or project specific criteria.

Calibrations
All calibrations and calibration verifications met method and/or project specific QC criteria.

Preparation Blanks
All preparation blanks met method and/or project specific QC criteria.

RAW DATA
The raw data for all analytical analyses is organized according to the NYSDEC ASP Category B order of data requirements.

ITS Intertek Testing Services
Environmental Laboratories

October 30, 1997

Ms. Jaye Lubey
O'Brien & Gere Laboratories
5000 Brittonfield Parkway
PO Box 4942
Syracuse, NY 13221

Re: Laboratory Project No. 97000
Case: 97000; SDG 66831

Dear Ms. Lubey :

Enclosed are the analytical results of samples received by ITS Environmental Laboratories on October 03, 1997. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
Received: 10/03/97 ETR No: 66831			
343584	G1635	09/30/97	Solid
343584MS	G1635MS	09/30/97	Solid
343584DP	G1635REP	09/30/97	Solid
343585	G1636	09/30/97	Solid

If there are any questions regarding this submittal, please contact James W. Madison at (802) 655-1203.

Sincerely,

Deborah A. Loring
Laboratory Manager

DAL/cga
Enclosure

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

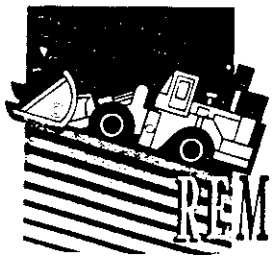
SAMPLE IDENTIFICATION AND ANALYTICAL SUMMARY

Customer Sample Code	Laboratory Sample Code	Analytical Requirements					
		*VOA GC/MS Method #	*BNA GC/MS Method #	*VOA GC Method #	*PCBs Method #	*Metals	*Other
Gravel Pit Pond Shallow Surface	G1637				8080A		
Gravel Pit Pond Shallow Surface	G1637MS				8080A		
Gravel Pit Pond Shallow Surface	G1637MSD				8080A		
Gravel Pit Pond Deep Surface	G1638				8080A		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
SEMIVOLATILE (PEST)
ANALYSES

Laboratory Sample ID	Matrix	Analytical Protocol	Extraction Method	Auxiliary Cleanup	Dil/Conc Factor
G1637	Water	8080	3520	acid wash	5
G1638	Water	8080	3520	acid wash	5



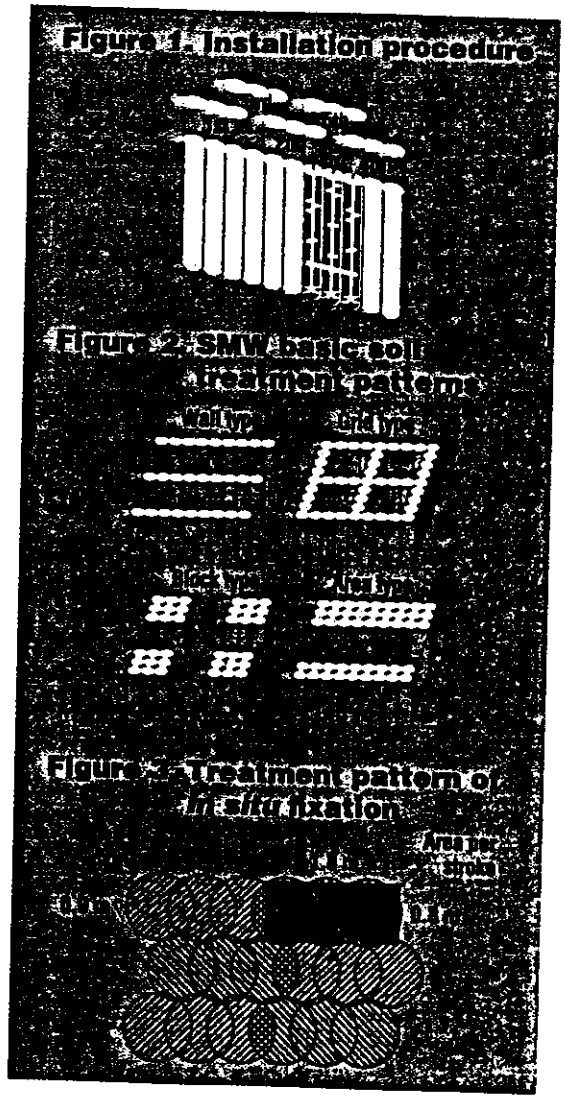
Soil-mixing technology offers pollution containment, in situ fixation solutions

By David S. Yang and Shigeru Takeshima

SOIL-MIX WALL TECHNOLOGY consists of mixing soils in situ with cement grout using multiple-shaft augurs to construct overlapped cement columns. The columns then are extended laterally to form a subsurface soil-cement wall (Figure 1). Soil mixing technology enables the column panels to be arranged in various configurations (Figure 2), making it a versatile tool for stabilization of soft ground or liquefiable soil, or fixation of contaminated soils.

Soil-mix wall technology uses mechanical means to mix *in situ* soils with various reagents to obtain soil-reagent products. The use of augurs makes it possible to define the treatment zone clearly, and to confine and uniformly mix the reagent slurry with soils inside the drilling holes in a pug-mill-type action. Thus, the technology can produce more reliable treatment results than methods that use jetting or high pressure to control slurry mixing and distribution.

Soil-mix wall technology was developed in Japan by Seiko Kogyo Co. Ltd., the parent company of Hayward, Calif.-based S.M.W. Seiko Inc. More than 4,000 soil-mixing projects have been completed since the technology's introduction in 1976. The total wall area constructed to date exceeds 134 million square feet, or 9 million cubic yards of *in situ* soil mixing work.



Pollution containment. Soil-mix walls have been used as cutoff walls in civil construction for groundwater during deep excavation, and for seepage control in dams and levees. In such cases, cement grout is used as a soil-mixing reagent to produce soil-cement cutoff walls, which also have been used for pollution containment around landfills and man-made industrial islands.

Soil-cement is chosen as the cutoff wall material in cases where site stability, limited allowable ground movement during and after wall installation, and the capacity to sustain heavy loads are required. In cases where lower strength levels are acceptable, bentonite slurry or slurry with clay fines as the major reagent may be mixed with *in situ* soils to form cutoff walls for pollution containment.

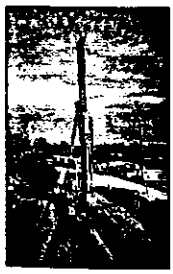
An *in situ* soil-bentonite wall was used at a Virginia site to isolate a landfill from an aquifer. Subsurface soils in several zones at the site were comprised of soft clay and loose sand, causing the slurry trench to cave in. This made installation of a conventional slurry wall difficult and the resulting cutoff wall unreliable. Soil-mix wall equipment was used to mix the soil with bentonite to form an *in situ* soil-bentonite wall. Because open excavation is not required for soil-mix wall installation, the uncertainties associated with slurry-trench operations were eliminated.

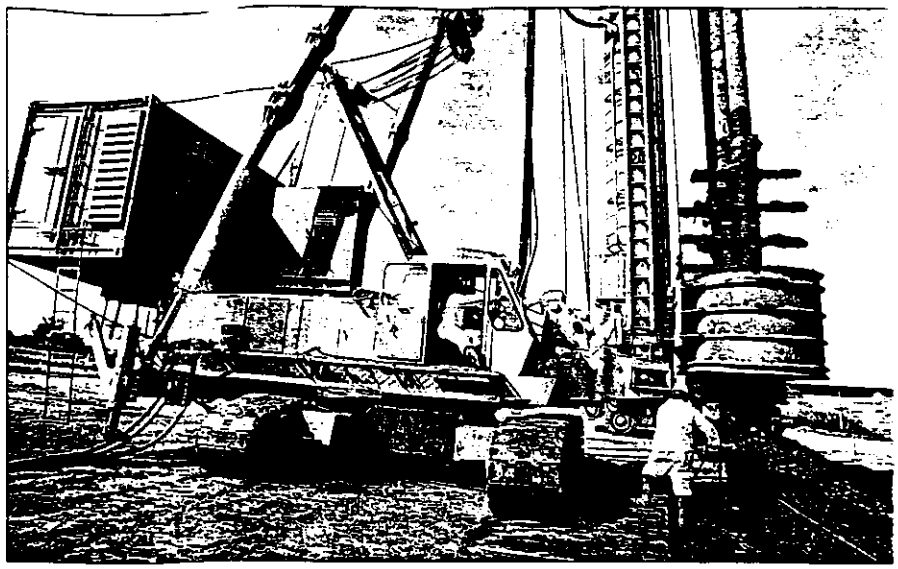
Repair of defective soil-bentonite slurry walls is another soil-mixing application. Clay-bentonite mixtures first are injected into sand and gravel pockets, and higher permeable zones inside the slurry wall. Then, the entire slurry wall is remixed in place to obtain a more uniform and reliable soil-bentonite mixture for pollution containment.

Fixation. Soil-mixing technology also may be used in applications involving *in situ* fixation of contaminated soils and sludges, an increasingly popular remediation method. S.M.W. Seiko's triple-auger soil-mixing equipment can be used to inject and mix reagents uniformly with contaminated soils in fixation projects.

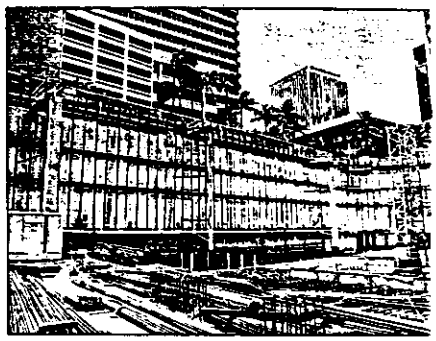
Two full-scale implementations of *in situ* fixation were conducted

in 1992 and 1994 at a San Francisco Bay Area site by S.M.W. Seiko and Kajima Engineering & Construction Co., Chandler, Ariz., under the supervision of Geomatrix Consultants Inc. of San Francisco, the site owner's representative. The site was used from the 1920s to the 1960s for manufacturing arsenical pesticides, and soils contained elevated concentrations of arsenic and heavy metals. The arsenic had entered the soil as trivalent arsenic [As(III)] but had been transformed partially over time to pentavalent arsenic [As(V)]. Soil textures ranged from sandy gravel to plastic clay, locally called San Francisco Bay mud. Groundwater was encountered about 5 feet below the ground's surface. The cleanup remedy selected included *in situ* fixation of soils containing arsenic at concentrations between 500 milligrams and 5,000 milligrams per kilogram.





Clockwise from above: SMW cutoff wall installation, *in situ* fixation using soil-mixing wall equipment, and an exposed soil-mix wall.



Based on bench-scale studies conducted by Geomatrix, the project team selected a sequential treatment process using two reagents. In the 1992 project, 4,000 cubic yards of contaminated soils were treated using two proprietary reagents, S-3 and P1/P1A, supplied by Silicate Technology Corp. of Scottsdale, Ariz. The S-3 solution first was mixed thoroughly with the soil; then, the P1/P1A solution was added and mixed. In the 1994 remediation, 10,000 cubic yards of contaminated soils were treated using two new proprietary reagents developed based on further bench-scale studies. These reagents also were mixed sequentially with the *in situ* soils.

In situ fixation was performed using S.M.W. triple-axis auger equipment. Areal coverage was provided by sequentially augering and mixing overlapping elements (Figure 3). Post-treatment samples were collected and tested using the toxicity characteristic leaching procedure for arsenic, maximum particle size and unconfined compressive strength. Arsenic concentrations in the leachate were analyzed using Environmental Protection Agency Method 6010. More than 300 arsenic leachability tests were performed during the two treatment phases. None of the test results exceeded the TCLP limits of 5 milligrams per liter.

David S. Yang is senior engineering manager and Shigeru Takeshima is vice president of S.M.W. Seiko Inc., Hayward, Calif. For more information on Seiko's soil-mix wall technology, circle No. 202.

Harmon
Environmental
Services, inc.
Environmental Contractors

SOLIDIFICATION/STABILIZATION BENCH TESTING

OF

CENTRAL MAINE POWER

F.O'CONNOR SITE MATERIALS

PREPARED FOR:

E.C. JORDAN CO.
AUGUSTA MAINE
(ECJ PROJECT NO. 4903-24)

PREPARED BY:

HARMON ENVIRONMENTAL SERVICES, INC.
5221 MILITIA HILL ROAD
PLYMOUTH MEETING, PA 19462

(HES PROJECT NO. 0130.001.520)

JUNE 6, 1989

OVERVIEW

The purpose of this report is to present information relative to the laboratory testing program performed by Harmon Environmental Services (HES) for E.C. Jordan Co. (ECJ) involving the solidification/stabilization of soils from the F. O'Connor Co. site in Augusta, Maine. This site contains various residues from handling and dismantling transformers and capacitors from Central Maine Power Co. (CMP). F. O'Connor Co. operated three transformer work areas (TWA's) for transformer disassembly and storage. Leaks and spills of dielectric fluids contaminated some of the surface and subsurface soils of the former work areas (operations ceased in 1978) located on the O'Connor property. Polychlorinated biphenyls (PCB's), polynuclear aromatic hydrocarbons (PAH's) and lead were found as soil contaminants resulting from transformer oil spillage and electrical equipment scrap in the TWA's. E.C. Jordan provided Harmon Environmental Services with three discrete soil samples taken from the O'Connor TWA's. Estimated chemical constituent levels for each soil were given to Harmon Environmental Services by E.C. Jordan as guidelines to implementing bench scale treatment. Analytic confirmation tests were performed by Harmon Environmental Services to measure the degree of actual contamination in the soil samples provided to Harmon Environmental Services. All analytical evaluations were performed by Applied Scientific Associates (ASA), a division of Harmon Engineering Associates, Inc.

The Region III office of the USEPA granted the Harmon Environmental Services Northeast Region Stabilization Laboratory an approval to conduct Research and Development (R&D) activity relative to PCBs stabilization under the authority of the Toxic Substances Control Act (TSCA). Figure 1 shows the scope of work completed during this bench scale soils solidification/stabilization program.

The tabular data presented in this report summarize the results of this successful treatability study. The test results indicate that solidification/stabilization is an effective method for treating PCB

contaminated soils. Full scale implementation of this technology is a feasible and cost effective remedial action relative to on-site soils treatment at the O'Connor site. This laboratory program simulates field proven technology for on-site soils treatment; the Harmon High Solids Stabilization (HSS™) System provided in batch or layering mode.

SAMPLE IDENTIFICATION/CHARACTERIZATION - RAW SOILS

Harmon Environmental Services was provided with three different soil types from the O'Connor site. These samples were identified as follows:

SAMPLES	SOIL CLASS	SITE SOURCE	TOTAL CONSTITUENTS (ppm)*	CATEGORY	SAMPLE QUANTITY
FSL-1	Sandy Loam	TWA III	PCB's 100-500 (100) Pb 300-1000 (800)	Low PCB's	4x1 gal
FSL-2	Sandy Loam	TWA III	PCB's 1000-5000 (1000) Pb 300-1000 (500)	High PCB's	4x1 gal
FILL	Sand, silt & clay	TWA I & II	PCB's 1-80 (80) Pb 16-500 (500) PAH's 8-16 (9)	Low PAH's & Low PCB's	4x1 gal

* Range of levels estimated by E.C. Jordan (expected level of contamination)

The samples were blended to form 3 distinct soil composites for physical and chemical characterization prior to bench scale treatment. All samples were allowed to air dry for a short period of time after compositing to reduce the excess moisture content resulting from thawed winter frost. Subsequent air

TABLE IIB

CENTRAL MAINE POWER
F. O'CONNER SITE

STABILIZED SOIL CHARACTERISTICS
SAMPLE FSL-2
SCREENING MIXTURES

MIX	FSL-2 A20	FSL-2 A40	FSL-2 B30	FSL-2 B60	FSL-2 C10	FSL-2 C30 *
Additive System	A	A	B	B	C	C
Additive Ratio	20%	40%	30%	60%	10%	30%
Consistency	Moist Soil	Moist Soil	Moist Soil	Sl.Moist Soil	Very Moist Plastic Soil	V.MoistSoil
Density, pcf	118	122	118	116	112	124
Penetration Resistance, tsf						
5 Day	>> 4.5	>> 4.5	> 4.5	> 4.5	> 4.5	>> 4.5
EP Toxicity, 7 Day						
LEAD, (ppm)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
PCB's (ppb)	7.4	10.7	11.0	4.1	11.2	< 1.0

* Selected Mix Design.

HARMON ENVIRONMENTAL SERVICES INC.

TABLE IIA

CENTRAL MAINE POWER
F. O'CONNER SITE

RAW SOIL CHARACTERISTICS
SAMPLE FSL-2

Description	Very Moist Clayey Sandy Loam
Contamination *	Polychlorinated Biphenyls and Lead
Solids, wgt%	58%
Density, pcf	109
Permeability **, cm/sec	6.4×10^{-5}

Total Waste Extraction

	PCB's (ppm)	Lead (ppm)
7 Day	10,600	ND

EP Toxicity Extraction

	PCB's (ppb)	Lead (ppm)
7 Day	18.0	2.06

Multiple Extraction (MEP)

	PCB's (ppb)	Lead (ppm)
Day 1	25	< 1.0
Day 2	132	< 1.0
Day 3	132	< 1.0
Day 4	40	< 1.0
Day 5	21	< 1.0

EP Toxicity, other metals (ppm)

Arsenic	< 1.0
Barium	< 20.0
Cadmium	< 1.0
Lead	< 1.0
Mercury	< 0.1
Nickel	< 1.0
Selenium	< 1.0
Silver	< 1.0

* Expected constituents of concern.
** USACE Falling Head Method EM-1110-2-1906
ND - Not Determined.

D2157\P2

>

Transfer interrupted!

EPA United States Environmental Protection Agency **Superfund**

Record of Decision (ROD) Abstract

ROD Number: EPA/ROD/R04-90/067
ROD Date: 09/28/90

Site: **YELLOW WATER ROAD DUMP** *EPA ID Number:* **FLD980844179**
Location: **BALDWIN, FL** *Operable Unit:* **01**

Abstract:
THE 14-ACRE YELLOW WATER ROAD SITE IS A FORMER STORAGE AREA FOR PCB-CONTAMINATED LIQUIDS AND ELECTRICAL EQUIPMENT IN BALDWIN, DUVAL COUNTY, FLORIDA. DENSE WOODLANDS ARE LOCATED ALONG THE PERIMETER OF THE SITE, AND SURROUNDING LAND USE IS COMMERCIAL AND RESIDENTIAL. IN 1981, ONSITE STORAGE OF PCB-CONTAMINATED LIQUIDS AND ELECTRICAL EQUIPMENT BEGAN AT THE FORMER OPERATIONAL AREA IN ANTICIPATION OF UPCOMING ONSITE INCINERATION OPERATIONS, BUT THE PROPER PERMITS FOR THE INCINERATOR WERE NEVER OBTAINED. SUBSEQUENTLY IN 1982, PCB-CONTAMINATED OILS WERE SPILLED AT THE SITE AS A RESULT OF ONSITE SALVAGE OPERATION WHICH INCLUDED METAL REMOVAL FROM TRANSFORMERS. AS A RESULT OF THIS ONSITE PCB CONTAMINATION, EPA CONDUCTED A REMOVAL ACTION IN 1984 THAT INCLUDED CLEANING AND STORING 719 ELECTRICAL TRANSFORMERS, SECURING 100,000 GALLONS OF PCB LIQUIDS IN ONSITE HOLDING TANKS, AND EXCAVATING AND STORING 3,000 CUBIC YARDS OF PCB-CONTAMINATED SOIL ONSITE. IN 1988, EPA DIRECTED A SECOND REMOVAL ACTION WHICH INCLUDED DEMOLISHING AN ONSITE WAREHOUSE; DISPOSING OF WAREHOUSE DEBRIS AND STOCKPILING CONTAMINATED SOIL OFFSITE; INCINERATING 78,854 GALLONS OF PCB LIQUIDS OFFSITE; AND DISPOSING OF 704 TRANSFORMERS AND 18,690 POUNDS OF CAPACITORS OFFSITE. THIS RECORD OF DECISION (ROD) ADDRESSES THE REMEDIATION OF PCB-CONTAMINATED SOIL AND SEDIMENT. ONSITE GROUND WATER CONTAMINATION WILL BE ADDRESSED IN A SUBSEQUENT ROD. THE PRIMARY CONTAMINANTS OF CONCERN AFFECTING THE SOIL AND SEDIMENT ARE ORGANICS INCLUDING PCBS. THE SELECTED REMEDIAL ACTION FOR THIS SITE INCLUDES EXCAVATING 3,560 CUBIC YARDS OF ONSITE CONTAMINATED SOIL AND SEDIMENT WITH PCB CONCENTRATIONS GREATER THAN 10 MG/KG; SOLIDIFYING AND STABILIZING THE SOIL AND SEDIMENT, IF A TREATABILITY STUDY DETERMINES THE EFFECTIVENESS OF USING SOLIDIFICATION FOR ORGANICS; PLACING TREATED SOIL WITHIN THE OLD SALVAGE

OPERATIONAL AREA AND COVERING THE AREA WITH 1-FOOT-THICK SOIL COVER; CONDUCTING LEACHABILITY STUDIES OF THE TREATED MASS; BACKFILLING EXCAVATED AREAS WITH CLEAN SOIL AND REVEGETATING THE SITE; IMPLEMENTING SITE ACCESS RESTRICTIONS INCLUDING FENCING; CONDUCTING GROUND WATER MONITORING; AND ABANDONING GROUND WATER WELLS WITHIN THE EXCAVATED AREA, IF NECESSARY. THE ESTIMATED PRESENT WORTH COST FOR THIS REMEDIAL ACTION RANGES FROM $1,119,000 TO $1,448,200, (DEPENDING ON THE SOIL DISPOSAL METHOD USED), WHICH INCLUDES A TOTAL O&M COST OF $62,600 FOR 30 YEARS. PERFORMANCE STANDARDS OR GOALS: ONSITE SOIL CLEANUP LEVELS ARE BASED ON THE TSCA PCB SPILL CLEANUP POLICY FOR UNRESTRICTED SITES. PCBS WILL BE REMEDIATED TO A LEVEL OF 10 MG/KG WITH A MINIMUM EXCAVATION DEPTH OF 10 INCHES, AND EXCAVATED AREAS WILL BE COVERED WITH CLEAN FILL TO REDUCE LEVELS OF PCBS TO LESS THAN 1 MG/KG.

Remedy:

THE REMEDY SELECTED BY EPA WILL BE CONDUCTED IN TWO SEPARATE OPERABLE UNITS. OPERABLE UNIT ONE ADDRESSES THE SOURCE OF THE CONTAMINATION BY EXCAVATING, STABILIZING, AND SOLIDIFYING THE PCB CONTAMINATED SOILS. OPERABLE UNIT TWO WILL ADDRESS THE APPROPRIATE REMEDIATION FOR THE GROUND WATER. THE MAJOR COMPONENTS OF THE SELECTED REMEDY FOR OPERABLE UNIT ONE INCLUDE; * A TREATABILITY STUDY TO VERIFY THE EFFECTIVENESS OF THE TECHNOLOGY IN SOLIDIFYING/STABILIZING PCBS CONTAINED IN SITE SOILS; * THE EXCAVATION OF SOILS HAVING PCB CONCENTRATIONS IN EXCESS OF 10 PPM WITH SUBSEQUENT TREATMENT BY STABILIZATION/SOLIDIFICATION; * PLACEMENT OF THE TREATED SOILS IN THE FORMER OPERATIONAL AREA OF THE SITE; * BACKFILLING EXCAVATED AREAS WITH CLEAN SOILS (LESS THAN 1 PPM PCB CONCENTRATION); * PLACEMENT OF A VEGETATED ONE-FOOT THICK SOIL COVER OVER THE TREATED SOIL MASS (MONOLITH) AND SECUREMENT OF THE MONOLITH BY A SECURITY FENCE; * PROVISION OF A VEGETATIVE COVER OVER THE REMAINDER OF THE SITE AND; * LONG-TERM MANAGEMENT CONTROLS INCLUDING OPERATION AND MAINTENANCE OF THE MONOLITH, VEGETATIVE COVER AND FENCE.