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SUBSURFACE INVESTIGATION

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Superfund - hw
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VCP - v
BCP - c

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XCG

EXCELLENCE IN ENVIRONMENTAL CONSULTING SERVICES

August 24, 2000

XCG File No.: 5-997-02-05

Mr. Gerald Pietraszek
Senior Engineering Geologist
New York State Department of Environmental Conservation
Regional Hazardous Waste Remediation
270 Michigan Avenue
Buffalo, New York
14203-2999

Re: Phase 2 Subsurface Investigation on Railway Adjacent to
3241 Walden Avenue, Depew, New York

Dear Mr. Pietraszek:

Please find enclosed, one copy of our final report entitled "Phase 2 Subsurface Investigation on Railway Line Adjacent to 3241 Walden Avenue, Depew, New York" dated August 24, 2000.

If you have any questions, please do not hesitate to call me at 905-891-2400.

Yours truly,

XCG CONSULTANTS LTD.

Basil Wong, M.Eng., P.Eng.
Project Manager

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XCG CONSULTANTS LTD.

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN 3241 WALDEN AVENUE DEPEW, NEW YORK

ENVIRONMENTAL ENGINEERING SPECIALISTS

XCG

EXCELLENCE IN ENVIRONMENTAL CONSULTING SERVICES

XCG File #5-997-02-01

February 11, 2000

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY WORK PLAN 3241 WALDEN AVENUE DEPEW, NEW YORK

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Director of Environment
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FIGURES

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APPENDICES

1. INTRODUCTION

1.1 General

In September 1999, Norampac, Inc. (Norampac) retained XCG Consultants Ltd. (XCG) to carry out a Remedial Investigation and Feasibility Study (RI/FS) of the property located at 3241 Walden Avenue in Depew, New York. XCG has previously conducted a number of investigations at the subject property, including a Limited Phase 1 Environmental Site Assessment (ESA) and several Phase 2 ESAs. These studies were initiated in 1998 at the request of the New York State Department of Environmental Conservation (NYSDEC). The NYSDEC's concerns were related to historical environmental impacts located in the area of a former on-site lagoon and marsh, located at the south end of the central portion of the property. Specific contaminants of concern include metals (e.g. lead, copper, and zinc) and several polycyclic aromatic hydrocarbons (PAHs).

XCG conducted the subsurface investigations in a phased approach, and as such, the extent and types of contamination have been well characterized. This RI/FS work plan presents a summary of the existing site information, and additional investigations that may be required to address any data gaps, in order to complete the RI/FS.

1.2 Objectives of the RI/FS

Based on general United States Environmental Protection Agency (US EPA) and NYSDEC guidance requirements, the objectives of the RI are as follows:

- Delineate the lateral and vertical extent of contaminants of concern in the soil and groundwater, and their relative concentrations throughout the subject property. In addition, the extent of contamination will be delineated laterally to off-site areas, if necessary.
- Characterize the site geology and hydrogeology to assist in assessing the fate and migration of the contaminants of concern.

The FS will be initiated and carried out in conjunction with the RI to evaluate various site management alternatives.

The RI/FS will follow the guidance outlined in EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final," dated October 1998. In addition, the selection of remedial actions will be in accordance with the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4030 "Selection of Remedial Actions at Inactive Hazardous Waste Sites," dated May 15, 1990.

2. SITE BACKGROUND

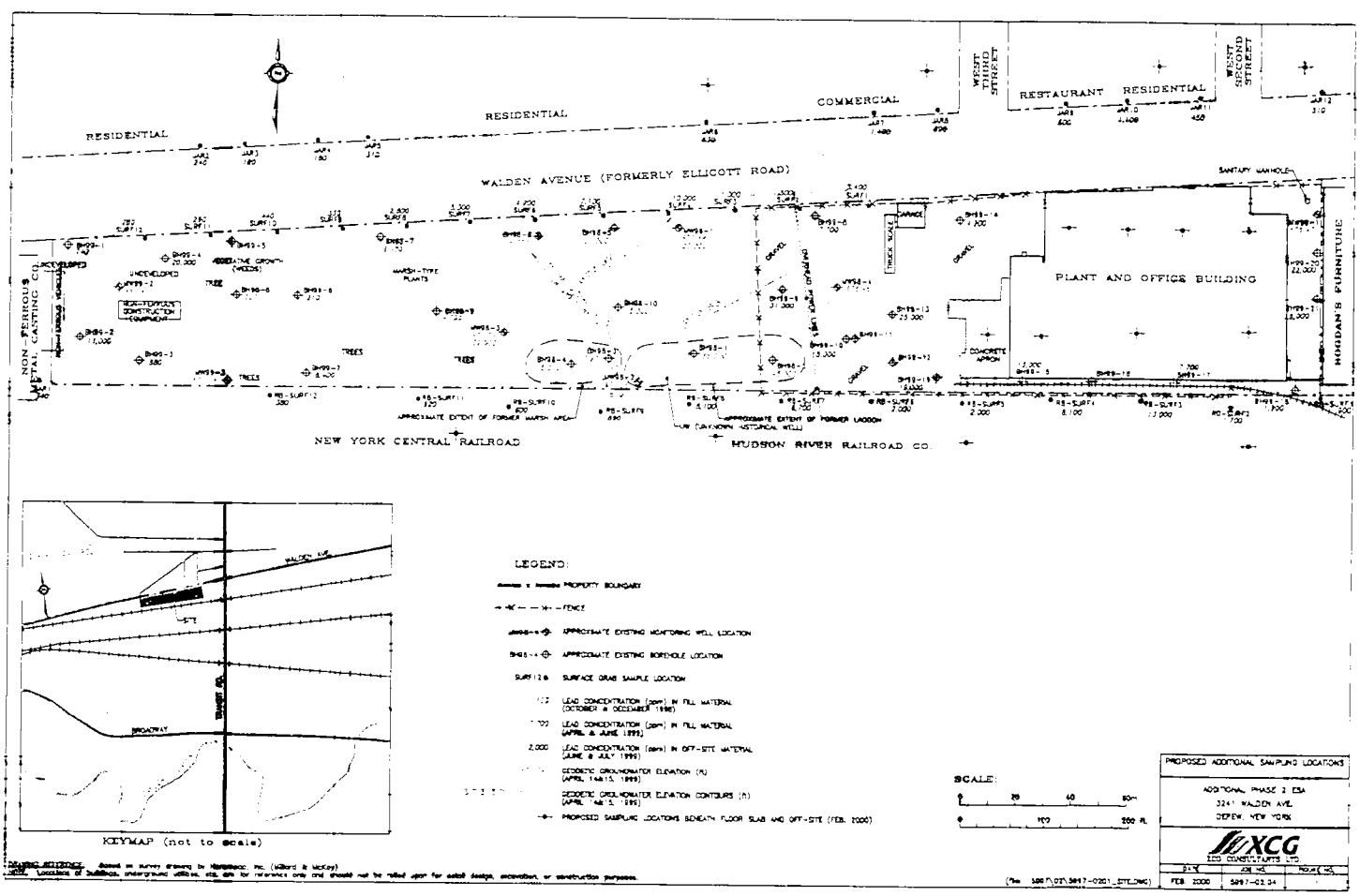
2.1 Site Location and Description

The subject property is located at 3241 Walden Avenue in Depew, New York. The property is situated on the south side of Walden Avenue, approximately 178.1 metres (584.42 feet) west of the centre line of Transit Road. The property is legally described as Part of Lot 68, Township 11, Range 7 of the Holland Land Company's Survey in the Village of Depew, Town of Cheektowaga, County of Erie.

The subject property is approximately 3.04 hectares (7.5 acres) in size. The site is located in a mixed commercial/industrial and residential area. Commercial/ industrial properties adjoin the east and west sides of the subject site. The properties located across the street, on the north side of Walden Avenue, are a mixture of residential and some commercial sites. The south side of the property is bordered by railway tracks. The topography of the subject property and immediate surrounding area has a generally flat grade. The property location and layout is shown on Figure 1. The property is currently used to operate paper fibre recycling activities, and XCG understands that it will continue to be used for industrial purposes.

The site has one main building located at the east side of the property. The building is estimated to occupy an area of approximately 5,890 m^2 (63,400 ft^2). The east side of the property is paved with asphalt for employee parking. A truck loading/unloading and trailer parking area is located west of the building. The trucking area is surfaced with gravel and is surrounded by a chain-link fence. In November 1999, the trucking area was re-surfaced with new gravel. Norampac indicated that approximately 400 tonnes of gravel was imported to the site to provide a minimum cover of approximately 0.08 metres (3 inches).

The area west of the fenced-off trucking area and east of the treed areas is described as the central portion of the property, for the purpose of this study. This area is not used for the paper fibre recycling activities. The central portion of the property, an area over 106.7 metres (350 feet) long and over 67 metres (220 feet) wide is vacant. The former lagoon and marsh area was located at the south portion of the central area. In July 1999, Norampac implemented Interim Remedial Measures (IRM) in the central portion of the property. The IRM consisted of constructing a hydroseeded-topsoil cover and erecting a chain link fence surrounding this area. These temporary measures were carried out to eliminate potential direct human exposure with the impacted fill, until a final remedial solution is developed.



KEYMAP (not to scale)

LEGEND:

- PROPERTY BOUNDARY
- FENCE
- APPROXIMATE EXISTING MONITORING WELL LOCATION
- APPROXIMATE EXISTING BOREHOLE LOCATION
- SURFACE GRAB SAMPLE LOCATION
- LEAD CONCENTRATION (ppm) IN FILL MATERIAL (OCTOBER & DECEMBER 1998)
- LEAD CONCENTRATION (ppm) IN FILL MATERIAL (APRIL & JUNE 1999)
- LEAD CONCENTRATION (ppm) IN OFF-SITE MATERIAL (JUNE & JULY 1999)
- GEODETIC GROUNDWATER ELEVATION (ft) (APRIL 14&15, 1999)
- GEODETIC GROUNDWATER ELEVATION CONTOURS (ft) (APRIL 14&15, 1999)
- PROPOSED SAMPLING LOCATIONS BENEATH FLOOR SLAB AND OFF-SITE (FEB. 2000)

SCALE:

0 20 40 80m

0 100 200 ft

PROPOSED ADDITIONAL SAMPLING LOCATIONS

ADDITIONAL PHASE 2 ESA
3241 WALDEN AVE.
DEPEW, NEW YORK

XCG CONSULTANTS LTD

DATE	JOB NO.	FIGURE NO.
FEB. 2000	5897-02.04	

(File: S897\07\5897-0201_SITE.DWG)

DRAWING REFERENCE: Based on survey drawing by Nasiadka, P.C. (Millard & McKay)

NOTE: Locations of buildings, underground utilities, etc. are for reference only and should not be relied upon for install design, excavation, or construction purposes.

The area between the west edge of the trees and the west property line is defined as the west side of the property. The west side of the property is not used for on-site operations and is covered with imported fill, including construction debris (i.e. brick and large concrete fragments).

2.2 Site Geology and Hydrogeology

The site-specific geology and hydrogeology were determined in XCG's previous Phase 2 ESAs. The subsurface conditions at the various portions of the subject property are briefly summarized in this section. The overburden material encountered at the west side of the property consisted of a sand and gravel fill mixed with silty clay. Brick and concrete fragments were encountered in the fill. The depth of fill at the west side of the site was generally encountered between approximately 0.6 and 0.9 metres (2 to 3 feet) below grade, and was present to as deep as 1.2 metres (4 feet) at one of the drilling locations. The fill unit is underlain by a native silty clay stratum. Occasional pebbles and gravel are present in the silty clay. The consistency of this soil unit increased from very stiff to hard with depth, and became less hard as the depth approached the shallow water zone. Bedrock was not encountered during the previous subsurface investigations.

The overburden material at the central portion of the property consisted of varying types of fill overlying a native silty clay unit. The fill in this area generally consisted of silty sand to sandy silt with occasional gravel, and typically ranged in depth between approximately 0.6 and 0.9 metres (2 to 3 feet) below grade. The fill in the former lagoon consisted of saturated and very soft silty sand to sandy silt, and extended to depths ranging from approximately 3.0 to 3.7 metres (10 to 12 feet) below ground surface.

In the trucking area, the fill encountered during the drilling programs consisted of sand and gravel at the surface. The fill became a mixture of sand, gravel, and silty clay with depth and was saturated with perched water. The fill zone in this area generally ranged between approximately 1.2 and 1.5 metres (4 to 5 feet) below grade, and was encountered as deep as 1.8 metres (6 feet). As mentioned previously in Section 2.1, the trucking area has recently been re-surfaced with a new gravel cover, approximately 0.08 metres (3 inches) thick.

The parking area at the east side of the property is surfaced with asphalt, approximately 8 centimetres (3 inches) thick. The depth of the underlying coarse sand with gravel fill ranged between approximately 0.5 and 0.75 metres (1.5 to 2.5 feet) below grade.

A total of seven monitoring wells have been installed throughout the property. The monitoring wells were surveyed to a geodetic benchmark, which was provided by

the New York State Department of Transportation. Perched water was encountered in the fill zone at various drilling locations; however, the shallow groundwater-bearing zone is situated in the native silty clay. Although the local regional area surrounding the property has a slight grade southwards, the shallow groundwater is estimated to flow northwesterly, based on groundwater measurements in the monitoring wells. Scajaquada Creek is located approximately 0.4 kilometres (0.25) miles to the north of the subject site while Cayuaga Creek is situated approximately 1.0 kilometres (0.62 miles) to the south.

2.3 Historical Review

The site history was reviewed as part of a Limited Phase 1 ESA conducted by XCG for Norampac. Details of the findings of this study are provided in XCG's report entitled "Limited Phase 1 Environmental Site Assessment, Former N.L. Industries Site, 3241 Walden Avenue, Depew, New York," dated June 11, 1999. This is briefly summarized below.

Metro Waste Paper Recovery Inc. (Metro Waste), a member of the Cascades Group, is currently operating paper fibre recycling activities at the subject property. The operations are limited to the east side of the property (i.e. as far west as the fenced-off trucking area). Paper fibre recycling has been conducted on the site by various companies since 1974.

The subject property was first developed for industrial use in 1892. Past on-site activities have included brass foundry operations, which were conducted between 1892 and 1972 (i.e. 80 years), smelting operations conducted in the early part of the century, and the processing of babbitt. Brass is an alloy of copper and zinc, and babbitt is formed from an alloy of various metals including lead and copper. Waste produced by these operations, including the dredged material from the former settling lagoon, was apparently spread throughout the site. These historical activities explain the elevated levels of lead, zinc, and copper detected in the fill material.

2.4 Site Investigation History

NUS Corporation (NUS) conducted the first environmental investigation of the subject property for the US EPA. NUS completed an off-site reconnaissance of the property in early 1986 and prepared a report entitled "Potential Hazardous Waste Site Preliminary Assessment, N.L. Industries, Inc., 3241 Walden Avenue, Depew, NY, EPA Site ID Number NYD980531636." On March 31, 1987, NUS conducted a site inspection, on behalf of the US EPA, and collected 3 sediment and 4 soil samples for laboratory analyses. Elevated concentrations of several PAHs and metals (e.g. lead, copper, and zinc) were detected in the surficial soils. The

results of this investigation are summarized in the NUS report entitled "Site Inspection Report, N.L. Industries/Buffalo Plant, Depew, New York," dated July 29, 1988.

In early 1998, the NYSDEC approached Norampac regarding the elevated PAH and metals detected at the subject property in 1987, and requested that Norampac carry out a subsurface investigation. Since that time, XCG has completed a number of subsurface investigations, in addition to the aforementioned Limited Phase 1 ESA. These investigations are summarized as follows:

- "Draft, Limited Phase 2 Environmental Site Assessment, 3241 Walden Avenue, Depew, New York," February 10, 1999.
- "Draft, Limited Phase 2 Environmental Site Assessment, Former Oil Tanks Area, 3241 Walden Avenue, Depew, New York," February 10, 1999.
- "Draft, Additional Phase 2 Environmental Site Assessment, 3241 Walden Avenue, Depew, New York," May 18, 1999.
- "Draft, Off-Site Surficial Soil Investigation, 3241 Walden Avenue, Depew, New York," July 26, 1999.

Copies of these documents have been submitted to the NYSDEC. In addition to the above investigations, additional surficial sampling was conducted at the west side of the property in June 1999; however, the analytical results of these samples were not summarized in a report. The findings of these investigations are briefly summarized in Section 3.

2.5 *Interim Remedial Measures*

Upon completion of these subsurface investigations, Norampac implemented Interim Remedial Measures (IRM) at the property in July 1999, which consisted of covering the central portion of the property with 0.15 metres (6 inches) of topsoil, hydroseeding the topsoil, and erecting a chain-link fence around the perimeter of this area. The IRM activities are summarized in Norampac's report entitled "Report on the Implementation of the Interim Remedial Measures at 3241 Walden Avenue, Depew, New York, July 12, 1999, to July 26, 1999," dated September 14, 1999.

3. INITIAL EVALUATION

3.1 Site Contamination

The above subsurface investigations were conducted in a phased approach to obtain greater insight of site conditions with each step, which was used to develop the scope of work for subsequent sampling. Borehole drilling, monitoring well installation, surface soil sampling, and laboratory analyses of soil, groundwater, and surface water samples have been conducted at all exterior locations of the property. This includes the east side of the property (paved parking lot), rail siding to the south of the building, trucking area, central portion of the site, and west side of the property. The total on-site testing program conducted by XCG in 1998 and 1999 is briefly summarized as follows:

- Drilling 42 boreholes across the entire property.
- Installing 7 groundwater monitoring wells.
- Collecting 24 surface soil samples.
- Laboratory analyses of 88 soil samples for metals, from both the fill and native silty clay.
- Laboratory analyses of 14 soil samples for TCLP metals.
- Laboratory analyses of 17 soil samples for PAHs.
- Laboratory analyses of 11 soil samples for volatile organic compounds (VOCs).
- Laboratory analyses of 1 soil sample for PCBs.
- Laboratory analyses of 1 surface water sample for metals, PAHs, and anions.
- Laboratory analyses of 9 groundwater samples for metals.
- Laboratory analyses of 4 groundwater samples for PAHs.
- Laboratory analyses of 2 groundwater samples for VOCs.
- Laboratory analyses of 4 groundwater samples for anions.

The above testing has provided a significant quantity of data to determine the extent of contamination on the property. The subsurface investigations conducted to date have provided a clear indication of the extent of petroleum and metal impacts throughout the exterior of the property.

A majority of the fill material at the subject property contains metals, and lead in particular, at concentrations that exceed the TAGM 4046 Cleanup Objectives or

Eastern UST/New York State Background Values. The TCLP results indicate that much of the metals impacted fill exceeds the regulatory limit for lead. The primary contaminant of concern appears to be lead in soil.

The underlying very stiff to hard silty clay is acting as an effective barrier to vertical migration of contaminants. This is supported by the groundwater results, as the concentrations of lead only marginally exceeded the TOGS 1.1.1 Standard in three monitoring wells. Residual petroleum hydrocarbon impacts were detected in the fill material, but to a much lesser extent. Petroleum impacts were limited to the rail siding, former lagoon/marsh area, and south part of the trucking area. The petroleum impacts are situated within the same medium (i.e. fill) and lateral extent, as the elevated metals and are considered to be co-contaminants. As such, the residual petroleum will be addressed as part of the remediation of the metals-impacted fill.

XCG believes that the investigations conducted to date have provided sufficient data to fully characterize the subsurface conditions at all exterior locations on the property. Carrying out any additional extensive drilling programs at exterior locations would be considered excessive and would not provide any added value to the understanding of the extent of contamination on-site. Further, it would only serve to delay the process of completing the RI/FS. There is, however, one general area of minor data gap for the subject property and is as follows:

- Fill quality below the building floor slab.

A number of building expansions occurred in the earlier part of the century and it is unknown if metals contaminated waste or soil was placed within the building expansion area, prior to expansion. Considering that metals impacted fill is present throughout the subject property, the possibility exists that impacted fill is present beneath the building. In order to complete the site characterization, testing of the soil beneath the building floor slab would be required.

3.2 *Off-Site Contamination*

In addition to the subsurface investigations conducted on the subject property, XCG has also carried out a number of investigations on nearby off-site properties. Surficial soil samples were collected for laboratory analyses from the adjacent property to the west, grass boulevard on the north side of Walden Avenue, and adjacent railway berm to the south. The off-site sampling program conducted by XCG in 1999 is briefly summarized as follows:

- Collecting 1 surface soil sample from the adjacent property to the west, Non-Ferrous Metal Casting Co.

- Collecting 11 surface soil samples from the grass boulevard on the north side of Walden Avenue.
- Collecting 12 surface soil samples from the adjacent railway berm to the south of the subject property.
- Laboratory analyses of 25 soil samples for metals, including one duplicate sample for QA/QC.

The soil sample from the adjacent property to the west contained a number of metals that exceeded the TAGM 4046 Cleanup Objectives or Eastern USA/New York State Background Values. However, the lead concentration in this sample was below the typical range found in metropolitan areas, as identified in TAGM 4046. The main metal of concern is lead. The concentrations of lead in six surface soil samples from the grass boulevard, located across the east half of the subject property, exceeded the values identified in TAGM 4046. At the railway berm, eleven of the twelve surface samples exceeded the typical range of values for lead, as identified in TAGM 4046. These samples were collected from the north edge of the railway berm, near where it begins to slope downwards towards the subject property.

The results at these off-site sampling locations have provided a general indication of metals impact, and lead in particular, at nearby adjacent properties; however, there are some data gaps, which are summarized as follows:

- Surface soil quality on the private residential/commercial properties on the north side of Walden Avenue (i.e. previous samples were collected from boulevard).
- Surface soil quality on the other side of the railway tracks (i.e. south side of the railway berm).
- Stormwater and sediment quality in storm sewers connected to the subject property.

3.3 *Potential Exposure Pathways*

Although the elevated concentrations of lead are present in the fill material, the exposure pathway of direct human contact has been significantly reduced in the interim, with the implementation of the IRM. The central portion of the property, where elevated lead concentrations were detected at surface, has now been covered with a topsoil cover and access has been reduced with the installation of a fence. The fill at the west side of the property has elevated lead concentrations in the fill zone; however, the concentrations at surface were below the TAGM 4046 Background Values. As such, any direct human contact in this area would not be considered a significant concern. Further, the lead-impacted fill at the east side of the property (i.e. parking lot) is covered with asphalt.

Lead concentrations exceeding the TAGM 4046 Background Values were detected in the fill material in the trucking yard. Any potential exposure to this fill material has been significantly reduced by the recent addition of a new gravel cover in the trucking yard. The fill quality beneath the building floor slab is currently unknown. However, exposure to lead impacted fill beneath the building (if any) would be mitigated by the concrete floor slab.

The potential for groundwater exposure is not considered significant, given that lead concentrations in groundwater only marginally exceeded the applicable standard at three locations, and that groundwater is not used for potable purposes in the subject property area. Depew is municipally serviced by water drawn from a surface water body.

Previous surficial soil sampling was conducted on off-site properties. Analytical results indicated that concentrations of lead were above the TAGM 4046 values at select locations. Additional surficial soil sampling will be conducted as part of the RI/FS to provide supplemental data. These results along with the existing data will be used to assess the potential exposure pathways to off-site receptors.

3.4 *Preliminary Health Assessment*

As discussed above, the potential for health risks by direct human contact at the central portion of the property has been addressed in the interim by the IRM. The potential health risks by direct contact at the west side of the property is not considered to be significant, given that the lead concentrations at surface are below the TAGM 4046 Background Values. The potential health risks at the east side of the property is minimal as the metals-impacted fill is covered by asphalt, thereby eliminating the direct contact exposure scenario. The new gravel cover has temporarily mitigated the possible health risks associated with exposure to impacted fill material in the trucking yard. The health risks associated with impacted fill beneath the building (if any) are not expected to be significant due to the absence of exposure.

As noted above in Section 3.3, there is the potential for direct human exposure to impacted soil situated on off-site properties. The properties on the north side of Walden Avenue and the properties further to the north (e.g. West Second Street and West Third Street, etc.) are predominantly residential. As such, the health of local residents may potentially be affected from ingestion (e.g. children eating soil while playing on the grass) and from air-borne particulates containing elevated metal concentrations. The health risks to potential receptors will be investigated further in the baseline health risk assessment, which will be conducted, if necessary, to address any off-site movement of contaminants, especially for the residences along Walden Avenue.

4. WORK PLAN APPROACH

A phased approach to the RI/FS will be implemented in order to achieve the goals in a focussed, practical, and cost-effective manner. The phased RI/FS will include all the requirements outlined in the US EPA guidance document. Although a phased approach for the field investigations will be applied, it is anticipated that only one more round of sampling will be sufficient to fill in the identified data gaps. This initial phase will consist of drilling through the floor slab to collect samples of the underlying fill and native soils; collection of additional off-site surface soil samples; re-sampling of the existing monitoring wells; and collection of water and sediment samples from the storm sewer located on Walden Avenue. The data from this initial soil sampling will be evaluated to complete the site characterization. Subsequent sampling phases in these areas, if required, will be developed based on the findings of the initial phase.

The information collected in this proposed additional sampling, as well as the extensive data obtained from previous investigations will be used to complete the RI of the subject property. A baseline health risk assessment will be conducted in conjunction with the RI to evaluate the levels of risk posed to potential human receptors. The findings of the risk assessment will be included in the RI report. Clean-up criteria for the metals, and lead in particular, will need to be established early in the RI/FS process. A target remediation value is required in order to assess the various remedial alternatives. XCG understands that Norampac and NYSDEC have previously discussed using a clean-up criterion for lead that is higher than the Background Values stated in TAGM 4046. The conclusions of the RI will be used to develop remedial alternatives in the FS. The FS will, however, be initiated and conducted in conjunction with the RI.

5. REMEDIAL INVESTIGATION/FEASIBILITY STUDY TASKS

5.1 Project Planning

The tasks included in the project planning for the RI/FS of the property located at 3241 Walden Avenue in Depew, New York, are summarized as follows:

1. Document review.
2. Preliminary evaluation of available data.
3. Preparation of work plan.
4. Work plan review and approval by NYSDEC.
5. Field investigation planning, health and safety plan, and community relations.
6. RI completion.
7. FS completion.

The first three tasks have been completed in the preparation of this work plan. Task 4 has been partially completed as NYSDEC has reviewed the draft RI/FS Work Plan. Once NYSDEC reviews and approves this revised Work Plan, Tasks 5 to 7, which are discussed below, will commence. Preparations for the field investigation will begin immediately upon receiving approval from NYSDEC. A proposed schedule based on certain assumptions is provided in Figure 2.

5.2 Field Investigation

As discussed previously, the data gaps identified during review of existing information include:

1. Fill and native silty clay quality below the building floor slab.
2. Surface soil quality on private residential/commercial properties on Walden Avenue.
3. Surface soil quality on the south side of the railway berm.
4. Stormwater and sediment quality in the storm sewer.

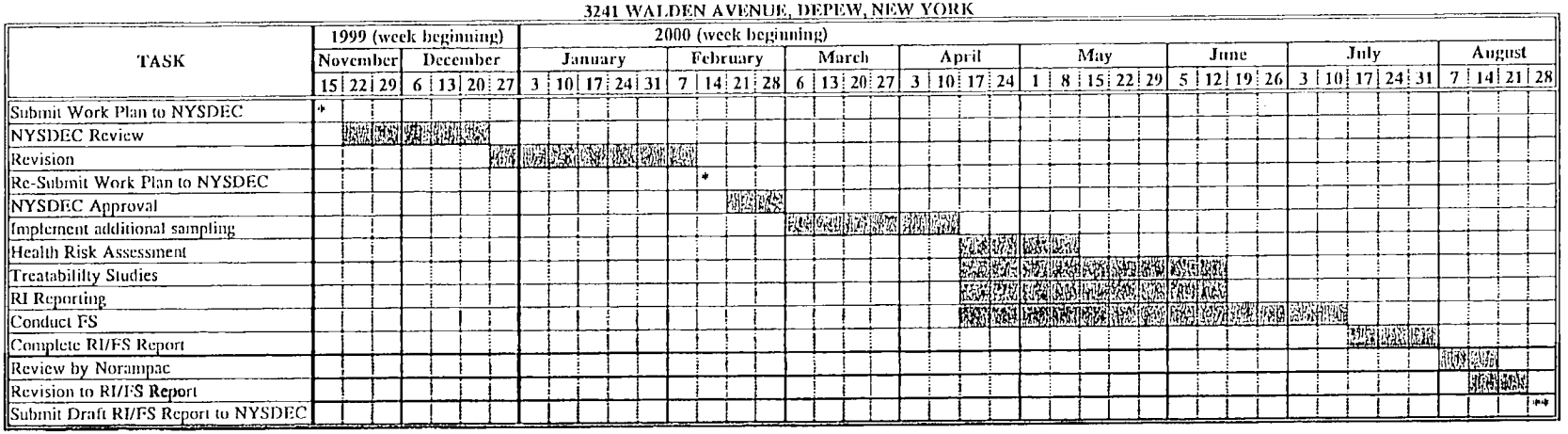
Although not considered a data gap, the existing monitoring wells will be re-sampled to provide a second round of groundwater data.

In order to obtain this additional data, the following activities will be conducted as the initial phase of the RI.

FIGURE 2

PROPOSED REMEDIAL INVESTIGATION/FEASIBILITY STUDY SCHEDULE

3241 WALDEN AVENUE, DEPEW, NEW YORK



NOTES:

* Work Plan submitted on November 19, 1999, and to be re-submitted by February 15, 2000

** RI/FS Report to be submitted by August 28, 2000

Schedule assumes that any required bench scale/pilot testing can be completed within 2 months.

Additional Sampling: off-site surficial soil sampling (residences and railway), soil sampling beneath building floor, storm sewer sampling, groundwater monitor well sampling

5.2.1 Sampling of Fill Beneath the Floor Slab

Soil samples are proposed to be collected from beneath the building's floor slab to complete the site characterization of the subsurface conditions. Soil sampling is proposed to be conducted with a truck-mounted direct-push Geoprobe sampler. The Geoprobe was used in previous investigations at the property and was successful in obtaining samples in both the fill and native silty clay units. The proposed contractor has visited the property and indicated that the Geoprobe can be used inside the building; however, the drilling process will be slow due to space restrictions. The Geoprobe sampler will be advanced to just past the fill and native soil contact. A total of up to eight sampling locations, depending on the drilling process, are proposed for inside the building (see Figure 1). Up to nine soil samples, including one duplicate QA/QC sample, will be analyzed for metals. In addition, one native silty clay sample from each drilling location will be analyzed for metals. The Geoprobe sampling and decontamination methods are described in the Field Sampling Plan (see Appendix B).

5.2.2 Off-Site Surface Soil Sampling on Private Properties

Surface soil sampling at private properties on the north side of Walden Avenue is proposed, as there is no data on these properties. The previous sampling conducted in this area was on the grass boulevard. This sampling program will consist of collecting surficial soil samples from four private properties. These proposed off-site sample locations (see Figure 1) are situated across the east half of the subject property, as the exceedances on the grass boulevard is located in this area. A total of five soil samples, including one duplicate for QA/QC, will be analyzed for metals. The samples will be collected from a depth of 0 to 0.05 metres (0 to 2 inches) below grade. A stainless steel trowel will be used to collect the soil samples and will be decontaminated after completing each sampling location, to prevent cross-contamination. The surficial soil sampling and decontamination methods are outlined in Appendix B.

5.2.3 Off-Site Surface Soil Sampling on Railway Berm

Surface soil sampling has been conducted on the north part of the adjacent railway berm. Additional surface sampling on the railway property, further towards the south side of the berm, is proposed to delineate the impacts in this direction. Soil samples will be collected at four locations and a total of five samples, including one duplicate for QA/AC, will be analyzed for metals. The surficial samples will be collected from a depth of 0 to 0.05 metres (0 to 2 inches).

5.2.4 Re-Sample Existing Monitoring Wells

A complete round of groundwater samples will be collected from the existing monitoring wells that are accessible. Four groundwater samples (three monitoring wells plus one duplicate for QA/QC purposes) will be submitted for a full scan Target Compound List (TCL)/Target Analyte List (TAL) analysis. Four groundwater samples from the remaining monitoring wells will be analyzed for TAL metals only. For this round of groundwater testing, an Environmental Laboratory Approval Program (ELAP) and Contract Laboratory Program (CLP) approved laboratory will be used. The Field Sampling Plan (see Appendix B) describes the groundwater purging and sampling protocol.

5.2.5 Sample Storm Sewer on Walden Avenue

Potential impacts from surface water flowing off the property will be investigated. This will be accomplished by collecting a surface water sample from the storm sewer located on Walden Avenue. The collection of this sample will depend on whether there is water flow in the sewer on the day of the site visit. A sediment sample will also be collected, if possible, without entering the manhole. The water and sediment samples will be analyzed for metals. XCG will contact the municipal public works office to determine the outfall location for this storm sewer. The potential impacts at the outfall will be assessed based on the analytical results.

5.2.6 Baseline Health Risk Assessment

A baseline risk assessment will be completed once all new data has been compiled and assessed. A qualitative risk assessment will be conducted to determine the toxicity and levels of contaminants of concern, environmental fate and transport mechanisms in the specific media, potential receptors, potential exposure pathways, extent of potential impacts, and the likelihood of the threat occurring.

This baseline risk assessment will determine which exposure scenario is considered the greatest concern and how the various exposure risks can be minimized. The results and conclusions of the qualitative risk assessment will be incorporated into the RI report and will be used in the FS process in determining which remedial actions and alternatives are most appropriate to reduce the potential risks. The goal of the baseline qualitative risk assessment is to collect sufficient data to properly characterize the potential risks at the property, but at the same time completing the study as quickly and efficiently as possible.

5.2.7 Remedial Investigation Report

Upon completion of the initial phase of the proposed additional investigations, a brief preliminary report will be provided to NYSDEC for review. Assuming that this new data is sufficient to supplement the existing site information, a comprehensive draft RI report will be prepared, which will include all analytical findings, site observations, and conclusions of all investigations conducted. A figure showing all sampling locations, borehole logs, and laboratory certificates of analyses will be included in this report.

XCG and Norampac will conduct multiple internal reviews of the draft RI report to provide quality control. As requested by NYSDEC, the draft RI report will be combined with the FS report to provide one single report. A format for the RI/FS report is briefly outlined in Section 5.5.

5.3 General Field Procedure

The field investigation will be conducted using various quality assurance and quality control measures to ensure proper sample collection, and data management and evaluation. These protocols are described in the Quality Assurance Project Plan (QAPP), included as Appendix A. The Field Sampling Plan (FSP) is provided in Appendix B. Field investigation activities will be conducted in accordance with health and safety protocols to protect the investigation team, on-site workers, and off-site pedestrians. A site-specific health and safety plan (HSP) was prepared by XCG for Norampac prior to implementation of the IRM activities (see Appendix C). Since the risks associated with the proposed additional soil investigation is much lower than the implementation of the IRM (e.g. no heavy earth moving equipment, no dust generated, etc.), the site-specific HSP will not be re-written for the sampling program. Rather, XCG will use the protocols and information established in this document, such as emergency contact numbers and routes to hospitals.

5.4 Community Relations

Similar to the implementation of the IRM, the local community will be informed of the proposed RI/FS activities following approval by NYSDEC. The NYSDEC will produce any fact sheets to be sent to the public. Norampac shall assist the NYSDEC as appropriate.

5.5 Feasibility Study

Remedial alternatives will begin to be considered as more information is reviewed throughout the RI process. The FS will be initiated at the same time and will be conducted in conjunction with the RI. The focus of the FS will be refined as the RI proceeds and will follow the requirements outlined in NYSDEC's TAGM 4030. A list of potential remedial alternatives will be assembled, reviewed, and assessed against each other. The long list of remedial alternatives will be evaluated based on implementability and effectiveness, in an effort to reduce the potential candidates. During the initial screening process, cost will not be considered as a factor in selecting a technology for further evaluation. The short list of alternatives will then be further evaluated in detail against the following seven CERCLA criteria:

1. Short-term effectiveness
2. Long-term effectiveness
3. Reduction of toxicity, mobility, or volume
4. Implementability
5. Cost
6. Compliance with New York State Soil Cleanup Guidelines
7. Overall protection of human health and the environment

If potential remedial technologies require bench or pilot scale testing, XCG will consult with Norampac and NYSDEC prior to conducting these additional activities. Potential treatability studies will be identified as soon as possible to prevent any delays in the completion of the RI/FS. The evaluation process, findings, and preferred remedial alternative will be summarized and incorporated into a combined RI/FS report. The RI/FS report will follow the general format as follows:

1. Introduction - purpose of report, site background, site description, site history, previous investigations, report organization
2. Study Area Investigation - field activities associated with site characterization, and physical and chemical data of various site features including surface features, contaminant source investigations, geological investigations, soil investigations, and groundwater investigations.
3. Physical Characteristics of the Study Area - results of field activities to determine physical site features including surface features, geology, soils, and hydrogeology.

4. Nature and Extent of Contamination - results of site characterization, including source of contaminants (e.g. lagoons, sludges, etc.), and contaminant distribution in soils, groundwater, surface water, and sediment.

5. Contaminant Fate and Transport - potential routes of migration (i.e. air, ground water, etc.), contaminant persistence, and factors affecting contaminant migration (e.g. sorption onto soils, solubility in soils, etc.).

6. Baseline Risk Assessment - human health assessment (i.e. exposure assessment, toxicity assessment, risk characterization) and environmental evaluation.

7. Identification and Screening of Technologies - remedial action objectives for each medium of interest (contaminant of interest, allowable exposure, and development of remediation goals), general response actions (estimation of areas or volumes requiring remediation), and identification and screening of technology types and process options.

8. Development and Screening of Alternatives - rationale for combination of technologies/media into alternatives, and screening of alternatives (description and evaluation for each alternative).

9. Detailed Analysis of Alternatives - individual analysis of alternatives (description and assessment) and comparative analysis.

10. Summary and Conclusions - summary of nature and extent of contamination, fate and transport, risk assessment, remedial alternative selection process, and recommended preferred remedial alternative.

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

XCG

EXCELLENCE IN ENVIRONMENTAL CONSULTING SERVICES

XCG File #5-997-02-01

February 11, 2000

QUALITY ASSURANCE PROJECT PLAN
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