Remedial Design

M. Wallace and Son, Inc.
Scrapyard Site
Cobleskill, New York

Niagara Mohawk Power Corporation
Syracuse, New York

September 2001

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1. Introduction

1.1 General

This document presents the *Remedial Design (RD)* for implementing certain remedial construction activities associated with the New York State Department of Environmental Conservation- (NYSDEC-) selected remedy for the M. Wallace and Son, Inc. Scrapyard (Wallace) site located in Cobleskill, New York. Those remedial construction activities, as detailed herein, include soil excavation and off-site disposal and installation of enhanced automatic light non-aqueous phase liquid (LNAPL) recovery systems. The NYSDEC-selected remedy was presented in the Record of Decision (ROD) for the site dated March 1999, which was amended by an Explanation of Significant Difference (ESD) issued by the NYSDEC in May 2000. This *RD* has been prepared by Blasland, Bouck & Lee, Inc. (BBL) on behalf of Niagara Mohawk Power Corporation (NMPC), in accordance with the Consent Decree (Case No. 85-CV-219) entered into by NMPC and the State of New York. This *RD* supports the NYSDEC-approved *Remedial Action Work Plan (RAWP)* (BBL, September 2001) for this site and sets forth the scope of the Contractor's responsibilities for the soil remedial action activities and the installation of the LNAPL recovery systems.

1.2 Background Information

The M. Wallace and Son, Inc. Scrapyard is located at the intersection of New York State Route 10 and West Street in the Village of Cobleskill, Schoharie County, New York, as shown on Figure 1. The portion of the M. Wallace and Son, Inc. property located north of Route 10 is the "site" and encompasses an area of approximately 6.6 acres. The site is bordered by West Street to the west; Route 10 to the south; several apartments and residential housing to the east; and a high school athletic field to the north. A site plan showing the location of features at the site is presented on Figure 2. The site can be divided into two general sections, as follows:

- The "lower" section of the site includes the active Scrapyard area (a wood frame barn, a concrete and metal building, and a leachfield area located south of the concrete and metal building), a building housing the permanent 100 gallon per minute (gpm) water treatment system, a sprung structure housing the temporary 300 gpm water treatment system, and a pond formed in a former limestone quarry (quarry pond); and

- The "upper" section of the site includes an area formerly known as the "electrical equipment gut area," where electrical equipment was reportedly disassembled.

The M. Wallace and Son, Inc. Scrapyard is an active salvage business that recovers and resells mechanical parts and materials from various equipment and other items. During the 1950s through the early 1980s, electrical transformers were purchased by the site operator and transported to the scrapyard. The transformers were disassembled within the electrical equipment gut area to recover copper components, which were then resold. During these scrapping operations, transformer dielectric fluid containing PCBs may have been released from the transformers to the ground surface.

To address the chemicals of interest at the site, the NYSDEC-selected site remedy includes a number of components that are identified/detailed in the ROD and the *RAWP*. The remedial action components of the NYSDEC-selected remedy that are addressed in this *RD* are summarized below.

- The installation and operation of enhanced automatic LNAPL recovery systems in the vicinity of existing on-site coreholes C-3/MW-8 and C-4 for the continued collection of LNAPL consistently observed in measurable amounts in these coreholes.

- The excavation, transportation, and off-site treatment/disposal of surface soils that contain PCB concentrations greater than or equal to one part per million (ppm), subsurface soils that contain PCB concentrations greater than or equal to 10 ppm, and an area of soil previously identified to exhibit the hazardous characteristic of toxicity for lead.

- The backfilling of excavated areas with at least 12 inches of clean backfill material.

To present the required information, this *RD* has been organized into the following sections:

Section	Description
1 – Introduction	Identifies project responsibilities and provides background information relevant to implementing the remedial action activities detailed in this *RD*.
2 – Description of Work Tasks	Provides a detailed description of the work tasks associated with implementing the soil remedial action activities and installation of the LNAPL recovery systems.

Included with this *RD* are special conditions (provided as Attachment 1), materials and performance (M&P) specifications (provided as Attachment 2), and Contract Drawings showing plans and details associated with the soil remedial action activities and installation of the LNAPL recovery systems.

1.3 Project Responsibilities

This section identifies the minimum responsibilities of NMPC's Representative, the Contractor, and NMPC.

Responsibilities of NMPC's Representative

A representative of NMPC will provide the following engineering services during implementation of the remedial activities:

- Review of contractor submittals for adequacy relative to the requirements presented in this *RD* and may include Contractor invoices and Authorization for Contract Change (ACC) forms (if any), as requested by NMPC;

- Observe the work performed by the Contractor for the duration of the remedial action activities for general conformance with this *RD* and/or approved changes;

- Keep detailed records of the personnel, materials, and equipment utilized during the remedial action activities;

- Maintain detailed written records of the field activities performed by the Contractor, including documentation of any unusual circumstances encountered, and quantities of material removed, generated, used, or transported off-site. The written records will include a daily log of the work performed and photographs of the work in progress;

- Evaluate whether the Contractor has performed any extra work;

- Conduct PCB verification sampling for delineation of subsurface soil excavation limits;

- Coordinate the construction activities with the NYSDEC, NMPC, and the affected property owner, as appropriate;

- Conduct air monitoring in accordance with the procedures and requirements set forth in the *Health and Safety Plan (HASP)* provided as Appendix C of the *RAWP*;

- Sign waste manifest(s) and bills of lading on behalf of NMPC (if requested by NMPC); and

- Prepare the Remedial Action Report for submittal to the NYSDEC and other required regulatory agencies, in accordance with the Consent Decree.

Responsibilities of the Contractor

- Prepare, submit, and revise (if necessary) to the satisfaction of NMPC and NMPC's Representative all required plans and submittals;

- Provide all supervision, equipment, materials, and labor necessary to implement the remedial action activities as described in this *RD* and in accordance with applicable rules and regulations;

- Obtain all necessary non-environmental permits (if any) associated with the remedial action activities;

- Coordinate activities with NMPC's Representative;

- Notify NMPC's Representative immediately when conflict between the *RD* and actual field conditions are discovered;

- Complete the remedial action activities in a timely fashion in accordance with NMPC's requirements to be identified in the contract, and the remedial action schedule to be submitted by the Contractor (as part of the Site Management Plan) and approved by NMPC; and

- At the completion of the construction activities, the Contractor will provide NMPC's Representative with as-built drawings (redlined markups of contract drawings) indicating any changes to this *RD* that were made during construction. Record Drawings, based on the as-built drawings, will then be included in the Remedial Action Report to be prepared by NMPC's Representative.

Responsibilities of NMPC

- Provide necessary direction and information to the Contractor and NMPC's Representative.

1.4 Site Characterization

Detailed information relating to previous investigative and remedial activities conducted at the site are provided in the following publicly available documents:

- The NYSDEC-approved *Remedial Investigation (RI) Report*, (BBL, July 1996);

- The NYSDEC-approved *Feasibility Study (FS) Report* (BBL, October 1997);

- The NYSDEC Record of Decision, M. Wallace and Son, Incorporated Site (NYSDEC, March 1999); and
- The NYSDEC Explanation of Significant Difference (NYSDEC, May 2000).

Based on the information presented in those documents, the subsections below present a brief summary of the physical and chemical site characterization information.

1.4.1 Topography and Drainage

The quarry pond and the quarry pond outlet channel are the only surface water features present at the site (see Figure 2). Flow sources into the pond include direct precipitation, surface water runoff from the upper portion of the site, and groundwater discharge. A water treatment system to control and treat surface water discharge from the approximately 1.3 acre quarry pond was constructed as part of an IRM for the site. The system is comprised of a 100 gpm water treatment system housed in the treatment building and a 300 gpm temporary water treatment system upgrade housed in a sprung structure.

The quarry pond formerly overflowed into a small outlet channel that flows into a culvert on the north side of NYS Route 10. Surface water from the quarry pond is presently treated by the water treatment system to prevent the discharge of quarry pond water containing PCBs in excess of 65 ppt into the off-site storm water drainage system. That drainage system discharges into Cobleskill Creek approximately two-thirds of a mile downstream from the site.

1.4.2 Geology and Hydrogeology

The unconsolidated deposits (overburden) at the site range in thickness across the site from not present (i.e., bedrock outcrop) to approximately 20 feet. The thicker overburden is generally located in the lower portion of the site (east of the quarry pond), and south of NYS Route 10.

Groundwater beneath the site is present both in the limestone bedrock and the unconsolidated deposits above the bedrock. Within the bedrock, groundwater is present primarily in structural features such as bedding planes, joints, and multiple vertical and horizontal fractures. Solution enlargement of these features, caused by acid/base reactions between water and limestone, has resulted in the formation of conduit and cave systems.

The general groundwater flow direction in the overburden immediately south of Route 10 and east of the quarry pond is toward the north-northwest. Groundwater flow paths through the fractured bedrock beneath the site are almost exclusively determined by the interconnectivity of the fractures. The generalized groundwater flow directions in the bedrock are toward the quarry pond. The operation of the quarry pond water treatment system lowers the quarry pond water surface elevation, thereby inducing flow from the bedrock (as well as the overburden) groundwater flow systems into the quarry pond.

1.4.3 Chemical Characterization

This subsection summarizes the findings of the NYSDEC-approved investigations and monitoring activities associated with the site that have been conducted to assess the presence, extent, and migration (where applicable) of chemical constituents and LNAPL in site media. The results of sampling activities conducted as part of the RI are detailed in the *RI Report*. Data generated from biweekly LNAPL monitoring and monthly groundwater elevation measurements, and post-RI groundwater sampling activities (from May 1996 to the present) have been reported in monthly progress reports and in letters to the NYSDEC and the NYSDOH.

Based upon the investigation and monitoring activities performed and the analytical data collected, the highlights of the findings for soil, groundwater, and LNAPL pertinent to the remedial activities described in this *RD* are provided below. A summary of the constituents of concern and range of concentrations detected is provided in Table 1 of the NYSDEC ROD, a copy of which is provided as Attachment 3.

Surface and Subsurface Soils

- The results of the PCB analyses for surface soil samples ranged from nondetect to 164 parts per million (ppm). PCBs in surface soils at concentrations greater than the NYSDEC cleanup objective of 1 ppm were detected in surface soil samples collected from the upper section of the site and from the active scrapyard area. Detections of PCBs were below 1 ppm from sampling locations outside the site fence to the north (in the Cobleskill High School athletic field) and east (within the site boundary near the apartment building complex). RI soil sampling locations are shown on Figure 3.

- PCBs in subsurface soils were detected at concentrations in excess of the NYSDEC cleanup objective of 10 ppm in the subsurface soil samples collected from only two locations. These two locations are S-13 and S-19 in the upper section of the site (Figure 3). PCBs were detected in these samples at concentrations of 15.99 ppm (S-13) and 13 ppm (S-19), and the samples were collected from the 0- to 2-foot and 2- to 4-foot depth intervals, respectively.

- Several semivolatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs), were detected in some surface and subsurface soils at levels exceeding NYSDEC cleanup objectives. These SVOC detections generally occurred in the same areas where PCBs were detected, but were less frequently detected at concentrations exceeding the NYSDEC cleanup objectives. Ranges for the SVOC concentrations detected in surface and subsurface soils are summarized in Attachment 3.

- Inorganic parameters including arsenic, cadmium, copper, lead, and zinc were detected at levels exceeding NYSDEC cleanup objectives at surface and subsurface soil sampling locations in the upper section of the site and in the active scrapyard area. The locations where inorganics were detected at concentrations exceeding cleanup objectives were generally the same locations where PCBs were detected. Ranges for the inorganic constituents detected in surface and subsurface soils are summarized in Attachment 3.

- Eight surface soil and two subsurface soil RI sampling locations where the total concentrations of the eight EP toxic metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) exceeded 1,000 ppm were sampled for EP Toxicity metals analysis. The extract from surface and subsurface samples collected at sampling location S-28 (Figure 3) contained lead at concentrations of 7.3 ppm and 44 ppm, respectively. These concentrations exceed the 5 ppm regulatory level at which a solid waste is considered a hazardous waste based on the concentration of lead in the EP Toxic extract [as outlined in 6NYCRR 371.31(e) and 40 CFR Part 261]. There were no other detections in the extracts obtained from the soil samples that exceeded the regulatory levels for the eight EP toxic metals.

Groundwater

- Groundwater samples were collected from monitoring wells during the RI, between June 1993 and April 1995. PCBs were detected at concentrations of 0.72 ppb and 0.10 in the unfiltered RI groundwater samples collected at bedrock coreholes (constructed and developed as monitoring wells) C-9 and C-16, respectively. As presented in the NYSDEC-approved *RI Report*, the detection of PCBs in C-9 appeared to be related to sediments that were flushed into the corehole from surface water runoff. PCBs were not detected in subsequent samples collected from bedrock coreholes C-9 and C-16 during the RI (i.e., prior to May 1996). PCBs were not detected in any of the other groundwater samples collected during the RI from site monitoring wells.

- Results of RI groundwater sampling indicated that VOCs were detected at levels exceeding the NYSDEC Class GA Groundwater Quality Standards only in groundwater samples collected from the bedrock monitoring wells near the leachfield area located south of the concrete and metal building (shown on Figure 2).

- In May 1996, groundwater samples were collected for PCB analysis from four bedrock monitoring wells (C-11, C-15, C-16, and C-18) located along the western site boundary. During this sampling event, LNAPL was observed coating the bailer at C-11 and light sheens were observed on the surface of purge water collected from monitoring wells C-15 and C-16. Based on these observations, and on the detections of PCBs in each of the unfiltered samples collected from these four on-site monitoring wells (concentrations ranging from 0.16 ppb to 52 ppb), a confirmatory round of groundwater sampling at these four monitoring wells was conducted. The results of the confirmatory sampling event indicated similar PCB concentrations in the four on-site monitoring wells.

LNAPL

- The bedrock at the site is characterized by multiple horizontal and vertical fractures, joints, and bedding planes with varying degrees of solution enlargement. LNAPL has infiltrated the fractured and jointed bedrock at the site where it appears to exist in discrete quantities, adhered to rock surfaces by surface tension forces, or sorbed to sediment within the fractures.

- Analytical results of several LNAPL samples collected during the RI indicate that the LNAPL consists of approximately 90% transformer oil with a density of 0.89 grams per cubic centimeter and PCB concentrations ranging from 1,780 to 2,230 ppm.

- LNAPL has been observed in nine monitoring wells/coreholes located on-site and west-northwest of the quarry pond. These monitoring wells/coreholes include: MW-5, C-3/MW-8, C-4, C-7, C-8, C-10, C-11, C-13, and C-14. However, since implementation of the biweekly LNAPL monitoring and removal program (June 1993), the amounts of LNAPL measured and removed has decreased significantly. With the exception of coreholes C-3/MW-8 and C-4, the amount of LNAPL observed in the on-site monitoring wells/coreholes has either decreased to non-measurable amounts (less than 0.01 feet) or has been observed on only one occasion.

- LNAPL has consistently been observed at coreholes C-3/MW-8 and C-4 in measurable thicknesses. Average LNAPL thicknesses measured during the biweekly monitoring events between January 1999 and July 2001 for coreholes C-3/MW-8 and C-4 are approximately 0.23 feet and 0.08 feet, respectively.

1.5 Regulatory Requirements

The contents of this *RD* have been based, in part, on numerous federal, state, and local regulations and guidance. The Contractor shall be familiar with all applicable regulations and shall be bound by the requirements of such whether specifically addressed herein or not. Such state and federal regulations include, but may not be limited to, the following:

Regulation	Topic
40 CFR 260-268 (RCRA)	Hazardous Waste Management Regulations
40 CFR 761 (TSCA)	Disposal of PCB-Contaminated Soils
6 NYCRR Part 371	Identification and Listing of Hazardous Wastes
29 CFR 1904, 1910, and 1926	Occupational Safety and Health Administration (OSHA) Standards
49 CFR 107, 171, and 172	USDOT Rules for Transporting of Hazardous Materials

Regulation	Topic
6 NYCRR Part 364	Waste Transporter Permits
6 NYCRR Part 372	Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Disposal Facilities
6 NYCRR Part 376	Land Disposal Restrictions

The Contractor will obtain all non-environmental permits (if any) that may be required for the implementation of the remedial activities detailed herein.

2. Description of Work Tasks

2.1 General

This section presents a task-by-task description of the anticipated activities to be completed by the Contractor in association with implementing the soil remedial activities and installation of the LNAPL recovery systems at the site. The Contractor's activities associated with this *RD* will be implemented under the following general work tasks:

- Task 1 - Mobilization;
- Task 2 - Site Preparation;
- Task 3 - LNAPL Recovery System Installation;
- Task 4 - Excavation;
- Task 5 - Backfilling/Grading;
- Task 6 - Site Restoration;
- Task 7 - Equipment Decontamination;
- Task 8 - Waste Materials Management; and
- Task 9 - Demobilization.

A description of each of these work tasks is presented below.

2.2 Work Task 1 – Mobilization

The activities to be conducted under this work task include the following:

- Attendance at a pre-construction meeting;

- Preparation, submittal, and revision (if necessary) to the satisfaction of NMPC and NMPC's Representative, all required plans and submittals, including data, assumptions, and any other necessary documentation; and

- Implementation of mobilization activities at the site.

A discussion of each of these activities is presented in the following subsections.

2.2.1 Pre-Construction Meeting

Following award of the contract and prior to Contractor mobilization, a pre-construction meeting will be held at the site to introduce project team members representing the Contractor, NMPC, and NMPC's Representative. The meeting will be scheduled by NMPC's Representative shortly after the award of the Contract. The meeting will be conducted to review Contractor requirements, establish a detailed schedule of operations and resolve issues (if any) raised by the attending parties.

NMPC's Representative will prepare a summary of the pre-construction meeting. A copy of this summary will be provided to each of the parties in attendance. Failure by the Contractor to inform NMPC's Representative within seven calendar days of receiving this summary of any discrepancies or inaccuracies contained therein, indicates that the Contractor concurs with NMPC's Representative's summary of the pre-construction meeting.

2.2.2 Preparation and Review of Contractor Submittals

Within one week following the pre-construction meeting, the Contractor shall submit two copies of the following submittals for review by NMPC and NMPC's Representative:

- A Site Management Plan;
- A site-specific Health and Safety Plan (HASP);
- An Emergency Preparedness and Contingency Plan; and
- Technical information pertaining to work to be conducted and materials to be used by the Contractor. Other than the information identified below to be included in the Site Management Plan, technical information to be submitted by the Contractor includes, but is not limited to: location of source and data for off-site fill materials/topsoil; product data and manufacturer's cutsheets for select materials/equipment; and seed analysis and application rates. Required technical information is identified and detailed in the appropriate M&P Specifications provided in Attachment 2.

The minimum requirements for the preparation and implementation of the Site Management Plan, the HASP, and the Emergency Preparedness and Contingency Plan are provided below.

Site Management Plan

The Site Management Plan shall present a detailed approach for implementation of activities detailed in this *RD*. The Site Management Plan shall present all information relevant to implementing the work tasks including, but not limited to, the following:

- Excavation methods, including surveying and delineation/confirmation of soil excavation limits;
- Materials handling and staging;
- Erosion and sedimentation control procedures;
- Noise, dust, and vapor emissions control procedures;
- Excavation dewatering method(s) and water management procedures;
- Restoration activities, including schedule for restoration operations, and methods for backfilling, compacting, grading, and restoring areas or features disturbed, damaged, or destroyed;
- A description of specific work responsibilities for personnel assigned to the project; and
- A detailed work schedule, including identification of the schedule for the work activities to be conducted in the active scrapyard area (i.e., southwestern portion of the site).

The Site Management Plan shall be provided to all Contractor personnel that will be directly involved with the implementation of the activities identified in this *RD*.

Site-Specific HASP

The selected Contractor shall prepare, submit (prior to mobilization to the site), and implement a site-specific HASP. The Contractor's HASP will, at a minimum, meet the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65) and the minimum requirements of the *HASP* provided as Appendix C of the *RAWP* (a copy of this *HASP* will be provided to the selected Contractor). The Contractor's HASP shall be signed by a Certified Industrial Hygienist (CIH). The Contractor's HASP shall cover all personnel who will be employed by the Contractor to perform work at the site, including direct employees as well as subcontractors. If the Contractor does not wish to include subcontractors under his/her HASP, then each subcontractor will be responsible

for developing and implementing a HASP that meets the requirements outlined in this *RD*. If a subcontractor agrees to be included under the Contractor's HASP, then a statement to this effect shall be submitted to NMPC.

The Contractor's HASP shall address, at a minimum, the following components:

1. Identification of Key Personnel - Identify, by name and by title, the on-site and off-site health and safety personnel responsible for the implementation of health and safety procedures. On-site personnel involved in the remedial activities must have (as appropriate, depending upon role) OSHA 40-hour Hazardous Waste Training (29 CFR 1910.120 and 29 CFR 1926.65) and the corresponding 8-hour refresher course update.

2. Training - Describe and provide certification of supervisory and on-site personnel having received appropriate health and safety training. Training requirements shall also include attending an initial site orientation prior to engaging in any on-site activities. Sign-off sheets acknowledging attendance shall be required.

3. Medical Surveillance - Describe and provide certification that supervisory and on-site personnel have received appropriate medical examinations and are able to conduct their specific work activities required for this project including but not limited to: working with chemicals, using respiratory protection, using personal protective equipment, and conducting hazardous waste operations in accordance with 29 CFR 1910.120 and 1926.65.

4. Site Hazards - Identify and provide a means of mitigating all foreseeable chemical and physical hazards associated with the work, including, but not limited to, hazards associated with exposure to constituents of concern, heavy equipment operation, site conditions, weather, biological hazards, materials handling, and work around excavated areas.

5. Work Zones - a site plan which depicts the designation of zones including: (1) Exclusion Zones, (2) Contamination Reduction Zones, and (3) Support Zones. The level of personal protection for each zone shall be specified.

6. Personal Safety equipment and Protective Clothing - Identify personal safety equipment and protective clothing to be used and available on-site. This shall include identification of expected levels of protection (A, B, C, D) for each task, and the action levels for personal protective equipment upgrades. Also included shall be a respiratory protection program that meets the requirements of 29 CFR 1910.134, which establishes specific requirements for any respirator use.

7. Personal Air Monitoring - Identify protocols and criteria associated with personal air monitoring of on-site personnel. NMPC's representative will conduct on-site air monitoring in accordance with the *HASP* provided as Appendix C to the *RAWP*. The results of those air monitoring activities will be made available to the selected Contractor for their use, as appropriate.

8. Equipment Cleaning - Describe methods and procedures for decontamination of personnel, vehicles, and equipment.

9. Material Safety Data Sheets - Provide Material Safety Data Sheets (MSDSs) for all materials to be brought on site, as well as constituents that are expected to be encountered in the course of the remediation activities.

10. Excavation Safety - Identify excavation and trenching safety procedures as specified in 29 CFR 1926 Subpart P including, but not limited to: soil classification, excavation inspections, protective systems, and designated competent persons.

11. Standard Operating Procedures and Safety Programs as required by applicable sections of 29 CFR 1910 and 29 CFR 1926.

Determination of the appropriate level of worker safety equipment and procedures shall be made by the Contractor as a result of site visit(s) and review of available information as deemed necessary by the Contractor. Should any unforeseen or site-specific safety-related factor, hazard, or condition become evident during the performance of work at the site, it shall be the Contractor's responsibility to bring such to the attention of NMPC's Representative both verbally and in writing as quickly as possible for resolution. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

Unauthorized variation from, or substitution for, any portion or provision of the health and safety requirements set forth in the HASP shall be deemed just and sufficient cause for termination of the Contract without compromise or prejudice to the rights of NMPC or NMPC's Representative.

The selected Contractor will be provided with a copy of the *HASP* provided as Appendix C to the *RAWP* prior to preparing its HASP to serve as a guideline. The Contractor, however, assumes sole responsibility for the accuracy and content of its HASP.

Emergency Preparedness and Contingency Plan

The selected Contractor shall prepare, submit (prior to site mobilization activities), and implement an Emergency Preparedness and Contingency Plan which includes, at a minimum, the items listed below.

1. A spill response plan for addressing spills (if any) that may occur on-site during the remedial activities.

2. A spill prevention control and countermeasures (SPCC) plan for materials brought to the site.

3. Emergency vehicular access/egress routes.

4. Procedures for the evacuation of personnel from the site.

5. A listing of all contact personnel with phone numbers to include: the Contractor; NMPC; NMPC's Representative; the NYSDEC; fire officials; ambulance service; local, county, and State Police; and local hospitals, including routes to local hospitals and procedures for notifying each.

6. Method(s) to contain gasoline/diesel fuel spills if these fuels are to be brought on site. No compensation will be provided to the Contractor for work related to cleaning up spills or leaks caused by the Contractor's personnel or equipment. Each piece of heavy equipment utilized at the site (excavators, loaders, etc.) shall be equipped with a spill containment and control kit.

7. NMPC Environmental Guidance Documents including Spill Reporting and Cleanup; and Waste Handling, Storage, Transportation, and Disposal Procedures.

All of the required Contractor submittals will be reviewed and stamped by NMPC's Representative as follows:

1. "Reviewed" if no objections are observed or comments made;

2. "Reviewed and Noted" if minor objections, comments, or additions are made but resubmittal is not necessary;

3. "Resubmit" if the objectives, comments, or additions are extensive. In this case, the Contractor shall resubmit the items after revision. The resubmittal shall consist of the same number of copies as the first submittal; and

4. "Rejected" if the submittal does not comply, even with reasonable revision, with contract conditions. In this case, the Contractor shall resubmit a new or modified submittal that meets the scope and intent of the work specified in the contract.

The Contractor will revise required submittals as necessary to address comments from NMPC and NMPC's Representative. The Contractor shall submit two copies of all revised and/or final submittals to NMPC's Representative. The Contractor will not be permitted to perform any activity that directly or indirectly involves the item or items covered by a submittal until a "reviewed" or "reviewed and noted" stamp is provided by NMPC's Representative. NMPC's Representative's review shall in no way be construed as permitting departure from the Contract, except where the written request by the Contractor and written approval by NMPC's Representative for such departure is included. NMPC's Representative's review does not relieve the Contractor of any responsibility to comply with applicable laws, rules, regulations, or agreements.

2.2.3 Mobilization Activities

The Contractor will initiate site mobilization activities within five working days after required submittals have been reviewed by NMPC's Representative. The Contractor will be responsible, at a minimum, for the mobilization tasks listed below.

- Verifying existing site and off-site conditions (as necessary) in order to develop an understanding of the conditions that may be encountered during implementation of the remedial activities identified herein. This shall include, but will not be limited to, identifying the location of, and staking out, all subsurface utilities and structures in the areas to be excavated. In addition to coordinating with the appropriate utility companies, the Contractor is responsible for coordinating with the property owner to verify the locations of subsurface utilities/structures, including (but not limited to) the leachfield located in the southwestern corner of his property (Figure 2). Any existing utility or structure that is damaged or any impacts caused from damaging an existing utility or structure during the remedial activities shall be the responsibility of the Contractor for fully repairing all damages at no additional cost to NMPC. This will include repairing any monitoring wells/coreholes damaged during, or as a result of, the activities conducted by the Contractor.

- Acquiring all necessary non-environmental permits (if any) associated with implementation of the remedial activities.

- Providing all supervision, manpower, equipment and supplies to the site, as necessary, to implement the remedial action activities in accordance with this *RD*. Equipment mobilized to the site will be subjected to a visual inspection by NMPC's on-site representative. Equipment that arrives at the site in unsatisfactory condition (e.g., soiled, poor operating condition, etc.) in the opinion of NMPC's Representative, will be decontaminated (to the satisfaction of NMPC's Representative) or replaced at no additional cost to NMPC.

- Providing, mobilizing, and maintaining a trailer(s) at the site, as required, to sustain the Contractor's offices, equipment, storage, and operations for the duration of the project. All trailers shall be provided with anchoring systems in accordance with the manufacturer's requirements to prevent overturning due to wind forces and must be located within the fenced portion of the site. The Contractor may install, in accordance with all applicable rules and regulations, electric and telephone services to the trailers. If so elected, the Contractor may utilize the water treatment building (already equipped with electric and telephone service) for their office operations. The Contractor should note that space available inside the water treatment building is limited.

- Providing portable sanitary services (i.e., port-a-johns) for use by all on-site personnel engaged in the remedial activities. The Contractor shall provide maintenance and servicing of the sanitary facilities, office trailers, and

equipment furnished with the office trailers, as required. Support facilities (e.g., port-a-johns, trailers, and equipment storage areas) must be located within the fenced portion of the site, in areas approved by NMPC and/or NMPC's Representative.

2.3 Work Task 2 – Site Preparation Activities

Prior to soil excavation/backfilling activities, various site preparation activities shall be performed. Anticipated site preparation activities include, but are not limited to, the activities identified below.

- Conducting a vertical and horizontal topographic survey of the site in the field by a New York State licensed surveyor. This survey will provide baseline survey data representative of pre-excavation conditions, which will be used in conjunction with post-excavation survey data to be conducted by the Contractor to verify that the required excavation limits have been achieved. As part of the pre-excavation survey, the locations of all underground and aboveground utilities and structures at the site must be located/verified, and spot elevations obtained at intervals required by topography and at all breaks in grade. In addition, the RI sampling locations used to define certain excavation limits must be located (surveyed) and staked in the field (see Subsection 2.5 and Contract Drawing 4). The coordinates for those locations will be provided to the Contractor by NMPC's Representative.

  Topographic elevations shall be obtained to the nearest 0.1-foot. All survey elevations shall be based on USGS datum within the surveyed area. The baseline topographic survey, including necessary site features (e.g., utilities, structures, and referenced RI sampling locations) shall be plotted at one-inch equals 20-foot scale with one-foot contour intervals. The Contractor shall provide, in advance of construction, two copies of the baseline survey to NMPC's Representative for review.

- Removing/relocating parts of chain-link fencing and building/restoring temporary access roads (if necessary).

- Clearing and grubbing of the area to be excavated, as necessary, to facilitate the required excavation activities. Vegetation required to be cleared within the areas to be excavated will be cut at ground level, chipped (if necessary), and disposed of at an appropriate location. NMPC will coordinate (with the property owner) the relocation of scrap materials associated with the active scrapyard prior to work activities in the area. Other surface scrap materials and debris that is present within the excavation limits will be relocated and/or removed and disposed of off site by the Contractor, as directed by NMPC's Representative.

- Establishing/constructing the work area(s) and staging area(s) necessary for the excavation activities. Soils excavated from the site shall be temporarily staged within the fenced portion of the site if not directly loaded for off-site disposal. The temporary soil staging area(s) shall meet the following minimum requirements:

  - The location(s) utilized for staging shall not be a low-lying area where the surface or groundwater may accumulate;

  - The location(s) utilized for staging areas shall be coordinated with NMPC's Representative;

  - The temporary staging area(s) shall be bermed, and lined with 6 mil (minimum thickness) polyethylene sheeting that is covered with a 6-inch layer of sand;

  - The staging area shall be sloped toward a collection sump lined with the same impermeable membrane as the staging area;

- Water drained (if any) from the stockpiled materials shall be pumped from the collection sump and containerized for subsequent treatment/disposal;

- The placement of the soil into the staging area(s) shall not involve any equipment or procedure that may jeopardize the integrity of the underlying impermeable membrane;

- The staging area(s) shall be continuously covered with a properly anchored impermeable membrane, except while the soils are actively being placed or removed. This membrane shall be maintained for the duration of the soil staging activities;

- Erosion control methods will be employed around the stockpile to prevent surface water runoff from coming in contact with the stockpiled material. Such erosion methods may include installing silt fence and/or hay bales as discussed below;

- A construction fence around the soil staging area(s) shall be placed and maintained for the duration of the staging activities; and

- The staging area(s) shall be inspected daily and noted deficiencies shall be promptly addressed.

▪ Constructing an equipment and material decontamination area(s). At a minimum, this decontamination area(s) will be lined with two layers of 6 mil (minimum thickness) polyethylene sheeting, covered with a 6-inch layer of sand, and a layer of crushed stone. The decontamination area will be sloped to a geomembrane-lined sump to allow for the collection of decontamination water. Water collected from the decontamination activities will be containerized and subsequently treated/disposed of in accordance with applicable rules and regulations. Decontamination area(s) must be located within the fenced portion of the site in an area(s) approved by NMPC and/or NMPC's Representative.

▪ Providing temporary storage of wastewater and waste materials removed/generated during implementation of the soil remedial action activities. Decontamination materials collected during soil excavation activities (i.e., PPE) will be appropriately containerized (e.g., in 55-gallon steel drums or a lined roll-off with cover). Water generated (if any) during the soil removal activities will be collected from the lined sumps located in both the soil staging and decontamination areas and transferred directly into 55-gallon drums. The drums will be temporarily stored on-site in an appropriate area, pending appropriate treatment/disposal in accordance with applicable rules and regulations. Waste materials must be stored within the fenced portion of site in an area(s) approved by NMPC and/or NMPC's Representative.

▪ Implementing erosion and sedimentation control measures in accordance with the *New York Guidelines for Urban Erosion and Sediment Control* (most current version) to temporarily control or divert surface water flow, and to mitigate the potential for erosion and migration of site-related constituents/materials. The Contractor will utilize the following erosion and sedimentation controls or propose alternative methods that will provide sufficient control. At a minimum, the Contractor shall install and maintain silt fence and/or haybales around all major construction efforts, and along the perimeter of the site and adjacent to the quarry pond as necessary to provide sufficient erosion and sedimentation control.

Silt Fence

Silt fencing may be utilized to intercept runoff occurring as overland flow, otherwise known as sheet flow. Silt fence shall be installed parallel to ground surface contours and prior to clearing, grading, or excavation activities within the work area, as appropriate. The lower edge of the fabric shall be buried below the ground surface to prevent undermining. The ends of the fence shall be curved uphill to the extent necessary to mitigate the

potential for flow around the ends of the fence. Removal of silt fence shall occur when site restoration activities have been completed.

Straw Bale Dike

Similar to silt fencing, straw bale dikes may be employed to limit the runoff velocity and provide filtration to minimize the downgradient migration of soil particles. Straw bales used for erosion and sedimentation control shall be of hay or straw and be free from deleterious weeds and woody materials. Straw bale dikes may be installed around the perimeter(s) of excavation areas as required for temporary control of erosion. The length of the slope between rows of straw bale dikes will vary depending on the slope gradient on which the bale dikes is placed. In all cases, the straw bales shall be placed immediately adjacent to one another to form a barrier free from gaps or holes. In addition, the straw bales shall be secured to grade by staking each bale with at least two rebar, steel pickets, or 2-inch by 2-inch wooden stakes per bale and burying the bottom of bale a minimum of 4 inches below grade.

The temporary erosion control measures shall be maintained by the Contractor for the duration of soil remedial action activities and until the site restoration activities are complete. The Contractor may be directed to install additional soil erosion controls by NMPC's Representative. Erosion controls shall be inspected by the Contractor at least once per day and after each significant rainfall (as determined by NMPC's Representative). Repairs shall be made by the Contractor, as necessary, to maintain erosion control measures are performing as intended or as required by NMPC's Representative.

2.4 Work Task 3 – LNAPL Recovery System Installation

The Contractor will be responsible for installing two enhanced automatic LNAPL recovery systems. Two new 6-inch diameter LNAPL recovery wells have been installed in the vicinity of existing coreholes C-3/MW-8 and C-4. These wells are currently being monitored by NMPC to determine their potential for enhanced automatic LNAPL recovery. Based on the results of the monitoring activities, these wells may be used for the construction of the enhanced automatic LNAPL recovery systems, or alternative new/existing wells in the vicinity of existing coreholes C3/MW-8 and C-4 may be installed/modified by NMPC for enhanced LNAPL recovery.

Each of the enhanced automatic LNAPL recovery systems to be installed by the Contractor will consist primarily of an in-well belt oil skimmer, an LNAPL collection drum, an equipment enclosure building, and associated electrical and control equipment. The proposed locations of the equipment enclosure buildings and electrical conduit plan are shown on Contract Drawing 1. Details and specifications for the system components are provided on Contract Drawings 2 and 3. Details regarding the belt skimmers and equipment enclosure buildings are discussed below.

A pre-fabricated equipment enclosure building will be installed to house each of the recovery systems. The enclosures will be Easi-Set precast concrete buildings manufactured by Kistner Concrete Products, Inc. The buildings will be 8 feet by 8 feet, and 8 feet in height. Each building will include two 3-foot wide 18 gauge steel security doors with tamper proof hinges and dead bolt locks. Each building will also be equipped with a wall-mounted space heater, thermostat, and exhaust fan. The buildings will be placed on a 4-inch thick compacted gravel base.

Petroextractor Model PX-A oil belt skimmers manufactured by Abanaki Corporation will be installed in the recovery wells to be used for enhanced automatic LNAPL recovery. The hydrophobic skimmer belts will be 40 feet in length and one inch wide. Each belt skimmer will be equipped with a 4-foot mounting stand, an on-off timer (with 15-minute increments), and a drum shut-off switch. The on-off timer will be programmed to periodically operate the belt skimmers, as necessary, to remove LNAPL accumulating in the recovery wells and transfer the LNAPL and any water removed from the wells into a 30-gallon drum located in the equipment enclosure buildings. The LNAPL collection drums will be placed in secondary spill containment units.

The Contractor will be responsible for installing all electrical equipment and conduit, as well as a gravel access road as specified in Contract Drawings 1 through 3. Excavation, backfilling, and site restoration activities associated with the installation of the LNAPL recovery systems will be performed by the Contractor in accordance with the applicable provisions of the M&P Specifications provided in Attachment 2.

2.5 Work Task 4 - Excavation

A description of the soil excavation activities to be conducted by the Contractor is presented below and shown on Contract Drawing 4.

- Excavating surface soils from the upper section of the site and the active scrapyard area where PCBs were detected at concentrations in excess of 1 ppm. Surface soils will include the top 12 inches of soil (where present). The area of surface soil excavation is depicted on Contract Drawing 4.

- Excavating surface and subsurface soils to a depth of 2 feet below ground surface (bgs) from the defined area located northwest of the quarry pond, shown on Contract Drawing 4. This area encompasses the two subsurface soil sampling locations (S-13 and S-19) where PCBs were detected at concentrations greater than 10 ppm. Because PCBs were detected in excess of 10 ppm in the soil sample collected from the 2- to 4-foot depth interval at location S-19, the limits of soil excavation include a 10-foot by 10-foot area centered around sampling location S-19 that would be excavated to a depth of 4 feet.

- Excavating surface and subsurface soils to a total depth of 2 feet bgs in a 10-foot by 10-foot area centered around sampling location S-28 (shown on Contract Drawing 4) where two soil samples were collected that exhibited the hazardous characteristic of lead toxicity. Soil samples SS-28 (0- to 6-inch depth interval) and TP-28 (6- to 24-inch depth interval) collected during the RI, exhibited lead concentrations in excess of the regulatory level of 5 ppm when subjected to the EP Toxicity testing procedure. These were the only samples that exhibited the hazardous characteristic of toxicity based on the results of the 13 soil samples submitted for EP Toxicity testing as part of the RI activities.

- Excavating obviously oil-saturated material encountered during the excavation activities, as directed by NMPC's Representative.

- Post-excavation verification samples will be collected by NMPC's Representative to confirm that the NYSDEC-specified cleanup goal for subsurface soils (10 ppm) has been met. The soil verification samples will be submitted for laboratory analysis of PCBs using USEPA SW-846 Method 8082 on an anticipated 24-hour turnaround basis. A minimum of five post-excavation verification samples will be collected. One sample will be collected from the area identified for surface soil excavation. This sample will be collected in the immediate vicinity of RI soil sampling location S-4 (Contract Drawing 4), from the bottom of the surface soil excavation (12 inches below the current ground surface) to confirm that PCBs are not present at concentrations greater than 10 ppm at this location prior to backfilling.

  In each of the two subsurface soil excavation areas (the 150-foot by 150-foot area encompassing soil sampling locations S-13 and S-19 and the 10-foot by 10-foot area centered around soil sampling location S-28), two post-excavation verification samples will be collected to confirm that PCBs are not present at concentrations greater than 10 ppm. Within the relatively larger subsurface soil excavation (150-foot by 150-foot) area, soil samples will be collected from the base of the excavation. Within the smaller subsurface soil excavation (10-foot by 10-foot) area, one soil sample will be collected from a sidewall and one collected from the base of the excavation. The location of the post-excavation verification samples to be collected within the subsurface excavation areas will be determined by NMPC's Representative based on field conditions encountered. Depending on conditions

encountered (e.g., presence of oily-saturated materials), additional PCB verification samples may be collected by NMPC's Representative, as necessary.

If PCBs are detected in any of the verification samples at concentrations greater than 10 ppm, then the excavation would be extended in the section where the exceedence occurred, and as directed by NMPC's Representative. For example, if the PCB analytical results of the one sidewall sample collected from the smaller subsurface excavation area indicated the presence of PCBs at a concentration in excess of 10 ppm, then additional soil would be excavated from each of the sidewalls of that excavation (i.e., the entire excavation would be extended laterally) because the one sample was collected to represent each of the sidewalls. The extended excavation would be resampled and this cycle continued until analytical testing indicates that PCB concentrations in the extended excavation is less than 10 ppm.

The actual extent of soil removal may, in part, be dictated by field conditions encountered (e.g., the presence of shallow bedrock) and by equipment limitations. The limits of the actual soil excavation and backfilling activities shall be confirmed by the Contractor in the field using conventional surveying practices. A comparison of pre- and post-excavation survey data (to be obtained by the Contractor) shall be conducted to verify that required excavation limits were achieved. Excavation of the soil shall be conducted in accordance with the M&P Specifications provided in Attachment 2 and 29 CFR 1926 Subpart P, including the use (as required) of protective measures such as sloping, benching or shoring. The soils will be excavated using conventional earth moving equipment such as excavators, backhoes, front-end loaders, dump trucks, etc. The Contractor's proposed method of excavating must be detailed in their Site Management Plan, which shall be subject to review and acceptance by NMPC's Representative.

Excavated soils will be directly loaded into appropriate transport vehicles (e.g., lined 20-yard dump trailers) or temporarily staged on-site in a staging area constructed as described in Subsection 2.3. To the extent possible, excavation activities will not be performed during periods of precipitation. The excavated soil will be subsequently disposed of off-site in accordance with all applicable rules and regulations, and as detailed further below.

Groundwater removal from the excavation is not anticipated to be necessary, as the excavations are not anticipated to extend into the groundwater table. However, if water collects in the excavation from groundwater seepage or from surface water run-off, and that water must be removed to facilitate completing the required excavation activities (to be determined in conjunction with and approval from NMPC's on-site representative), the water will be pumped out of the excavation, temporarily stored on-site in an appropriate container(s), and subsequently treated/disposed of in accordance with applicable rules and regulations. The volume of water to be pumped from the excavation area shall be dependent on a number of factors (e.g., the methods used by the Contractor to excavate soil, the size of area being excavated during a given period of time, weather conditions at the time of excavation activities, etc.). The Contractor should be prepared to provide pumps, hoses, and other appurtenances, as necessary, to enable each excavation area to be dewatered, as necessary, within a reasonable time frame. The water generated during the soil removal activities will be temporarily stored on site in an appropriate temporary storage container prior to off-site disposal by the Contractor.

To minimize the amount of suspended solids being pumped from the excavation, the Contractor should take adequate precautions. Those precautions should include, but not be limited to, cutting perforation into a cylindrical object (e.g., corrugated metal pipe or 55-gallon drum) and wrapping the perforated object with non-woven geotextile fabric that is capable of filtering particulate, while maintaining the flow capacity of the pump(s). Specific excavation dewatering method(s) shall be detailed in the Contractor's Site Management Plan to be reviewed and approved by NMPC and NMPC's Representative.

The Contractor will be responsible for maintaining noise levels produced by construction equipment to safe and tolerable limits set forth by OSHA, the USEPA, and any applicable New York State or local code ordinances. The Contractor is also responsible for coordinating excavation activities with the air monitoring program that will be implemented by NMPC's Representative as detailed in Subsection 2.6. Using the air monitoring measurements and

visual observations to be obtained during the remedial construction activities, the Contractor shall be responsible for maintaining/controlling dust and total organic vapor (TOV) levels, as detailed below and in Special Condition 01709.

Excavation activities in the southwestern portion of the site (i.e., the active scrapyard area) will require coordination with the property owner. The Contractor will be responsible for informing NMPC's Representative, in advance, of the schedule for conducting work in this area. The schedule for completion of the work activities in this area should be identified (and updated, as necessary) in the Site Management Plan to be prepared by the Contractor prior to commencement of the site activities, and subject to review/acceptance by NMPC's Representative. NMPC or NMPC's Representative will coordinate the Contractor's access to the active scrapyard area and the relocation of scrap materials with the property owner prior to the commencement of work in this area.

2.6 Work Task 5 – Backfilling/Grading

Upon completion of excavation activities, at least 12 inches of clean backfill will be placed over the excavated areas. The backfilling activities shall be conducted in accordance with the M&P specifications provided in Attachment 2. The site shall be graded, in general, to pre-excavation conditions. Additional backfill may be placed in some areas, as appropriate, to promote appropriate site drainage and to mitigate surface water runoff from off-site locations onto the site, to the extent practicable. The backfilling activities shall start as soon as practicable after excavation activities have been completed in an area and upon approval from NMPC's Representative based on the results of the post-excavation verification sampling activities and confirmation of suitable backfill material (see M&P Specification Section 02220).

Backfilling shall be started at the lowest section of the area to be backfilled and natural drainage shall be maintained to the extent appropriate/practicable. Survey measurements shall be conducted by the Contractor to verify the vertical and horizontal limits of the backfill. Details regarding the backfilling and grading (including compaction) activities shall be presented in the Contractor's Site Management Plan which shall be subject to review and acceptance by NMPC and NMPC's Representative.

During implementation of the soil remedial activities with the potential for dust generation or organic vapor emission (e.g., excavation, backfilling, and grading) the Contractor is responsible for coordinating excavation activities with the air monitoring program that will be implemented by NMPC's Representative, as described below. During the remedial activities, adequate measures will be taken (if and as necessary) for controlling dust generated as a result of the remedial activities, such that dust levels do not exceed the action levels summarized below and presented in the *HASP* provided as Appendix C to the *RAWP* (a copy of which will be provided to the Contractor).

During the remedial activities, dust will be controlled based on the results of airborne particulate monitoring to be continuously conducted by NMPC's Representative during implementation of the remedial activities that may generate dust. The results of the airborne particulate monitoring will be recorded by NMPC's Representative (at a minimum) of once per hour, unless site conditions and remedial activities being conducted do not cause the generation of dust. If dust monitoring indicates that ambient dust levels in the worker breathing zone exceed the action level of 100 micrograms per cubic meter (ug/m^3) above background, appropriate dust control measures will be implemented by the remedial contractor and the level of particulates will be manually recorded by NMPC's Representative at the downwind perimeter of the work area at 15 minute intervals. The actual measures to be implemented to control dust generated by the excavation and any other of the remedial activities may include one or more of the following techniques presented in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031:

1. Wetting equipment and excavation faces.

2. Spraying water on buckets during excavation and dumping.

3. Covering excavated areas and materials after the excavation activity ceases.

4. Reducing the excavation size and/or number of excavations.

If the sustained level of particulates in the breathing zone or at the downwind perimeter of the work area is 150 ug/m^3 (above site background) or greater, or if airborne dust is observed leaving the work area, then work activities will cease and dust suppression techniques must be employed to maintain particulate levels below 150 ug/m^3 and prevent visible dust migration. In addition, the work area will be enlarged if necessary to keep the public from being exposed to particulate levels greater than 150 ug/m^3. Dust generating activities will not be permitted to be resumed until dust levels subside to less than the action levels. Potential dust generating work activities may resume, provided that dust levels at the downwind work area perimeter are less than 150 ug/m^3.

Adequate measures will also be taken to assure that TOV levels during the remedial construction activities do not exceed the levels presented in the *HASP* provided as Appendix C of the *RAWP* (a copy of which will be provided to the Contractor). A PID will be used to monitor the worker breathing zone for TOV levels during the remedial activities in areas where VOCs may potentially be detected. PID monitoring will be continuously performed by NMPC's Representative during the implementation of such remedial activities and will be recorded at a minimum frequency of once per hour. If the sustained level of TOV in the worker breathing zone exceeds 3 ppm above background, then the TOV levels will be manually recorded by NMPC's Representative at the downwind perimeter of the work area (i.e., exclusion zone) at 15-minute intervals. If the TOV levels at the downwind perimeter of the work area exceed 1 ppm above background, then work activities will be halted and additional downwind monitoring will be performed by NMPC's Representative. Efforts will be undertaken by the Contractor to mitigate the source of organic vapors. The work area will be enlarged, if necessary, to mitigate the potential for people who are not involved with the remedial activities from being exposed to organic vapor levels exceeding 1 ppm above background.

During the remedial activities, it is possible that the downwind perimeter of the work area will coincide with the site perimeter. Site perimeters are defined by Route 10 and West Street in the southwestern corner of the site (i.e., the active scrapyard area) and by chain-link fencing in the remaining portions of the site. If, at any time, the levels of TOV adjacent to the downwind site perimeter reach 1 ppm above background, then the levels of TOV 200 feet downwind of the work area perimeter or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but no less than 20 feet, will be monitored. Work activities can resume provided that the TOV level at this location is below 1 ppm over background. If after 30 minutes, the level of TOV at this location has not subsided below 1 ppm above background, then the Contractor will inform the local emergency response contacts (in addition to project managers from NMPC, the NYSDEC, the NYSDOH, and NMPC's Representative), as identified in Table 11-1 of the *HASP* provided as Appendix C of the *RAWP*. Persons who potentially may be exposed will then be notified to evacuate occupied buildings or properties. These persons will not be permitted to return to the properties until after the levels of TOV on the properties subsides to below 1 ppm above background.

2.7 Work Task 6 – Site Restoration

Under this work task, the Contractor shall be responsible for restoring areas that are disturbed during implementation of the remedial activities. In general, surfaces disturbed by construction activities will be restored to pre-construction conditions, unless otherwise specified herein. The restoration activities shall be performed, as appropriate, in accordance with the M&P specifications provided in Attachment 2. These restoration activities may include, but will not necessarily be limited to, the following:

- Seeding site areas not covered with crushed stone or pavement (including the provision and placement of topsoil, mulch, seed, and fertilizer);

- Repairing paved parking or driveway areas, or other areas impacted by truck traffic or other activities associated with implementing the soil remedial activities;

- Restoring areas disturbed to accommodate support areas (e.g., trailers, staging areas, decontamination areas, storage areas, etc.), site access, access to removal areas, and any other areas identified by NMPC's Representative;

- Removing temporary access roads built/restored for implementation of the excavation/backfilling activities; and

- Repairing parts of the chain-link fencing removed to provide access to the site during excavation/backfilling activities.

2.8 Work Task 7 – Equipment Decontamination

The Contractor shall supply all labor, equipment, and materials necessary to implement decontamination activities. The Contractor shall perform decontamination of equipment and personnel in areas to be designated by the Contractor and approved by NMPC and/or NMPC's Representative. The Contractor shall provide in the Site Management Plan, the appropriate procedures and methods that will be employed to properly decontaminate project-related equipment, including excavation equipment, trucks, hand-tools, etc., that come into contact with impacted site media. At a minimum, the following procedures shall be executed by the Contractor:

- Unless otherwise directed by NMPC's Representative, any equipment to be taken off-site by the Contractor shall be subject to a final visual check by NMPC's Representative and cleaning (if necessary) at a designated location. Provisions must be made to prevent off-site tracking of materials (e.g., onto public roadways, etc.).

- If any equipment is in contact with contaminated material, equipment decontamination will be performed in a designated area within the fenced portion of the site, to be constructed as described in Subsection 2.3. The Contractor shall be responsible for constructing and maintaining the decontamination area(s) to accommodate all loads, equipment, and migration scenarios.

- The extent and method of cleaning shall be at the discretion of the Contractor; however, each piece of equipment shall be observed by NMPC's Representative for visible soils or other debris prior to its departure from the site. Any observed soils or other debris shall be promptly removed by the Contractor and disposed of in a manner consistent with the materials that were contacted or excavated from that area.

- All material used in equipment washing, including (but not necessarily limited to) detergent solution, rinsate, rinse water, towels, disposable equipment, and polyethylene sheeting will be collected and managed as described in the following subsection.

2.9 Work Task 8 – Waste Materials Management

Under this work task, the Contractor will be responsible for handling, storing, containerizing, transporting (including providing and preparing profiles, manifests, bills-of-lading, etc.) and disposing of the following waste streams in

accordance with all applicable federal, state, and local laws and the terms and conditions of the Contract to be executed between NMPC and the Contractor:

- Soil removed from the site that contains PCBs in concentrations less than 50 ppm;
- Soil removed from the site that contains PCBs in concentrations in excess of 50 ppm;
- Soil removed from the site that has been characterized as hazardous due to lead concentrations;
- Oil-saturated soil encountered during excavation activities;
- Debris removed from the site prior to excavation activities;
- Water (if any) that is generated during the soil excavation activities;
- Decontamination washwater, disposable equipment, and polyethylene sheeting;
- Erosion/sediment control measures such as silt fencing/straw bales used during the soil remedial activities;
- Other materials, such as PPE; and
- Any and all rubbish and debris resulting from the Contractor's operation unless otherwise specified herein or directed by NMPC or NMPC's Representative.

The Contractor shall provide all labor, equipment, and materials necessary to stabilize the soil, if necessary, in order to meet applicable requirements for off-site disposal (i.e., no free liquids). This may be accomplished using stabilizing materials, including, but not limited to, fly ash, Portland cement, or quick lime. The Contractor is encouraged to use, where appropriate, the addition of up to three percent by weight of quick lime as the preferred method of soil stabilization. Alternate stabilization methods proposed by the Contractor (if any) shall be evaluated by NMPC's Representative based on cost effectiveness (e.g., weight addition of stabilization agents and overall disposal costs). The Contractor should be aware that addition of quick lime at amounts in excess of approximately three percent by weight could cause the stabilized soil to be regulated as a corrosive hazardous waste. Visual check of the stabilized material by NMPC's Representative shall not release the Contractor from adequately stabilizing the soil for off-site disposal.

The Contractor must submit with the bid the proposed methods of handling and containerizing each waste stream, including the provision of containers. Waste characterization requirements of the disposal facilities shall be identified by the Contractors in their bid. In addition, any pre-treatment activities or other limitations/requirements applicable to off-site disposal must also be identified by the Contractor in their bid, including the Contractor's proposed method to meet these requirements.

The Contractor must also submit with the bid both proposed primary and secondary waste transporter(s) and the proposed disposal facilities for each potential waste stream. In addition, the Contractor must provide to NMPC (prior to the start of work activities) written verification from each identified transporter and disposal facility stating their regulatory authority and their agreement to transport and accept the various potential waste streams. Contractors are required to dispose of wastes at NMPC-approved facilities for each type of waste stream generated.

Copies of manifests or certificates of disposal will be maintained by NMPC's Representative at the site and will be provided to NMPC at the conclusion of the project (or at periodic intervals as requested by NMPC). The Contractor will provide written details and procedures with the bid submittal regarding proposed recordkeeping and transfer of information to NMPC and NMPC's Representative to ensure timely reporting to NMPC and NMPC's Representative.

The Contractor will also provide written details identifying potentially applicable regulations and how the Contractor intends to comply with these regulations.

2.10 Work Task 9 – Demobilization

The Contractor will be responsible, at the minimum, for the following demobilization activities:

- Dismantling the work area(s), staging area(s), equipment and material decontamination area(s), sedimentation and erosion control measures, temporary fence or other temporary barrier(s);

- Repairing any damage to equipment, surfaces, structures, or finishes caused by or resulting from the Contractor's operation; and

Removing from the site all materials, equipment and support structures (e.g. site trailers, port-a-john, etc.) resulting from the Contractor's operation.

Figures

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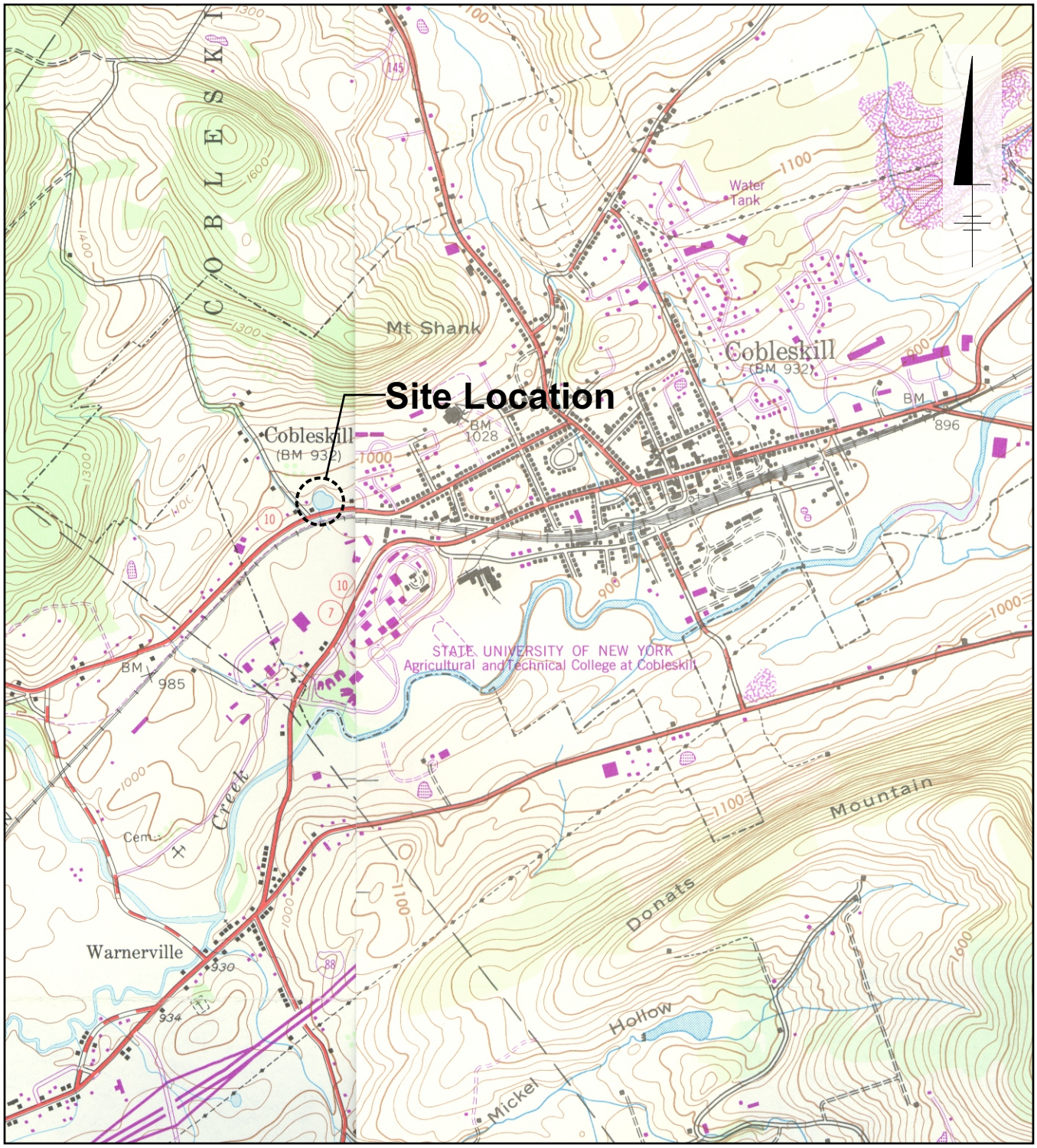
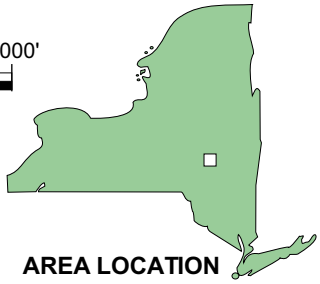


REFERENCE: Base Map Source USGS 7.5 Minute Quads. Series Cobleskill, New York, 1943, Photorevised 1980, and Richmondville, New York, 1944, Photorevised 1982.

2000' 0 2000'

Approximate Scale: 1" = 2000'



AREA LOCATION

NIAGARA MOHAWK, A NATIONAL GRID COMPANY
M. WALLACE AND SON, INC. SCRAPYARD SITE
COBLESKILL, NEW YORK

SITE LOCATION MAP

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FIGURE 1

06/27/03 SYR-D85-LBR
36417360/36417n01.cdr

Contract Drawings

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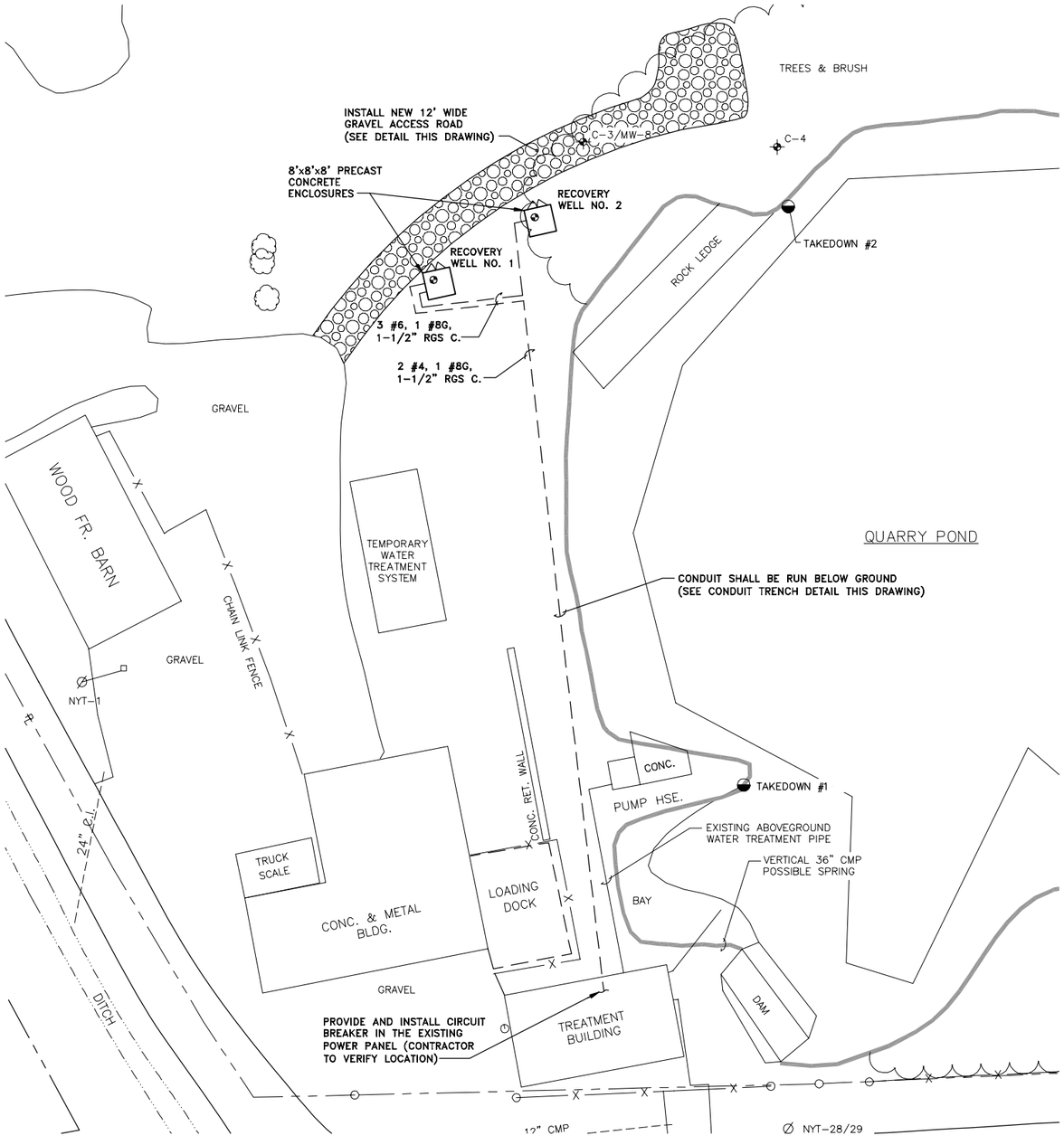


SITE PLAN

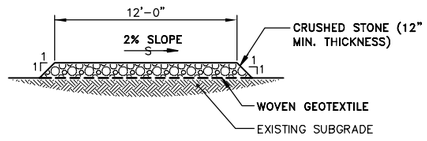
SCALE: 1"=20'-0"

LEGEND:

- GUY ANCHOR
- UTILITY POLE
- PROPERTY LINE
- APPROXIMATE LIMIT OF QUARRY
- DITCH
- TAKEDOWN LOCATION
- EXISTING BEDROCK COREHOLE MONITORING WELL LOCATION
- PROPOSED LNAPL RECOVERY WELL (BY OTHERS)
- ELECTRICAL CONDUIT

GENERAL NOTES:

1. LOCATION OF UNDERGROUND UTILITIES AND OTHER UNDERGROUND STRUCTURES LOCATED BY FIELD MEASUREMENTS WHERE POSSIBLE, OTHERWISE OBTAINED FROM OTHER SOURCES AND MAY BE APPROXIMATE. OTHER UNDERGROUND UTILITIES AND STRUCTURES MAY EXIST, THE LOCATIONS OF WHICH ARE PRESENTLY UNKNOWN. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL UNDERGROUND STRUCTURES AND UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES AND THE PROPERTY OWNER.
2. BASE MAP FROM SITE SURVEY CONDUCTED BY BLASLAND, BOUCK & LEE, INC., OCTOBER 1992.
3. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH NIAGARA MOHAWK POWER CORPORATION (NMPC), OR NMPC'S REPRESENTATIVE PRIOR TO COMMENCING ON-SITE ACTIVITIES.
4. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD (AS NECESSARY).
5. THE CONTRACTOR SHALL INSTALL COMPONENTS IN A NEAT AND WORKMANLIKE MANNER THAT ARE EASILY ACCESSIBLE FOR INSPECTION AND REPAIR; AND ALIGN, LEVEL AND ADJUST FOR SATISFACTORY OPERATION AND MAINTENANCE. DEVIATIONS FROM INDICATED ARRANGEMENTS ARE SUBJECT TO REVIEW AND APPROVAL BY NMPC, OR NMPC'S REPRESENTATIVE PRIOR TO INSTALLATION AND/OR OPERATION.
6. THE CONTRACTOR SHALL RESTORE ALL SURFACES DAMAGED OR DESTROYED AS A RESULT OF WORK PERFORMED UNDER THIS CONTRACT TO THEIR PRE-CONSTRUCTION CONDITION IN A TIMELY MANNER, IN ACCORDANCE WITH MATERIALS AND PERFORMANCE (M&P) SPECIFICATION SECTION 02207.
7. THE CONTRACTOR SHALL FURNISH AND PLACE PROPER GUARDS FOR PREVENTION OF ACCIDENTS, PROVIDE ALL SCAFFOLDING, SHIELDING, DUST/FUME PROTECTION, MECHANICAL/ELECTRICAL PROTECTION, SPECIAL GROUNDING, SAFETY RAILINGS, BARRIERS, OR OTHER SAFETY FEATURES, AS REQUIRED, AND DETAILED IN THE M&P SPECIFICATIONS.
8. THE CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS WITH CURRENT FIELD CHANGES MARKED THERE-ON AND SHALL DELIVER THESE DRAWINGS TO NMPC'S REPRESENTATIVE UPON COMPLETION OF CONSTRUCTION.
9. THE CONTRACTOR SHALL NOTIFY NMPC OR NMPC'S REPRESENTATIVE IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
10. CONTRACTOR SHALL OBTAIN ALL LOCAL (NON-ENVIRONMENTAL) PERMITS AND MAKE ARRANGEMENTS FOR LOCAL INSPECTIONS (AS NECESSARY).
11. CONTRACTOR SHALL FOLLOW ALL APPLICABLE CODES AND SAFETY STANDARDS DURING CONSTRUCTION INCLUDING THOSE SPECIFIED IN OSHA'S SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION (29 CFR 1900), AND THE CONTRACTOR'S HEALTH AND SAFETY PLAN.
12. RECOVERY WELL LOCATIONS ARE APPROXIMATE. RECOVERY WELLS NO. 1 AND NO. 2 WERE INSTALLED IN APRIL 2001 BY NMPC. THESE WELLS ARE CURRENTLY BEING MONITORED TO DETERMINE THEIR POTENTIAL FOR ENHANCED LNAPL RECOVERY. BASED UPON THE RESULTS OF THE MONITORING ACTIVITIES, THESE WELLS MAY BE USED FOR THE CONSTRUCTION OF THE ENHANCED AUTOMATIC LNAPL RECOVERY SYSTEMS, OR ALTERNATIVE NEW/EXISTING WELLS IN THE VICINITY OF EXISTING COREHOLES C-3/MW-8 AND C-4 MAY BE INSTALLED/MODIFIED BY NMPC.



GEOTEXTILE SPECIFICATIONS:

AMOCO 2006 OR AN APPROVED EQUIVALENT.

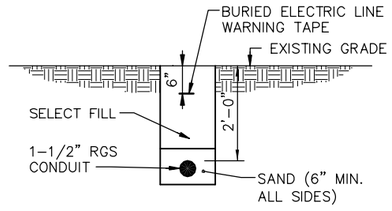
GRAVEL SPECIFICATIONS:

RUN-OF-CRUSHER HARD DURABLE LIMESTONE OR EQUAL HAVING THE FOLLOWING GRADATION BY WEIGHT:

% PASSING	SQUARE OPENING (INCHES)
100	1-1/2
90-100	1
65-80	1/2
40-60	1/4
0-10	#200 SIEVE

GRAVEL ACCESS ROAD DETAIL

NOT TO SCALE



NOTE:

SAND TO HAVE THE FOLLOWING GRADATION BY WEIGHT:

PERCENT PASSING	SIEVE
100	3/8 "
95-100	NO. 4
80-100	NO. 8
50-85	NO. 16
25-60	NO. 30
10-30	NO. 50
2-10	NO. 100

CONDUIT TRENCH DETAIL

NOT TO SCALE

L: ON=*, OFF=REF
P: PAGESET/CDL
9/11/01 SYR-54-DCC GMS JER
36417033/CONTRACT/36417G01.DWG

Graphic Scale
20' 0 20' 40'
1"=20'

No.	Date	Revisions	Init

Project Mgr. MCG
Designed by DRG
Drawn by DCC
Checked by DWH/DRG
Prof. Eng. DAVID W. HALE
PE License N.Y. 065423

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

NIAGARA MOHAWK POWER CORPORATION, M. WALLACE & SON, INC. SCRAPYARD • COBLESKILL, NEW YORK
REMEDIAL DESIGN

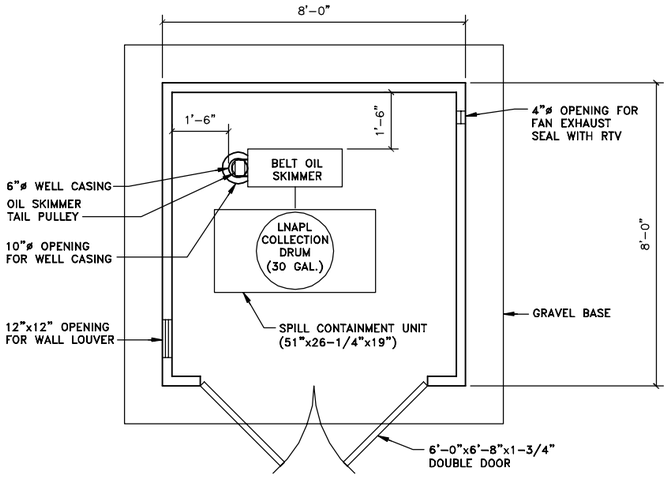
LNAPL RECOVERY SYSTEMS SITE PLAN AND DETAILS

GENERAL

File Number 364.17.01F
Date SEPTEMBER 2001

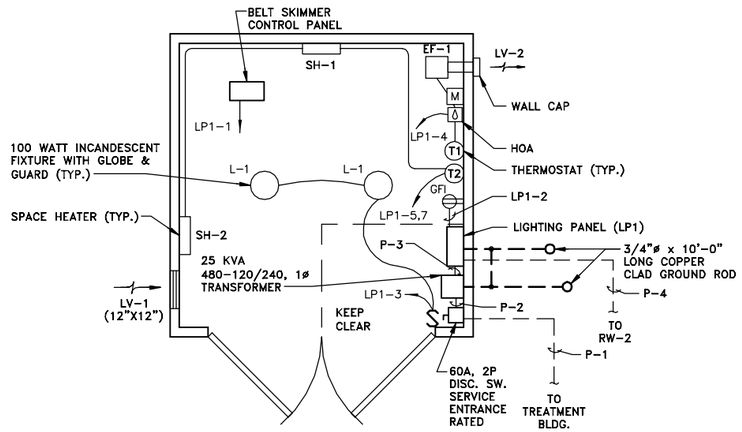
Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

1



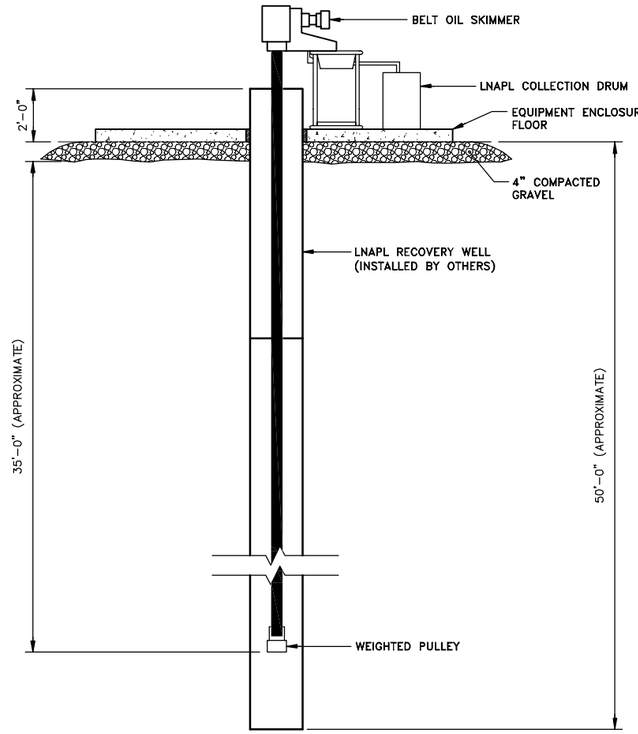
RECOVERY WELL NO. 1 & 2
EQUIPMENT ENCLOSURE FLOOR PLAN

SCALE: 1/2"=1'-0"



RECOVERY WELL NO. 1
ELECTRICAL PLAN

SCALE: 1/2"=1'-0"

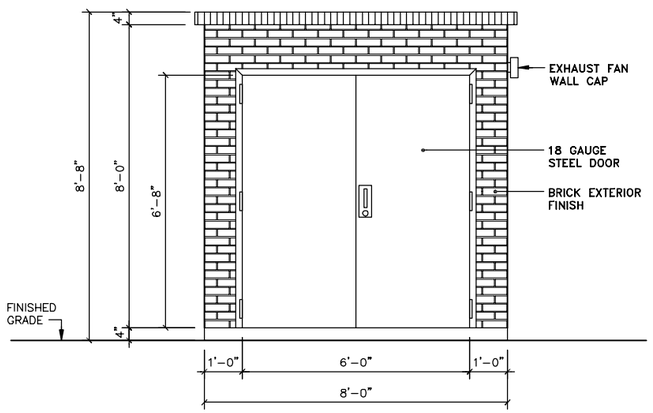


NOTES:

1. RECOVERY WELLS TO BE INSTALLED BY OTHERS PRIOR TO CONSTRUCTION OF THE LNAPL RECOVERY SYSTEMS.

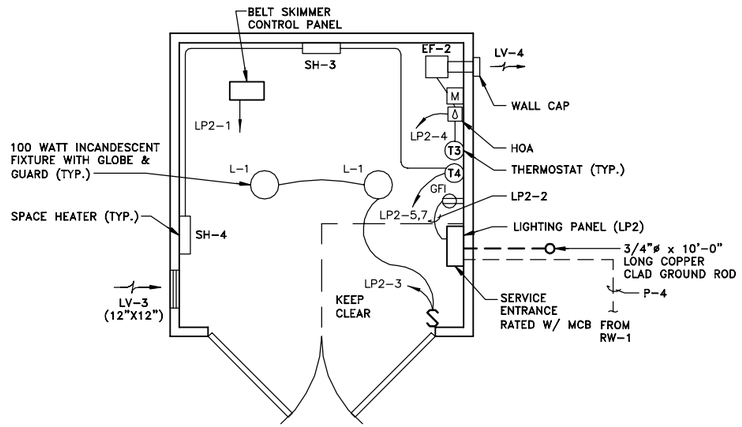
RECOVERY WELL DETAIL

NOT TO SCALE



RECOVERY WELL NO. 1 & 2
EQUIPMENT ENCLOSURE ELEVATION

SCALE: 1/2"=1'-0"



RECOVERY WELL NO. 2
ELECTRICAL PLAN

SCALE: 1/2"=1'-0"

GENERAL NOTES:

1. SEE DRAWING 3 FOR SPECIFICATIONS.
2. MOUNT ALL SPACE HEATERS 6" A.F.F.
3. MOUNT ALL T-STATS 5'-0" A.F.F.
4. MOUNT ALL SWITCHES AND RECEPTACLES MIN. 3'-0" A.F.F.
5. SEE SHEET 1 FOR ELECTRICAL SITE PLAN.

ELECTRICAL & HVAC LEGEND:

- NORMALLY OPEN CONTACT (N.O.)
- CIRCUIT BREAKER (C.B.)
- GROUND
- TRANSFORMER
- MOTOR OVERLOAD HEATER
- M — MANUAL MOTOR STARTER
- GFI — GROUND FAULT INTERUPTER RECEPTACLE
- L-1 — 100W INCANDESCENT LIGHT FIXTURE
- S — SINGLE POLE LIGHT SWITCH
- T — THERMOSTAT
- HOMERUN
- HOA — HAND-OFF-AUTOMATIC

L: ON=*, OFF=REF
P: PAGESET/CDL
9/11/01 SYR-54-DCC GMS JER
36417033/CONTRACT/36417G02.DWG

Graphic Scale
1/2"=1'-0" (2' 0 2' 4')

No.	Date	Revisions	Init

Project Mgr. MCG
Designed by DRG/ME
Drawn by DCC
Checked by DWH/DRG
Prof. Eng. DAVID W. HALE
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BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

NIAGARA MOHAWK POWER CORPORATION, M. WALLACE & SON, INC. SCRAPYARD • COBLESKILL, NEW YORK
REMEDIAL DESIGN

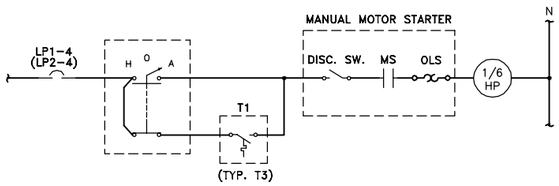
RECOVERY WELL PLANS, ELEVATION, AND DETAIL

GENERAL

File Number 364.17.02F

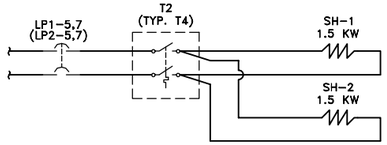
Date SEPTEMBER 2001

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120



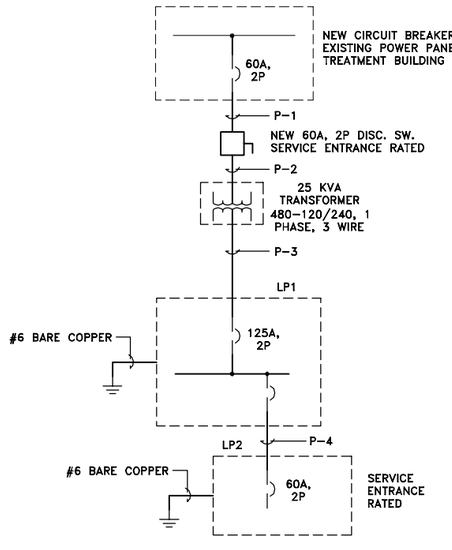
EXHAUST FAN EF-1

(TYPICAL FOR EF-2)
NOT TO SCALE



STRIP HEATER SH-1 & 2

(TYPICAL FOR SH-3 & 4)
NOT TO SCALE



ONE-LINE DIAGRAM

NOT TO SCALE

MECHANICAL SPECIFICATIONS:

LNAPL BELT SKIMMER

BELT OIL SKIMMER SHALL BE PETROXTRACTOR MODEL PX-A AS MANUFACTURED BY ABANAKI CORPORATION - OIL SKIMMER DIVISION WITH THE FOLLOWING:

- PX-A WITH TAIL WEIGHTED PULLEY, TAIL PULLEY SAFETY CABLE, PERFORATED HEAD PULLEY WITH SINGLE PHASE TEFC GEAR MOTOR
- 40' OF 1" WIDE OIL SKIMMING BELT (REACHES 35' DEEP)
- CERAMIC IMPREGNATED WIPER BLADES
- 4' MOUNTING STAND
- ON-OFF TIMER (WITH 1 HOUR INCREMENTS)
- PAD HEATERS FOR PX-A UNIT
- DRUM SHUT OFF SWITCH
- DRY RUN CONTACT FROM SKIMMER MOTOR

PRE-FABRICATED EQUIPMENT ENCLOSURES ⚠

PRE-FABRICATED ENCLOSURE SHALL BE OF THE FOLLOWING DIMENSIONS:

- RECOVERY WELLS NO. 1 & NO. 2 ENCLOSURES SHALL BE 8'-0" WIDE X 8'-0" LONG X 8'-0" HIGH

THE PRE-FABRICATED BUILDINGS SHALL BE EASI-SET PRECAST CONCRETE BUILDINGS FROM KISTNER CONCRETE PRODUCTS, INC. OF EAST PEMBROKE, NEW YORK COMPLETE WITH:

- 6'-0" WIDE, 18 GAUGE SECURITY DOOR WITH TAMPER PROOF HINGES, DEAD BOLT LOCKS
- AIR DUCT AND FLOOR PENETRATIONS AS SHOWN ON DRAWINGS
- RED BRICK EXTERIOR FINISH

SPILL CONTAINMENT UNIT

UNIT SHALL BE HEAVY-DUTY POLYETHYLENE CORROSION RESISTANT EAGLE HAZ-MAT SPILL CONTROL PALLET (51"x26-1/4"x19"), OR EQUAL, WITH 68 GALLON SPILL CAPACITY. ⚠

HVAC SPECIFICATIONS:

EF-1 & EF-2

CABINET EXHAUST FAN, 50 CFM @ 1/8" S.P., 120 VOLTS, SINGLE PHASE (0.8A), 30 WATTS, CARNES, VCDC005

SH-1 - SH-4

WALL MOUNTED SPACE HEATER, 1.5 KW, 240, SINGLE PHASE, CHROMALOX, TYPE H

LV-1 & LV-3

LOUVER, 12" X 12", RUSKIN, MODEL ELF211

LV-2 & LV-4

VENT LOUVER, 3" DIA., SEIHO, MODEL SFX

T1 & T3

THERMOSTAT, 120 VOLTS, SINGLE PHASE, HONEYWELL, MODEL T631A113

T2 & T4

THERMOSTAT, 240 VOLTS, SINGLE PHASE, HONEYWELL, MODEL T631A113

ELECTRICAL SPECIFICATIONS:

LP1

120/240 VAC, SINGLE PHASE, PANELBOARD, 225A BUS, 30 SPACE SURFACE MOUNTED, NEMA 4 ENCLOSURE, COVER, 125A MAIN, BRANCH BREAKERS AS SCHEDULED ON DRAWING, GENERAL ELECTRIC AQF 1302 AB, AB43 & AF43F, S

LP2

120/240 VAC, SINGLE PHASE PANELBOARD 100A BUS, 12 SPACE SURFACE MOUNTED, NEMA 4, ENCLOSURES, COVER, 60A MAIN, BRANCH BREAKERS AS SCHEDULED ON DRAWING, GENERAL ELECTRIC AQF 1121 AB, AB25 & AF25F, S

L-1

ENCLOSED AND GASKETED, CEILING MOUNTED, INCANDESCENT 120V WITH 100 WATT MEDIUM BASE LAMP, CLEAR GLOBE AND GUARD, GENERAL ELECTRIC H7115F3CDD

WIRE

600V, COPPER, 90øC DRY, 75øC WET, WITH PVC INSULATION AND NYLON JACKET, TYPE THHN/THWN

MANUAL MOTOR STARTER

MANUAL MOTOR STARTER, NEMA 4, SQUARE D TYPE KWIA CLASS 2510

SWITCHES

20A, 120V - 277V TOGGLE OPERATED SINGLE POLE. PASS & SEYMOUR LEGRAND MODEL 20ACI

GFI RECEPTACLE

20A GFI - PASS & SEYMOUR LEGRAND MODEL 2091-S

HOA

HEAVY-DUTY NON-ILLUMINATED SELECTOR SWITCH, 3 POSITION, GENERAL ELECTRIC CR104P MODEL SG34B91 WITH XN1BP070 NAME PLATE

CONDUIT (RGS)

RIGID GALVANIZED STEEL (RGS) TO BE USED OUTDOORS. ALLIED TUBE & CONDUIT CORPORATION, OR EQUAL.

CONDUIT (PVC)

POLYVINYL CHLORIDE (PVC) SCHEDULE 80, TO BE USED INDOORS, MINIMUM SIZE 3/4", SUPPORT EVERY 3 FEET. CARLON MODEL EPC-80 OR EQUAL

CIRCUIT BREAKER PANELBOARD - LP1								SCHEDULE			
LOCATION:			RECOVERY WELL NO. 1					FEED FROM		TREATMENT BUILDING	
MAIN BUS RATING:			225 AMPERES					120/240 VOLTS		1 PHASE, 3 WIRE	
MINIMUM SHORTCIRCUIT:			10,000 AMPERES					FEEDER CABLE		3 #1, 1 #6G, 1-1/2" C	
MAIN BREAKER TRIP:			125 AMPERES					SURFACE MTD		NEMA 4	
ESTIMATED CONNECTED LOAD:			9.17 KVA								
		C/B							C/B		
		AMPS/	LOAD					LOAD	AMPS/		
CIRCUIT	DESCRIPTION	POLES	TYPE	KVA	PH-A	PH-B	KVA	TYPE	POLES	DESCRIPTION	CIRCUIT
1	BELT SKIMMER	20/1P	MOTOR	1.176	1.356		0.180	RECPT	20/1P	RECEPTACLE	2
3	LIGHTS	20/1P	LIGHTS	0.200		0.230	0.030	MOTOR	20/1P	EXHAUST FAN	4
5	SPACE HEATERS	20A	HEAT	1.500	1.500				20A	SPARE	6
7	SPACE HEATERS	2P	HEAT	1.500		1.500			2P	SPARE	8
9	SUB-PANEL	60A	LP2	1.880	1.880				20/1P	SPARE	10
11	SUB-PANEL	2P	LP2	2.706		2.706			20/1P	SPARE	12
LOAD SUMMARY				8.962	4.736	4.436	0.210				

NOTE:

ALL CONDUCTORS TO BE #12 IN 3/4 INCH CONDUIT UNLESS OTHERWISE INDICATED

CIRCUIT BREAKER PANELBOARD - LP2								SCHEDULE			
LOCATION:			RECOVERY WELL NO. 2					FEED FROM		LP1	
MAIN BUS RATING:			100 AMPERES					120/240 VOLTS		1 PHASE, 3 WIRE	
MINIMUM SHORTCIRCUIT:			10,000 AMPERES					FEEDER CABLE		3 #6, 1 #8G, 1-1/2"C	
MAIN BREAKER TRIP:			60 AMPERES					SURFACE MTD		NEMA 4	
ESTIMATED CONNECTED LOAD:			4.586 KVA					SERVICE ENTRANCE RATED			
		C/B							C/B		
		AMPS/	LOAD					LOAD	AMPS/		
CIRCUIT	DESCRIPTION	POLES	TYPE	KVA	PH-A	PH-B	KVA	TYPE	POLES	DESCRIPTION	CIRCUIT
1	BELT SKIMMER	20/1P	MOTOR	1.176	1.356		0.180	RECPT	20/1P	RECEPTACLE	2
3	LIGHTS	20/1P	LIGHTS	0.200		0.230	0.030	MOTOR	20/1P	EXHAUST FAN	4
5	SPACE HEATERS	20A	HEAT	1.500	1.500				20A	SPARE	6
7	SPACE HEATERS	2P	HEAT	1.500		1.500			2P	SPARE	8
9	SPARE	20A							20/1P	SPARE	10
11	SPARE	2P							20/1P	SPARE	12
LOAD SUMMARY				4.376	1.88	1.730	0.210				

NOTE:

ALL CONDUCTORS TO BE #12 IN 3/4 INCH CONDUIT UNLESS OTHERWISE INDICATED

CONDUIT SCHEDULE		
CONDUIT NUMBER	SIZE AND NO. CONDUCTOR	SIZE CONDUIT
P-1	2 #4, 1 #8G	1-1/2" RGS
P-2	2 #4, 1 #8G	1-1/2" RGS
P-3	3 #1, 1 #6G	1-1/2" PVC
P-4	3 #6, 1 #8G	1-1/2" RGS

L: ON=*, OFF=REF
P: PAGESET/CDL
10/12/01 SYR-54-DCC JER LJP
36417033/CONTRACT/36417E01.DWG

Graphic Scale	No.	Date	Revisions	Init
	⚠	10/12/01	REVISED TEXT	

NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW

Project Mgr. MCG
Designed by DRG/ME
Drawn by DCC
Checked by DWH/DRG
Prof. Eng. DAVID W. HALE
PE License N.Y. 065423

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

NIAGARA MOHAWK POWER CORPORATION, M. WALLACE & SON, INC. SCRAPYARD • COBLESKILL, NEW YORK
REMEDIAL DESIGN

ONE-LINE DIAGRAM, DETAILS, SPECIFICATIONS, AND SCHEDULES

GENERAL

File Number 364.17.03F
Date SEPTEMBER 2001

Blasland, Bouck & Lee, Inc.
Corporate Headquarters
6723 Towpath Road
Syracuse, NY 13214
315-446-9120

3 ⚠

Attachments

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Attachment 1

Special Conditions

01701	NMPC and NMPC's Representative
01702	Protection and Restoration of Existing Utilities, Facilities, Structures, and Features
01703	Existing Conditions and Subsurface Information
01704	Storage of Equipment and Materials
01705	Lines, Grades, and Elevations
01706	Equivalent Products
01707	Emergency Calls
01708	Permits
01709	Noise and Dust Control
01710	Soil, Sediment, and Erosion Control
01711	Work Within Public Roadways
01712	Protection of the Environment
01713	Recordkeeping and Record Drawings
01704	Electrical Conduit Labeling
01715	Equipment Manufacturers' Manuals and Information
01716	Replacement of Property
01717	Contractor's Personnel
01718	Damage and Cleanup
01719	Protection, Security, and Maintenance of Work Area
01720	Maintenance and Protection of Traffic

SPECIAL CONDITIONS

01701 - NMPC AND NMPC'S REPRESENTATIVE

Niagara Mohawk Power Corporation (NMPC), 300 Erie Boulevard West, Syracuse, New York 13202, is a defendant identified in the Consent Decree (85-CV-219) executed on August 21, 2000 between the State of New York and NMPC requiring this work to be conducted. The *Remedial Design* was prepared by the Engineer retained by NMPC ("NMPC's Representative"), Blasland, Bouck & Lee, Inc., 6723 Towpath Road, P.O. Box 66, Syracuse, New York 13214; Telephone: 315-446-9120; Fax: 315-446-7485. NMPC's Representative will also perform field observation, air monitoring, and post-excavation verification sampling during construction activities.

01702 - PROTECTION AND RESTORATION OF EXISTING UTILITIES, FACILITIES, STRUCTURES, AND FEATURES

During the course of the work, it will be necessary to work adjacent to and/or across existing pipelines, utilities, structures, or equipment. The Contractor shall take all necessary precautions to protect existing facilities from damage. The Contractor shall, at his or her own cost and expense, sustain in their places and permanently protect from direct or indirect injury any and all utilities, structures, and property in the vicinity of his or her work (whether over or underground) or which appear within the trench or excavations, and the Contractor shall assume all costs and expenses for direct or indirect damage which may be occasioned by injury to any of them.

The Contractor shall exercise extreme caution not to interfere with or cause damage to any existing utilities, as specified elsewhere in this *Remedial Design*. The Contractor shall notify the Underground Facilities Protective Organization (UFPO) and the utility companies at least seventy-two (72) hours before construction is started adjacent to such utilities. The Contractor shall provide NMPC's Representative with necessary utility contact information to verify such notification has occurred. Failure to provide such proof shall be cause for automatic cessation of the work. The utilities shall be protected in a manner prescribed by the utility company.

Locations of utilities as shown on the Contract Drawings are approximate only. Other underground utilities and structures may exist, the location of which are presently unknown. It is the Contractor's responsibility to verify the exact location of utilities in the work area, through coordination with the appropriate utility companies and the property owner. Any reliance upon information made available by NMPC or NMPC's Representative shall be at the Contractor's risk. The Contractor shall notify NMPC's Representative immediately in the event of a conflict between proposed facility location/remedial area and that of existing utilities. No payment will be made to the Contractor for delays caused by the relocation of the existing utility or the determination of the proposed facility/remedial area realignment by NMPC's Representative if the Contractor has not performed the necessary activities (e.g., excavation) to locate the conflicting utilities.

Any existing utility that is damaged or broken during the construction operation shall be immediately reported to the respective utility company or property owner (as appropriate) so that arrangements for repair can be made. The Contractor shall not at any time operate or repair the facilities of the respective utility companies or property owner unless permission is received in writing from the respective utility or property owner (as appropriate) and filed with NMPC and NMPC's Representative.

SPECIAL CONDITIONS

The Contractor shall coordinate with the proper utility company or property owner (as appropriate) whenever utility relocations are necessary. Agreement shall be made between the Contractor and the utility company or property owner concerning scheduling of relocation work and payment for such work. The Contractor shall not perform the utility relocation work unless permission is received in writing, from the utility company or property owner, and filed with NMPC and NMPC's Representative.

The Contractor shall protect adjacent and other property from damage and shall arrange for the repair, restore, or replacement, to the satisfaction of NMPC and NMPC's Representative, of any and all existing facilities, structures, equipment, surfaces, finishes or other features, including existing monitoring wells and coreholes, which may become damaged or disturbed as a result of the work of this *Remedial Design* or the activity of his or her personnel. All such repair or replacement shall be done in accordance with the applicable specifications, and shall be at least equal to the pre-construction conditions.

01703 - EXISTING CONDITIONS AND SUBSURFACE INFORMATION

The Contractor is required to visit the site prior to submitting a Bid to satisfy himself/herself regarding all existing conditions.

It is the Contractor's responsibility to verify the exact nature, character, quality and quantity of all conditions to be encountered. Any reliance upon information made available by NMPC or NMPC's Representative shall be at the Contractor's risk. The Contractor agrees that he or she shall neither have nor assert against NMPC or NMPC's Representative any claim for damages for extra work or otherwise or for relief from any obligation of this *Remedial Design* based upon the failure by NMPC or NMPC's Representative to obtain or to furnish additional drawings or information in NMPC's or the NMPC Representative's possession or based upon any inadequacy or inaccuracy of the drawings or information furnished; provided, however, that the Contractor may be entitled to an adjustment in the contract price under the circumstances and to the extent provided.

All bidding Contractors will be permitted to inspect the site of the work of this *Remedial Design*. It should be understood that the party or parties inspecting the site must assume all risks and liabilities contingent thereto. All parties wishing to visit the site must request permission in advance from NMPC/NMPC's Representative and coordinate such a visit with NMPC/NMPC's Representative.

It shall be the Contractor's obligation to satisfy himself/herself to the nature, character, quality and quantity of subsurface conditions likely to be encountered. Any reliance upon the subsurface information made available by NMPC or NMPC's Representative shall be at the Contractor's risk.

The Contractor agrees that he or she shall neither have nor assert against NMPC or NMPC's Representative any claim for damages for extra work or otherwise or for relief from any obligation of this *Remedial Design* based upon the failure by NMPC or NMPC's Representative to obtain or to furnish additional subsurface information or to furnish all subsurface information in NMPC's or the NMPC Representative's possession or based upon any inadequacy or inaccuracy of the information furnished.

Certain subsurface information may be shown on separate sheets or otherwise made available by NMPC or NMPC's Representative to Bidders, Contractors, and other interested parties. Neither such information nor the documents on which it may be shown shall be considered a part of this *Remedial Design*, it being understood that such information is made available only as a convenience, without express or implied representation, assurance, or guarantee that the information is adequate, complete, or correct, or that it represents a true picture of the subsurface conditions to be encountered, or that all

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pertinent subsurface information in the possession of NMPC or NMPC's Representative has been furnished. The Contractor must interpret such information according to his or her own judgement. Subsurface and other site-related information in the possession of NMPC's Representative may be examined by making an appointment a minimum of forty-eight (48) hours in advance.

It shall be the obligation of the Contractor to inquire of NMPC and NMPC's Representative whether pertinent subsurface information has been obtained by NMPC with respect to the work of this *Remedial Design*. Any Bidder will be permitted to make test borings/pits and other investigation if it deems necessary at the site of work if it so desires, subject to its first obtaining written approval from NMPC. It is understood that the party or parties receiving such approval must assume all risks and liabilities contingent thereto.

01704 - STORAGE OF EQUIPMENT AND MATERIALS

The Contractor shall provide temporary storage facilities for all materials and equipment delivered to the site and required to complete the work of this *Remedial Design*. All temporary storage facilities at the site are subject to the approval of NMPC and NMPC's Representative.

01705 - LINES, GRADES, AND ELEVATIONS

The Contractor (or a licensed surveyor retained by the Contractor) shall develop and make all detail surveys as specified in the *Remedial Design* and necessary to complete the work. The Contractor shall set and maintain all necessary intermediate points, lines, grades and elevations, and provide slope stakes, offset stakes, batter boards, and other such items at his or her own expense. Where the Contractor uses the laser for control, he or she shall periodically check the grade and alignment during each day's operation.

The accuracy of the survey work is the sole responsibility of the Contractor.

01706 - EQUIVALENT PRODUCTS

There shall be no acceptance given by NMPC's Representative during the bidding period or prior to award of contracts for any names or equal equipment systems.

Whenever a product is specified or described in this *Remedial Design* by reference of name, trade name, make or catalog number of a particular manufacturer, supplier, fabricator or distributor, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of the manufacturers, fabricators, suppliers, or distributors may be accepted by NMPC's Representative if sufficient information is submitted by the Contractor to allow NMPC's Representative to determine that the material or equipment proposed is equivalent to that named. The procedure for review by NMPC's Representative shall be as described below.

Requests for review of "or equal" items of material and equipment will not be accepted by NMPC's Representative from anyone other than the Contractor. If the Contractor wishes to furnish or use "or equal" items of material or equipment, the Contractor shall make written application to NMPC's Representative for acceptance thereof.

Applications for use of any "or equal" items shall be submitted by the Contractor to NMPC's Representative at the pre-construction meeting. No applications will be considered thereafter unless the

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Contractor produces satisfactory evidence that the specified item is no longer manufactured or is unavailable for the project.

The Contractor's written application shall include the following:

1. A statement that a clear equality of the "or equal" item exists, supported by certified test results, performance data and other evidence to supplement the requirements stated herein.

2. The application shall also state the monetary credit to NMPC which will be allowed if the "or equal" item is accepted.

3. Contractor shall certify that the proposed "or equal" item will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified.

4. The application will state whether or not acceptance of the "or equal" item for use in the work will require a change in the Contract Drawings or Specifications to adapt the design to the "or equal" item and whether or not incorporation or use of the "or equal" item in connection with the work is subject to payment of any license fee or royalty.

5. If the "or equal" item requires modifications to the structures, piping, layouts, etc., detailed on the Contract Drawings, the application shall also include details of proposed modifications necessary to accommodate the "or equal" item. Such details shall constitute scaled layouts, dimensions and other pertinent information to enable NMPC's Representative to accurately assess the entire application. If the "or equal" item and proposed modifications are accepted, the Contractor, at no additional cost to NMPC, shall do all work necessary to make such modifications and absorb all costs of any related changes imposed on other Contractors. Final details of such modifications shall then be prepared and submitted for review by the Contractor.

6. All variations of the proposed "or equal" item from that specified shall be identified in the application and available maintenance, repair and replacement services shall be indicated.

7. The application shall also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such "or equal" item, including costs of redesign and claims of other Contractors affected by the resulting change, all of which shall be considered by NMPC's Representative in evaluating the proposed "or equal" item.

In order to aid NMPC's Representative in determining the equality of a proposed "or equal" item (when compared to the item actually specified), the Contractor shall arrange for the performance of any tests requested by NMPC's Representative. The nature, extent, testing and supervision of such tests including engineering costs, shall be borne by the Contractor. Certified test results shall be mailed directly to NMPC's Representative for all tests requested. NMPC's Representative may require the Contractor to furnish at the Contractor's expense additional data about the proposed "or equal" item.

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NMPC's Representative will be the sole judge of acceptability, and no "or equal" item will be ordered or installed without NMPC's Representative's prior written acceptance and NMPC's consent. NMPC may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any "or equal" item.

NMPC's Representative will record time required by NMPC's Representative and the NMPC Representative's consultants in evaluating "or equal" items proposed by the Contractor and in making changes in the Contract Drawings or Specifications occasioned thereby. If NMPC's Representative determines the proposed "or equal" item is not "or equal", the Contractor shall reimburse NMPC for the charges of NMPC's Representative and NMPC's Representative's consultants for evaluating the proposed "or equal" item.

01707 - EMERGENCY CALLS

The Contractor shall maintain telephone service 24 hours a day, 7 days a week to responsible personnel who shall be in a position to dispatch personnel and machinery to the project area in the event of an emergency and to clear conditions creating any hazard to life, limb, or property. The Contractor shall provide a list to NMPC and NMPC's Representative of at least three such telephone numbers.

01708 - PERMITS

NMPC will be responsible for obtaining all environmental permits associated with federal/state regulations, if necessary. The Contractor, however, will be obligated to meet all substantial requirements of applicable environmental permits and/or regulations, whether or not they are actually obtained. The Contractor will obtain all non-environmental permits (if any) that may be required.

01709 - NOISE AND DUST CONTROL

It shall be the responsibility of the Contractor to take adequate measures for controlling dust produced by excavation, backfilling, loading, grading, or other means. The use of calcium chloride or petroleum-based materials for dust control is prohibited. Requirements for dust control, as well as dust action levels, are specified in the *Remedial Design*.

It shall be the responsibility of the Contractor to take adequate measures for keeping noise levels as produced by construction equipment to safe and tolerable limits as set forth by the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the New York State Industrial Code Guidelines and Ordinances, and all local codes and ordinances. All construction equipment presenting a potential noise nuisance shall be provided with noise muffling devices. In addition, work shall be restricted to normal working hours (8:00 a.m. to 6:00 p.m.), unless otherwise specified or directed.

01710 – SOIL, SEDIMENT, AND EROSION CONTROL

Erosion Control

Erosion control procedures shall be utilized on the site as required. Erosion control shall occur as required prior to any site work. At a minimum, erosion control measures shall be performed in accordance with the requirements of M&P Specification Section 02260 entitled Sediment and Erosion Control.

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Sediment Control

Temporary silt fence, erosion control mats, and/or hay bales shall be used where necessary to protect vegetation and to achieve environmental objectives. At a minimum, sediment control measures shall be performed in accordance with the requirements of M&P Specification Section 02260 entitled Sediment and Erosion Control.

01711 - WORK WITHIN PUBLIC ROADWAYS

The use and protection of all public roadways involved in the implementation of this *Remedial Design* shall be in accordance with all applicable state, county, and local requirements. All transportation of equipment and materials along public roadways shall be preceded by the Contractor obtaining all necessary road and bridge crossing permits from the appropriate city/town/county. Any damages to existing roadways or bridges shall be repaired (to its original or better condition) by the Contractor, at no expense to NMPC.

01712 - PROTECTION OF THE ENVIRONMENT

Construction procedures shall include protection of the environment in accordance with all pertinent federal, state, and local regulations. Construction procedures that are prohibited in the undertaking of work associated with this *Remedial Design* include, but are not limited to:

1. Dumping of spoil material into any stream corridor, any wetlands (as defined by appropriate NYS regulations), any surface waters, or at unspecified locations.

2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, or surface waters.

3. Pumping of silt-laden water from trenches or other excavations into any surface waters, and stream corridors, or any wetlands.

4. Damaging vegetation beyond the extent necessary for construction of the facilities.

5. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.

6. Permanent or unspecified alteration of the flow line of the waterway.

7. Open burning of project debris.

01713 - RECORDKEEPING AND RECORD DRAWINGS

During construction, the Contractor shall keep one set of the Contract Drawings at the project site on which he or she shall show all changes in, or directly associated with this *Remedial Design*. Such changes shall be neatly and clearly marked on the drawings using colored ink or pencil, and the entire set of drawings shall be kept current on a day-to-day basis in concert with the progress of the work. Where applicable, the change marked on a drawing is to carry the notation "per Change Order No. ___", or similar reference that cites the reason for the change. The day to day construction drawings (record drawings) shall be made available to NMPC's Representative and/or NMPC for review upon request.

SPECIAL CONDITIONS

The following items are examples of some of the types of changes that could occur and are to be recorded by the Contractor.

1. Change in location of project components
2. Change in elevation of project components.
3. Change in materials, such as backfill.
4. Change in topographic contours of finished earth surfaces.
5. Change in elevation of finished grades.
6. Additions to project.
7. Elimination of a project component.
8. Relocation of existing underground utilities made necessary because of interference with project components.
9. Unforeseen modifications made to existing structures made necessary by requirements of the work.
10. Relocation of equipment.

In addition, the record drawings shall show the precise as-built locations of all buried, imbedded, or concealed features installed by the Contractor.

NMPC retains the right to withhold a portion of progress payments to the Contractor if record drawings are not kept current in accordance with this section.

Upon substantial completion of the work associated with this *Remedial Design*, and as a condition of reduction of retainage, the Contractor shall deliver one (1) complete, accurate, and legible set of record drawings to NMPC's Representative for transmittal by NMPC's Representative to NMPC.

01714 – ELECTRICAL CONDUIT LABELING

All electrical conduit, including rigid conduit, flexible conduit, plastic coated conduit, and electrical metallic tubing (EMT), shall be field labeled with the appropriate conduit designation or identification. Labels shall be placed at each end of conduit run, at any and all intermediate junction boxes, panels, fixtures, enclosures or other devices, and at the point where conduit emerges from concealment, burial, or embedment. In unfurnished spaces or where conduit is not to be painted and exposed, the labeling shall be accomplished with indelible marker pen or paint, neatly hand lettered on the exterior surface of the conduit so that the label is readily visible and readable. Where conduit is not exposed, the conduit shall be labeled using neatly hand lettered; non-metallic tags securely attached on the conduit inside the panel box to which the conduit is connected. In finished spaces where conduit is exposed or where conduit is to be painted, the conduit shall be labeled using embossed or stamped metal (aluminum or brass) bands, at least ½-inch wide, rigidly and permanently attached to the exterior surface of the conduit so that the label is readily visible and readable.

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01715 - EQUIPMENT MANUFACTURERS' MANUALS AND INFORMATION

All equipment, devices, or materials furnished by the Contractor as a part of the work associated with this *Remedial Design* shall be accompanied by all information, instructions and data necessary for the proper and complete care, operation, maintenance, and repair of the equipment, device, or material by NMPC's personnel or representatives. The required information, instructions, and data shall be prepared and compiled by the manufacturer of the equipment, device, or material and shall hereinafter be referred to collectively as "equipment manuals."

In addition to any specific requirements of other sections of the *Remedial Design*, equipment manuals shall be required for any and all items containing moving parts, electric or electronic wiring or components, pneumatic or hydraulic devices or components, or requiring regular or special maintenance, cleaning, or lubrication. In addition to major items of equipment, this requirement for submission of equipment manuals is intended to also apply to such items as locksets; doors; finishes; and electrical and lighting system components, fixtures, and accessories.

Each equipment manual shall clearly and specifically identify the equipment or item that is the subject of the manual, including, as applicable, the model name and number, size, serial number(s), and optional features or accessories actually included with the furnished equipment. Each equipment manual shall also include the following kinds of information, as applicable to the item that is the subject of the manual:

- Table of contents;
- Theory of operation, functional diagrams;
- Design and operating specifications, criteria;
- Recommended installation arrangement, locations, wiring, criteria, procedure, etc.;
- Normal and emergency operating instructions, procedures, and sequences for each possible mode of operation;
- Normal operating parameters, indications, settings, adjustments, voltages, currents, etc.;
- Troubleshooting procedures;
- Preventative or routine maintenance requirements or recommendations;
- Lubrication schedules, including lube points, frequency, quantity, type, and brand name of recommended lubricants;
- Parts layout, identification, assembly diagrams, including exploded views with parts referenced by name and/or number;
- Parts lists of each assembly and subassembly showing part name, number, size, composition, and quantity required, down to discrete components;
- Recommended spare parts stocking lists;
- Names, addresses, and telephone numbers of factory authorized or recommended service representatives and parts suppliers;
- Major overhaul or repair procedures including diagrams, measurements, clearances, tolerances, adjustment settings, alignment procedures, torque specs, etc.;
- Wiring diagrams and schematics;
- Elementary control diagrams;
- One-line diagrams;
- Interconnection data or diagrams for factory wired components;
- Alignment and calibration procedures, including original or factory settings and data;

SPECIAL CONDITIONS

- Recommended or required special tools and maintenance, alignment, calibration, or safety equipment;
- Care and cleaning of finishes and paints used, colors, types;
- Any other information necessary or recommended for the complete and proper operation, maintenance and repair of the equipment by NMPC's personnel; and
- Where an item of equipment includes components or subassemblies manufactured by a company other than the equipment manufacturer, all pertinent information for the subassemblies shall be included in the equipment manual prepared and compiled by the equipment manufacturer.

Information contained in an equipment manual that is not applicable to the specific item furnished shall be clearly lined out or obliterated.

The Contractor is wholly responsible for obtaining acceptable equipment manuals from the equipment manufacturers and submitting them to NMPC's Representative. Four copies of each equipment manual shall be submitted to NMPC's Representative by the Contractor; three of which shall be transmitted to NMPC by NMPC's Representative. In order to be acceptable, each copy of each equipment manual must be complete, as specified herein, and must be easily legible and clearly reproduced.

Over and above and in addition to any other retainages provided for in the Contract, 10 percent of the value of equipment, devices, or materials requiring equipment manuals shall be retained from payments otherwise due the Contractor until acceptable equipment manuals for the applicable items are received by NMPC. For the purposes of applying this retainage, equipment, device, or material values shall be determined from actual invoices presented by the Contractor to NMPC's Representative, or, in the absence of actual invoices, by an estimate of fair and reasonable value determined by NMPC's Representative.

01716 - REPLACEMENT OF PROPERTY

The Contractor shall replace all culverts, pavements, driveways, shrubs, lawns, fences, and any other property either public or private which are damaged as a result of the work of this *Remedial Design*. All such replacement shall be made according to the applicable specifications and no extra payment will be made for such work. If applicable specifications do not address a replacement item, at a minimum, the Contractor will replace in kind, any property or items damaged unless otherwise directed by NMPC, or NMPC's Representative.

01717 - CONTRACTOR'S PERSONNEL

The Contractor shall be solely responsible for the supervision, conduct, and safety of his or her personnel. The Contractor shall restrict his or her personnel to only those areas of the site necessary for the performance of the work of this *Remedial Design*. The Contractor shall be solely responsible for any damage or disruption caused by his or her personnel. If applicable specifications do not address a replacement item, at a minimum, the contractor will replace in kind, any property or items damaged unless otherwise directed by NMPC or NMPC's Representative.

01718 - DAMAGE AND CLEANUP

The Contractor shall be responsible for repairing any damage to existing facilities, equipment, surfaces, or finishes caused by or resulting from his or her operation, or the activity of his or her personnel.

SPECIAL CONDITIONS

The Contractor shall be responsible for clean-up and removal from the site of any and all rubbish and debris resulting from his or her operation, unless specified otherwise herein or directed by NMPC or NMPC's Representative.

01719 - PROTECTION, SECURITY, AND MAINTENANCE OF WORK AREA

The Contractor shall be responsible for protecting and securing the work area from trespass, unauthorized entry, malicious mischief, and vandalism, and shall erect and maintain fences, lights, barricades, signs or other devices as necessary to warn the public of hazards and secure the work area from accidental or unauthorized entry.

The Contractor shall maintain the work area in a safe, neat and orderly condition and shall promptly remove on a regular basis and at his or her expense all rubbish and debris resulting from his or her operation, unless specified herein or otherwise directed by NMPC or NMPC's Representative. Prior to removal, rubbish shall be placed and stored in approved containers, such as "dumpsters", provided by the Contractor. Property owner's facilities shall not be used, unless otherwise directed by NMPC or NMPC's Representative. On-site burning or burying of rubbish will not be permitted.

01720 - MAINTENANCE AND PROTECTION OF TRAFFIC

The Contractor shall be responsible for providing all necessary means and methods to maintain safe and orderly vehicular and pedestrian travel through and around the work area. The Contractor shall provide flagmen, lights, signs, barricades, detours, temporary roadways or walkways or other devices or facilities as required by the owner of the roadway on which travel may be obstructed as the result of the Contractor's operations. At a minimum, all traffic warning and control methods and devices shall be designed, constructed, placed and installed in accordance with the New York State Department of Transportation (NYSDOT) *Manual of Uniform Traffic Control Devices*, current edition.

Whether or not a traffic maintenance plan is specified, the Contractor may be required to meet with appropriate officials to develop or modify a plan, and any such plan shall be implemented at the Contractor's expense. Local police and emergency services and school dispatchers shall be notified by the Contractor prior to each day's operations (as appropriate) if such operations will disrupt traffic in any manner.

Any interruptions of access to public or private property shall be coordinated with NMPC's Representative and shall be of absolute minimum essential duration. If required by the property owner, the Contractor shall provide alternate means of access, at no additional cost.

Attachment 2

Materials and Performance Specification Sections

02201	Rock Removal
02205	Fill Materials
02207	Restoration of Surfaces
02208	Clearing
02220	Earthwork
02260	Sediment and Erosion Control
02270	Geotextile
02821	Topsoil and Seeding
03400	Precast Concrete Structures
15500	Heating and Ventilation - General
16101	Electrical - General

MATERIALS AND PERFORMANCE - SECTION 02201

ROCK REMOVAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All labor, material, and equipment necessary to remove and dispose of rock encountered in excavations, as required to complete the work.

2. Rock removal shall be accomplished as specified herein, to the widths and depths as specified or as directed by NMPC's Representative, including the loosening, removing, transporting, storing, and disposal of all rock materials as defined herein and in M&P Specification Section 02220 entitled Earthwork.

B. Work Specified Elsewhere

1. M&P Specification Section 02220 Earthwork
2. M&P Specification Section 02205 Fill Materials

1.02 SUBMITTAL AND RECORD REQUIREMENTS

A. Before any rock removal operations begin, the Contractor shall obtain all permits and licenses required. In addition, the Contractor shall submit to NMPC's Representative all data listed herein.

B. Pre-Removal Property Inspection: Reports on adjacent properties shall be submitted prior to beginning rock removal work. Bridges, paved roads, dams and buildings shall be considered a "property" subject to such survey.

C. Blasting Notice: The Contractor shall give written notice to NMPC's Representative and NMPC of his or her intention to blast at least five working days in advance of the detonation.

D. Blasting Records: The Contractor shall submit a record of each blast no later than one working day after detonation. The record shall include the following information:

1. Number, location, diameter, and depth of drill holes shown on a plan drawn to scale.

2. Type and grade of explosive, size of cartridge and weight of explosive in each hole.

3. Total amount of explosives in the blast and maximum pounds of explosive per delay interval.

4. Delay arrangement scheme showing delay interval for each hole. Type and brand of delays should also be shown.

5. Date and exact firing time of each blast.

MATERIALS AND PERFORMANCE - SECTION 02201

ROCK REMOVAL

6. Weather conditions at firing time.

7. Name of the responsible person in charge of loading and firing and the blaster's permit number.

8. Signature and title of person making record entries.

E. Blasting Monitoring Records: The Contractor shall submit all vibration and air overpressure monitoring records for each blast no later than one working day after the blast. The records shall include the following:

1. Strip charts of peak particle velocity and air overpressure.

2. Summary of the maximum peak particle velocity and air overpressure, including the identification of the blast.

3. Interpretation of the monitoring records.

4. Signature and title of the person in charge of monitoring.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Rock removal may be carried out using explosive techniques except when conditions require that non-explosive means be used. Selection of any rock removal method will generally be at the Contractor's option, however, the method used shall be subject to all restrictions by outside agencies, utilities, and municipalities for protection of adjacent property or facilities.

3.02 PRE-REMOVAL PROPERTY SURVEYS

A. Before any rock removal will be allowed to commence, the Contractor shall make an in-depth inspection of all properties within a minimum distance of 100 feet of any part of the rock removal area to note structure interior and exterior condition, including foundation walls, sidewalks, pools, and the like. The inspection and written report shall be conducted by a firm or individual experienced in this type of work.

B. There is no separate payment for this work; all costs shall be included in the applicable bid items. A copy of the report, when it is completed, covering each property inspected, shall be delivered to NMPC's Representative. Rock removal operations may not begin until such reports are approved.

MATERIALS AND PERFORMANCE - SECTION 02201

ROCK REMOVAL

3.03 EXPLOSIVE ROCK REMOVAL

A. The Contractor shall employ only experienced supervisors and workmen in the handling, loading, and firing of the explosives. The Contractor's attention is directed to the requirements of Industrial Code Rule 39 of the State of New York, Department of Labor, Board of Standards and Appeals, and the applicable sections of the labor law which, together with the conditions indicated herein, shall provide for the possession, handling, storage, and transportation of all explosives used at the site.

B. Handling and blasting shall be in accordance with all Federal, State and local laws, rules and regulations relating to the possession, handling, storage, and transportation and use of explosives and all applicable fire codes.

C. Charges shall be of such size that the excavation will not be unduly large and shall be so arranged and time that adjacent rock, upon or against which pipelines or structures are to be built, will not be shattered.

D. Blasting shall only be permitted where excavation sides are at least 20 feet away from underground structures or utilities. All existing pipes or structures exposed during excavation shall be adequately protected from damage before proceeding with the blasting. All blasts in open cut shall be properly covered and adequately protected with blasting mats.

E. Monitoring of vibration and air overpressure produced by the Contractor's blasting operations shall be performed by an independent consultant retained by the Contractor at his or her own expense. Each detonation shall be monitored in at least two locations. Additional locations shall be monitored if required.

F. Blasting procedures and explosive charges shall be designed so that vibration and air overpressure at existing structures do not exceed the allowable values listed below:

1. Vibrations: The peak particle velocity as measured by a 3-component seismograph shall not exceed 1.0 inch per second at any adjacent habitable buildings or structures. The peak particle velocity shall not exceed 2.0 inches per second elsewhere.

2. Air overpressure: Air overpressure shall not exceed 130 dB (A).

G. Any injury or damage to the work or to existing pipes, facilities, or other structures resulting from explosive rock removal shall be repaired or rebuilt by the Contractor at his or her expense. Whenever blasting may damage adjacent rock, pipes, facilities, or structures, blasting shall be discontinued and the rock removed by other methods. No separate payment will be made for this change in methods.

H. At no time shall an excessive amount of explosives be kept at the site of the work or exceed amounts needed for five (5) working days. Such explosives shall be stored, handled, and used in conformity with any and all applicable laws, regulations, and codes. Accurate daily records shall be kept showing the amounts of explosives on hand, both at the site and at any storage magazine, the quantities received and issued, and the purpose for which issued.

MATERIALS AND PERFORMANCE - SECTION 02201

ROCK REMOVAL

I. The Contractor shall be responsible for any damage or injury to any persons, property, or structures as a result of his or her handling, storage, or use of explosives. Blasting caps, detonating primers and primed cartridges shall not be stored in the same magazines with other explosives. Magazines to be used for storage of explosives shall be as specified in the National Fire Code, Chapter 6. Magazines are to be kept locked except when being inspected or when explosives are being placed therein or being removed therefrom.

3.04 NON-EXPLOSIVE DRILLING/SPLITTING/ABRASION

A. Rock removal carried out using drilling, splitting, or abrasion techniques shall generally be carried out to the lines and grades required and in a manner such to protect and preserve adjacent pipes, facilities, and structures. Protection for adjacent facilities shall be provided when required, and methods used must be such method and scale such that damage to all adjacent facilities is prevented. Damage resulting from removal operations shall be repaired or rebuilt by the Contractor at his or her own expense.

B. Adequate records of rock removal by these methods shall be kept in accordance with provisions specified earlier in this Section.

3.05 ROCK CLEARANCE

A. In Trenches

1. Ledge rock, boulders, and large stones shall be removed from the sides and bottom of the trench to provide clearance for the specified embedment joint or appurtenance, but in no instance shall the clearance around electrical conduit be less than 6-inches.

B. At Structures

1. Concrete for structures shall be placed directly on the rock and the excavation shall be only to the elevations and grades shown on the Contract Drawings.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02205

FILL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Fill materials shall be used as specified elsewhere in this *Remedial Design* or as directed by NMPC or NMPC's Representative.

B. Related Work Specified Elsewhere

1. Earthwork (M&P Specification Section 02220)
2. Restoration of Surfaces (M&P Specification Section 02207)

C. Definitions

1. Fill Materials

a. Any soil materials such as clay, sand, and/or silt which is suitable for use as backfill material (as determined by NMPC's Representative) and is free from all roots, sticks, stumps, brush, and foreign objects.

PART 2 - PRODUCTS

2.01 SUBMITTALS

A. The name and location of each source and type of fill material proposed by the Contractor.

B. As required, the Contractor shall submit to NMPC's Representative for review and acceptance the following laboratory tests which will be performed at the Contractor's expense by an independent testing laboratory:

- Grain Size Analysis (ASTM D422 and 2217);
- Hydrometer Analysis (ASTM D422); and
- Atterberg Limits (ASTM D4318) prior to usage of select fill materials at the site.

Additional testing may be required by the Contractor on each fill material as determined by NMPC and NMPC's Representative.

C. The Contractor shall submit to NMPC's Representative for review and acceptance information to be obtained at the Contractor's expense which verifies that all fill material does not contain detectable levels of target compound list organic chemical contaminants, and has metals concentrations consistent with

background or the levels presented in NYSDEC TAGM #4046, most current version.

PART 3 - EXECUTION

3.01 GENERAL

A. Fill material as specified or directed for backfilling activities shall be placed in accordance with the *Remedial Design*, including the Contract Drawings and M&P Specification Section 02220 entitled Earthwork.

B. Materials displaced through the use of the above materials shall be wasted or disposed of by the Contractor as detailed in the *Remedial Design* and the cost of such disposal shall be included, as appropriate, in the Contractor's bid.

C. Any settlements in the finished work shall be rebackfilled and regraded by the Contractor at his or her cost and expense.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02207

RESTORATION OF SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All types of surfaces, sidewalks, curbs, gutters, culverts and other features disturbed, damaged or destroyed during the performance of the work under or as a result of the operations of the Contractor, shall be restored and maintained, as specified herein, or as directed by NMPC or NMPC's Representative.

2. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to or better than the condition of each before the work began, as approved by NMPC or NMPC's Representative.

B. Related Work Specified Elsewhere

1. Earthwork (M&P Specification Section 02220)
2. Topsoil and Seeding (M&P Specification Section 02821)

1.02 SUBMITTALS

A. A schedule of restoration operations shall be submitted by the Contractor for review.

1.03 SCHEDULE OF RESTORATION

A. After an accepted schedule has been agreed upon, it shall be adhered to unless otherwise revised with the approval of NMPC or NMPC's Representative.

B. In general, permanent restoration of paved surfaces will not be permitted until six month's time has elapsed after excavations have been completely backfilled as specified. A greater length of time, but not more than nine months may be allowed to elapse before permanent restoration of street surfaces is undertaken, if additional time is required for shrinkage and settlement of the backfill.

C. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the Contractor of responsibility to repair damages by settlement or other failures.

MATERIALS AND PERFORMANCE – SECTION 02207

RESTORATION OF SURFACES

PART 2 - EXECUTION

2.01 TEMPORARY PAVEMENT

A. Immediately upon completion of refilling of the excavation, the Contractor shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks and other traveled places where the original surface has been disturbed as a result of his or her operations.

B. The Contractor shall place temporary paving as soon as the excavations have been backfilled. The Contractor is to excavate, fill, grade, and compact the subgrade to a smooth, stable condition prior to placing of the temporary paving. The temporary paving is to match the slope, grade and alignment of the original pavement. The Contractor shall maintain the temporary paving in a satisfactory manner, free from depressions and holes, matching the elevation of the adjacent paving until its removal is required for the installation of permanent pavement. The temporary paving will be Type P: Asphalt Concrete, described as follows:

Type P: Asphalt Concrete

1. From May through October, or when local blacktop plants are operating, the temporary paving shall be New York State Department of Transportation (NYSDOT) Type 3 Asphalt Concrete Binder plant mix, 2-inch compacted thickness. When temporary pavements are to be maintained through a winter season then a 4-inch compacted thickness shall be placed.

2. From November through April, or when local blacktop plants are not operating, the cold-mix bituminous surfacing shall be NYSDOT Maintenance Specifications 15.403.2001, placed to a 4-inch compacted thickness.

   Compaction of the temporary asphalt concrete to be performed with smooth wheel rollers of sufficient size and number to satisfactorily compact the asphalt mixture while it is still in a workable condition. Rolling shall continue until all roller marks and creases are removed. Surfaces shall be maintained free from bumps, ridges, potholes and other nonconformities (exceeding 3/4-inch as measured by a 10-foot straight edge), including the use of additional material to maintain satisfactory driving surfaces.

C. Where weather and seasonal limitations prevent the placement of the referenced "hot-mixing" topping, cold patch, compacted to a minimum thickness of 2 inches shall be used, unless otherwise directed.

D. For dust prevention, the Contractor shall treat all surfaces, not covered with cold patch, as frequently as may be required.

MATERIALS AND PERFORMANCE – SECTION 02207

RESTORATION OF SURFACES

E. The temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. The Contractor shall immediately remove and restore all pavement that becomes unsatisfactory.

2.02 PERMANENT PAVEMENT REPLACEMENT

A. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by the Contractor as a result of performance of the work shall be repaired and replaced by the Contractor, by a new and similar pavement.

1. The top surface shall conform to the grade of existing adjacent pavement and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.

2. Where the local community has no specification for the type of pavement, the work shall be done in conformity with the NYSDOT Standard Specification which conforms the closest to the type of surfacing being replaced, as determined by NMPC's Representative.

2.03 PREPARATION FOR PERMANENT PAVEMENT

A. When scheduled and within the time specified, the temporary pavement shall be removed and a base prepared, at the depth required by the local community or Highway Permit (as appropriate), to receive the permanent pavement.

1. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.

2. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials.

B. Prior to placing the permanent pavement all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.

C. The edges of existing asphalt pavement shall be saw cut a minimum of 24 inches beyond the excavation or disturbed base whichever is greater.

1. All cuts shall be parallel or perpendicular to the centerline of the street.

2.04 ASPHALT PAVEMENT

A. The permanent asphalt pavement for streets, driveways and parking area surfaces shall be replaced with bituminous materials of the same depth and kind as the existing unless otherwise specified.

B. Prior to placing any bituminous pavement, a sealer shall be applied to the edges of the existing pavement and other features.

C. The furnishing, handling and compaction of all bituminous materials shall be in accordance with the NYSDOT Standard Specifications.

2.05 CONCRETE PAVEMENT AND PAVEMENT BASE

A. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with Class "B" Concrete, air-entrained.

B. Paving slabs or concrete bases shall be constructed to extend 1 foot beyond each side of the excavation and be supported on undisturbed soil. Where such extension of the pavement will leave less than 2 feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base.

C. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled with Special Backfill (as specified by NMPC's Representative) compacted to 95 percent maximum dry density as determined by ASTM D 698 up to the base of the concrete.

D. The new concrete shall be of the same thickness as the slab being replaced and shall contain the adequate amount of temperature and shrinkage reinforcement.

1. New concrete shall be placed and cured in accordance with the applicable provisions of the NYSDOT Standard Specifications.

2.06 STONE OR GRAVEL PAVEMENT

A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.

1. The depth of the stone or gravel shall be at least equal to the existing.

2. After compaction, the surface shall conform to the slope and grade of the area being replaced.

2.07 CONCRETE WALKS, CURBS AND GUTTER REPLACEMENT

A. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.

1. The minimum replacement will be a flag or block of sidewalk and 5 feet of curb or gutter.

B. Walks shall be constructed of Class "B" concrete, air-entrained with NYSDOT #1 stone aggregate on a 4 inch base of compacted gravel or stone.

1. The walk shall be not less than 4 inches in thickness or the thickness of the replaced walk where greater than 4 inches, shall have construction joints spaced not more than 25 feet apart, shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline approximately 1/8-inch per foot of width.

C. One-half inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings and others.

D. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.

1. The intermediate grooves shall be scored a minimum of one-quarter of the depth of the walk.

2. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.

E. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.

1. The restored curb or gutter shall be the same shape, thickness and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

F. All concrete shall be placed and cured as specified in the section for concrete.

2.08 LAWNS AND IMPROVED AREAS

A. The area to receive topsoil shall be graded to a depth of not less than 4 inches or as specified, below the proposed finish surface.

1. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.

B. The furnishing and placing of topsoil, seed and mulch shall be in accordance with M&P Specification Section 02821 entitled Topsoil and Seeding.

C. When required to obtain germination, the seeded areas shall be watered in such a manner as to prevent washing out of the seed.

D. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.

E. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, watering and mowing, in good condition.

2.09 CULTIVATED AREA REPLACEMENT

A. Areas of cultivated lands shall be graded to a depth to receive topsoil of not less than the depth of the topsoil before being disturbed. All debris and inorganic material shall be removed prior to the placing of the topsoil.

B. The furnishing and placing of topsoil shall be in accordance with M&P Specification Section 02821 entitled Topsoil and Seeding.

C. Grass areas shall be reseeded using perennial type grass, spread in conformance to the general requirements of M&P Specification Section 02821 entitled Topsoil and Seeding.

1. Any debris or inorganic materials appearing shall be removed.

2. The removal of stones shall be governed by the adjacent undisturbed cultivated area.

D. Grass areas shall be reseeded using a mixture equal to that of the area before being disturbed, unless otherwise specified.

2.10 OTHER TYPES OF RESTORATION

A. Trees, shrubs and landscape items located outside the limits of the site that are damaged or destroyed as a result of the construction operations shall be replaced in like species and size.

1. All planting and care thereof shall meet the standards of the American Association of Nurserymen.

B. Water courses shall be reshaped to the original grade and cross-section and all debris removed. Where required to prevent erosion, the bottom and sides of the water course shall be protected.

C. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When there is minor damage to a culvert and with the consent of NMPC's Representative, a repair may be undertaken, if satisfactory results can be obtained.

D. Stone or granite curbs to be disrupted by construction activities shall be removed, stored, and reset to conditions matching existing in concert with pavement restoration activities in the disrupted areas. Care shall be taken in removing and handling curbing so as not to damage.

MATERIALS AND PERFORMANCE – SECTION 02207

RESTORATION OF SURFACES

Stone curbing destroyed or missing as a result of the Contractor's operations shall be replaced with new stone curbing matching existing material in size, color and texture.

E. Fences destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location.

2.11 MAINTENANCE

A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of completion or other such date as set forth elsewhere.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02208

CLEARING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Clearing and grubbing the following within the excavation limits indicated on the Contract Drawings.

   a. Topsoil
   b. Pieces of rock (up to ½-cubic yard in volume)
   c. Trees and Bushes
   d. Pavements
   e. Brush
   f. Logs and Stumps
   g. Refuse and Rubbish
   h. Decayed and Growing Organic Matter
   i. Snow and Ice

2. All material shall be disposed of at a location selected by the Contractor and approved by NMPC.

3. The Contractor shall remove, replace, support and protect (as appropriate) all power and telephone poles and posts as required.

B. Related Work Specified Elsewhere

1. Earthwork (M&P Specification Section 02220)
2. Restoration of Surfaces (M&P Specification Section 02207)
3. Topsoil and Seeding (M&P Specification Section 02821)

PART 2 - PRODUCTS

2.01 QUALITY OF MATERIALS

A. New power and utility poles and posts (if any) and the supporting and protecting of all poles and posts shall be in accordance with the requirements of the local power and telephone companies.

B. Topsoil, seed, and mulch shall be in accordance with M&P Specification Section 02821 entitled Topsoil and Seeding.

MATERIALS AND PERFORMANCE – SECTION 02208

CLEARING

PART 3 - EXECUTION

3.01 GENERAL

A. Debris Removal

1. Debris shall not be burned.

2. All brush and trees shall be removed from the work area and disposed of at a site selected by the Contractor, approved by NMPC, and in conformance with local and state regulations.

3.02 ENVIRONMENTAL PROTECTION

A. Prohibited Construction Procedures

1. Prohibited construction procedures include, but are not limited to:

a. Dumping of spoil material into any 100-year flood hazard area, stream corridor, any wetlands, any surface waters or at unspecified locations.

b. Indiscriminate, arbitrary or capricious operation of equipment in any stream corridors, any wetlands or any surface waters.

c. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors or any wetlands.

d. Damaging vegetation beyond the extent necessary for construction of the facilities.

e. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters or at unspecified locations.

f. Permanent or unspecified alteration of the flow line of the stream.

g. Placing of wet concrete so it comes in contact with stream water.

B. Site and Access Clearing

1. Vegetation required to be cleared within the areas to be excavated will be cut at ground level, chipped (if necessary), and disposed of at an appropriate location.

2. NMPC will coordinate (with the property owner) the relocation of surface scrap materials associated with the active scrapyard prior to work activities in this area.

MATERIALS AND PERFORMANCE – SECTION 02208

CLEARING

C. Erosion and Sediment Control

1. Erosion and sediment control procedures shall be utilized on the site in accordance with M&P Specification Section 02260 entitled Sediment and Erosion Control. Erosion control shall occur as required, and immediately following (weather permitting) completion of site and access clearing.

D. Critical Impact Areas

1. "Critical Impact Area" means and includes any area, condition or feature which is environmentally sensitive, or which, if disturbed during construction, would adversely affect the environment. Critical impact areas include, but are not limited to, stream corridors, streams, inland wetlands, estuaries, coastal wetlands, slopes greater than 15 percent, highly acid, highly erodible and adverse mineral soil conditions (such as highly glauconitic soils), natural surface and manmade surface and subsurface drainage facilities and features, areas of high water table, and mature stands of native vegetation.

   a. Slopes exceeding 15 percent require special treatment such as water diversion berms, sodding, or the use of jute or excelsior blankets.

   b. Right-of-way slopes at surface water crossings or drainageways shall be protected by rip-rapping, sand bagging, sodding, or the use of jute or excelsior blankets as the conditions require. If adverse acid or mineralized ground water is present, a relatively impermeable soil shall be used for backfill at the crossing to minimize discharge of such water.

   c. Clayey material having a pH of four or less exposed during construction shall be covered with at least 1 foot of soil having a pH of five or more before seed bed preparation.

   d. To maintain natural groundwater levels and flow patterns, relatively impermeable soils should be incorporated in backfilling as blankets and anti-seep collars.

E. Dust Control

1. Dust shall be controlled by sprinkling and sweeping on paved areas and by sprinkling and mulching in unpaved areas, and in accordance with the *Remedial Design*. The use of calcium chloride or petroleum-based materials for dust control is prohibited.

MATERIALS AND PERFORMANCE – SECTION 02208

CLEARING

F. Noise Control

1. All construction equipment presenting a potential noise nuisance shall be provided with noise muffling devices. In addition, work shall be restricted to normal working hours (8:00 a.m. to 6:00 p.m.), unless otherwise specified or directed.

- END OF SECTION –

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All labor, materials, services and equipment necessary to complete the earthwork required for completion of the work.

B. Related Work Specified Elsewhere

1. Rock Removal (M&P Specification Section 02201)
2. Clearing (M&P Specification Section 02208)
3. Restoration of Surfaces (M&P Specification Section 02207)

1.02 SUBMITTALS

A. Contractor's proposed method(s) of compaction and equipment.

B. Laboratory tests of materials to be compacted.

1.03 DEFINITION

A. Earthwork is defined to include, but not be limited to, one or more of the following: clearing, topsoil removal, pavement removal, classified and unclassified excavation, handling and disposal of surplus materials, maintenance of excavations, removal of water, sheeting and bracing, steel sheet piling, backfilling operations, rough grading, embankments and fills, compaction, and protection of existing structures and facilities.

B. Excavated material shall be classified as provided herein.

1. Unclassified Excavation

a. Unclassified excavation shall include all materials excavated within the authorized lines and grades described in the *Remedial Design*, or as required for construction of the project.

b. Unclassified excavation shall include rock excavation as well as common excavation as defined herein.

c. Unless specifically designated otherwise in the appropriate payment items of the Bid proposal, all excavation shall be considered to be unclassified excavation.

2. Common Excavation

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

a. Common excavation shall include all excavation except rock excavation.

b. All unconsolidated and non-hardened material, rippable rock, loose rock, soft mineral matter, weathered rock, and soft or friable shale, which are removable with normal earth excavation equipment, shall be classified as common excavation.

c. All boulders and detached pieces of solid rock or concrete or masonry less than one cubic yard in volume shall be classified as common excavation.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.01 SITE CLEARING AND GRADING

A. Sites of all construction work shall be cleared of all trees, stumps, brush, large roots, rubbish, snow, water and other surface materials within the limits outlined in the *Remedial Design* or, if not designated, as required for the work in accordance with M&P Specification Section 02208 entitled Clearing.

3.02 PAVEMENT REMOVAL

A. Pavements covering areas to be excavated shall be broken up, removed and then disposed of in accordance with the subsection below entitled Surplus Material.

B. Where roadway pavement work is required by this project, pavement shall be saw cut and removed such that the integrity of pavement to remain is protected.

3.03 STRUCTURE EXCAVATION

A. Minimum limits for structure excavation shall be a minimum distance of three feet outside the base of wall footings or edge of slabs unless otherwise shown.

B. Excavations shall be carried to slopes which are safe for the specific material in which the excavation is made.

C. Undercutting of excavation faces will not be permitted.

D. The Contractor shall determine the amount of additional excavation beyond the minimum distance from the structure.

E. No claim may be made by the Contractor for extra work for damages resulting from slope instability or extra earthwork required to maintain safe slope conditions.

F. Contractor shall be responsible for excavation of all types of materials encountered.

G. Care shall be taken that excavations for structures are not excavated below the planned subgrade, unless required to remove clay, silt, fine sand or other subgrade materials which are determined to be unacceptable for the support of the structures.

H. Unsuitable soils shall be excavated below the required subgrade and a backfill material installed in conformance with the *Remedial Design*.

I. Special backfill material required as a result of the Contractor's carelessness in excavating to required subgrade levels shall be at the Contractor's expense.

J. Exposed subgrade surfaces shall remain undisturbed, drained, protected and maintained as uniform, plane areas, shaped as required to receive the foundation components of the structure.

3.04 UNAUTHORIZED EXCAVATION

A. The Contractor shall not be entitled to any compensation for excavation carried beyond or below the lines and subgrades prescribed in the *Remedial Design*. The Contractor shall refill and compact such unauthorized excavations at his own expense and in conformance with the provisions of this subsection.

3.05 SURPLUS MATERIAL

A. All disposal of surplus materials from excavations to a designated facility shall be as approved by NMPC. Surplus material shall be hauled from the site, and the Contractor shall make all arrangements for disposal sites. The Contractor shall investigate all aspects of surplus material disposing operations. Pavement rubble, tree stumps, trash and debris shall be disposed of in a legal manner.

B. Vehicles used to haul soft or wet material over streets or pavements shall be sufficiently tight to prevent material leakage on the streets or pavements. In all cases where any materials are dropped from the vehicles of the Contractor, he shall clean up the same immediately and keep crosswalks, streets, and pavements clean and free from debris.

C. Prior to disposal of surplus material at any off-site location, the Contractor shall obtain a written agreement between himself/herself and the owner of the property on which the disposal of the material is proposed. The agreement shall state that the owner gives permission for the Contractor to enter and deposit material of a particular classification on the owner's property, and shall include any other

conditions pertinent to the situation as agreed upon by each party. A copy of such agreement shall be promptly furnished to NMPC.

3.06 MAINTENANCE OF EXCAVATIONS

A. All excavations shall be properly and legally maintained while open and exposed.

B. All excavations shall be enclosed with suitably supported temporary fencing.

C. Sufficient and suitable barricades, warning lights, flood lights, signs, etc. to protect the public shall be installed and maintained (as appropriate) at all times until the excavation has been backfilled and graded to a safe and satisfactory condition.

D. All barricades, signs, and markers shall be reflective. They shall also conform to the requirements of the NYSDOT *Manual of Uniform Traffic Control Devices,* most current version.

3.07 REMOVAL OF WATER

A. Upon entering a project site, the Contractor shall assume responsibility for site surface and subsurface drainage and shall maintain such drainage in an acceptable manner during the life of his or her contract.

B. The Contractor shall provide, maintain, and operate pumps and related equipment, including standby equipment of sufficient capacity to control water in all excavations and trenches and under any and all contingencies that may arise until the excavations have been completed and backifilled, and are safe from damage, flotation, settlement, or displacement.

C. The Contractor shall provide all supervision, labor, material and equipment necessary to promptly and properly remove accumulated water, ice and snow, as well as construct and subsequently maintain all drains, ditching, sluiceways, pumping, bailing, wicking, sumps, wells, well points, cut-off trenches, curtains, sheeting and other appurtenances and structures required to complete the required excavation activities.

D. Groundwater removal from the excavations is not anticipated to be necessary, as the excavations are not anticipated to extend into the groundwater table. However, if water collects in the excavation from groundwater seepage or from surface water run-off, and that water must be removed to facilitate completing the required excavation activities (to be determined in conjunction with and approval from NMPC's Representative), the Contractor shall pump the water from the excavation, temporarily store the water on-site in an appropriate container(s), and subsequently treat/dispose of the water in accordance with applicable rules and regulations.

E. The Contractor shall perform all work necessary to control the amount of groundwater and surface waters in the excavations and areas to be filled to facilitate work activities in these areas.

F. The Contractor shall protect all adjacent structures, whether existing or under construction, from settlement or other adverse effects resulting from his or her water removal or dewatering methods.

G. The Contractor shall be responsible for protecting public as well as private water supplies within the zone of influence of any water removal system which is required.

3.08 SHEETING AND BRACING

A. If ordinary open-cut excavation is not possible or if excavation endangers adjacent facilities or results in a hazardous condition, the Contractor shall be responsible for furnishing and installing adequate sheeting and bracing in all such excavations.

B. The Contractor shall furnish and place all sheeting, wales, stringers, braces, timbers, etc., necessary to prevent damage to the work and for the safety of his employees, the general public, or adjacent property and such work shall be in complete accordance with all details of applicable codes, rules, and regulations.

C. Sheeting and bracing work shall comply with the Occupational Safety and Health Act (OSHA).

D. Unless sheeting and bracing is to remain in place, it shall be removed as the work progresses and in such a manner as to prevent loosening and caving of the sides of the excavation, and to prevent damage to finished work or adjacent structures and property.

E. As soon as withdrawn, all voids left by the removal of the sheeting and bracing shall be carefully filled with rodded and tamped sand.

F. No excavation shall be permitted below a line drawn down and away at a slope of two horizontal and one vertical from the nearest footing or grade beam of any existing building or structure without providing sheeting, shoring, and bracing to provide sufficient lateral support for soils beneath the foundation of the structure and to prevent damage to the structure.

G. In addition, sheeting shall be provided for all excavations below a line drawn at a slope of one horizontal and one vertical from edges of travel lanes where excavations take place along highways. Shoulders of such highways are not considered traffic lanes.

H. Sheeting and Bracing Left In Place

1. Sheeting and bracing shall be left in place when ordered by NMPC's Representative.

2. The sheeting shall be cut off and removed to a depth of at least 3 feet below finished grade.

3. Good grade and quality of sheeting material shall be used for such sheeting left in place.

3.09 BACKFILL MATERIALS

A. Soil fill materials shall be used as specified for backfill. Requirements for off-site soil fill materials are specified in M&P Specification Section 02205 entitled Fill Materials.

3.10 GENERAL BACKFILLING REQUIREMENTS

A. Backfilling shall be started as soon as practicable after the excavation activities have been completed in an area upon approval from NMPC's Representative.

B. Backfilling shall be carried on expeditiously thereafter.

C. Backfill shall be started at the lowest section of the area to be backfilled.

D. Natural drainage shall be maintained at all times.

E. Areas to be backfilled shall be inspected prior to backfilling operations. All unsuitable materials, including sheeting, bracing, forms and all other deleterious debris, shall be removed if so directed by NMPC's Representative.

F. No backfill shall be placed against foundation walls or structural members unless properly shored and braced or of sufficient strength to withstand lateral soil pressures.

G. Backfill material shall be inspected prior to placement and all roots, vegetation, organic matter, or other foreign debris shall be removed.

H. Stones larger than 12 inches in any dimension shall be removed or broken.

I. Stones shall not be allowed to form clusters with voids.

J. Backfill material shall not be placed when moisture content is too high to allow proper compaction.

K. When material is too dry for adequate compaction, water shall be added to the extent necessary.

L. No backfill material shall be placed on frozen ground nor shall the material itself be frozen or contain frozen soil fragments when placed.

M. No calcium chloride or other chemicals shall be added to prevent freezing.

N. Material incorporated in the backfilling operation which is not in satisfactory condition shall be subject to rejection and removal at the Contractor's expense.

3.11 METHOD OF COMPACTION

A. General

1. The Contractor shall adopt compaction methods which will produce the degree of compaction specified herein, prevent subsequent settlement, and provide adequate support for the surface treatment, pavement, and structure to be placed thereon, or therein, without damage to the new or existing facilities.

2. Methods used shall avoid disturbance to underlying fine-grained soils and to subsurface utilities.

3. Before filling or backfilling is initiated, the Contractor shall submit in writing (as part of the required Site Management Plan) a description of the equipment and method for compaction which he/she proposes to use.

4. Backfill material shall not be left in an uncompacted state at the close of a day's operation.

5. Prior to terminating work, the final layer of compacted fill, after compaction, shall be rolled with a smooth-wheel roller if necessary to eliminate ridges of soil left by tractors or trucks used for compaction.

6. As backfill progresses, the surface shall be graded such that no ponding of water shall occur on the surface of the fill.

7. Fill shall not be placed on snow, ice or soil that was permitted to freeze prior to compaction. These unsatisfactory materials shall be removed prior to fill placement.

B. Equipment

1. Generally, equipment for compaction of foundation bearing surfaces shall be the largest equipment consistent with space limitations of the work areas and the need to protect adjacent facilities.

2. Compaction of granular material adjacent to foundation walls, footings, piers, and in other confined areas shall be accomplished by means of a

drum-type, power driven, hand-guided vibratory compactor, or by hand-guided vibratory plate tampers.

3. If the proposed method does not give the degree of compaction required, an alternate method shall be adopted until the required compaction is achieved.

4. The moisture content of backfill or fill material shall be adjusted, if necessary, to achieve the required degree of compaction.

C. Inside Buildings

1. Fill placed within the building lines or outside the building lines, but below the bearing level of adjacent foundation elements shall be placed in layers 6 inches in thickness (measured prior to compaction) where hand-guided compaction equipment is used, and not exceeding 8 inches when self-propelled or tractor-drawn compaction equipment is used.

2. Under slabs on grade and backfill around structures and above footings, backfill shall be placed in 8-inch maximum layers.

3. This fill shall be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557.

D. Outside Buildings

1. Backfill and fill placed outside the building lines and above the bearing level of adjacent foundation elements shall be placed in layers not exceeding 12 inches in thickness (measured prior to compaction) and shall be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557.

E. Natural Subgrade

1. The natural subgrade for all structural components shall consist of firm undisturbed natural soil.

2. After excavation to subgrade is completed, the subgrade shall be compacted.

3. Compaction shall be limited to that required to compact loose surface material and shall be terminated in the event that it causes disturbance to underlying fine-grained soils, as revealed by weaving or deflection of the subgrade under the compaction equipment.

4. If the subgrade soils consist of saturated fine or silty sands, silts, or clay, no compaction shall be applied.

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

F. Minimum Compaction Requirements

1. Unless specified otherwise in these specifications, the degree of compaction specified for the various items listed in Table 1 shall be the minimum allowable.

2. Unless the Contractor can successfully demonstrate that his methods will produce the required degree of compaction, materials to be compacted shall be placed in layers not exceeding the uncompacted thicknesses listed in Table 1.

3. NMPC's Representative may order in-place density tests to ascertain conformance with the compaction requirements shown in Table 1.

4. Tests may be ordered for every 200 cubic yards of fill or backfill placed, or frequencies deemed necessary by NMPC's Representative to reliably and consistently determine the general compaction level being achieved.

5. The Contractor shall dig test holes at no additional cost to NMPC when requested for the purpose of taking an in-place density test below the current fill level.

6. The Contractor shall provide free access to fill areas for the purpose of making such tests. Payment for these tests will be made by the Contractor.

7. The Contractor shall anticipate time needed due to testing procedures and shall not have claims for extra compensation occasioned by such time.

8. All laboratory moisture/density testing will be conducted in accordance with ASTM Standard D1557 (Modified Method D) and D698 (Standard).

9. Minimum field compaction requirements in Table 1 are expressed as a percentage of the maximum dry unit weight of the material compacted in this laboratory.

TABLE 1
MINIMUM COMPACTION REQUIREMENTS

Type of Backfill	Max. Uncompacted Fill Layer Thickness (Inches)	Minimum Compaction (Percent)	Per ASTM Method
1. Fill Beneath Structure Foundation Elements – Hand-Guided Compaction	6	98	D1557

TABLE 1
MINIMUM COMPACTION REQUIREMENTS

Type of Backfill	Max. Uncompacted Fill Layer Thickness (Inches)	Minimum Compaction (Percent)	Per ASTM Method
2. Fill Beneath Structure Foundation Elements – Self-Propelled or Tractor-Drawn Compaction	8	98	D1557
3. Fill Under Slabs-On-Grade, and Backfill Around Structures and Above Footings	8	95	D1557
4. Fill Under Pipelines and Pipe Bedding	8	95	D1557
5. Pipe Sidefills and Top 4 Feet of Trench Backfill Under Pavements	12	93	D1557
6. Cement-Gravel Trench Backfill	6	95	D1557
7. Trench Backfill Under Lawns, Gardens and Cultivated Fields	24	90	D698
8. Other Trench Backfill	36	85	D698
9. Fill Under Streets, Parking Lots and Other Paved Areas	12	92	D1557
10. Embankments Not Supporting Pavement or Structures	18	90	D1557
11. Rough Site Grading	24	85	D698

3.12 TEMPORARY PAVING

The Contractor shall place temporary paving over all trenches and excavations within paved areas as soon as backfilling is completed in accordance with M&P Specification Section 02207 entitled Restoration of Surfaces. The Contractor shall grade and compact the subgrade to a smooth, stable condition prior to placing of the temporary paving. The temporary paving shall match the slope, grade and alignment of the existing pavement. The Contractor shall maintain the temporary paving, free from depressions and holes, matching the elevation of the adjacent pavement, until its removal is required for the installation of permanent pavement.

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

3.13 BACKFILL FOR STRUCTURES

A. Backfill shall be placed in layers not exceeding 8-inches thick and thoroughly compacted by mechanical means.

B. In addition, where pipelines or conduits are to be placed in structure backfill, all backfill under the pipes shall be crushed stone unless a specific method of supporting such pipes is specified by NMPC's Representative.

3.14 BACKFILL FOR EMBANKMENTS AND FILLS

A. General

1. Embankment areas shall be cleared and grubbed prior to initiating fill operations.

2. Embankments shall be formed of satisfactory materials placed in successive layers, approximately horizontal, of not more than 12 inches in loose depth for the full width of the embankment.

3. All materials placed in constructing the embankment shall be free of organic matter, leaves, grass, roots, and other objectionable material.

4. At all times the Contractor shall slope the embankment to provide surface drainage.

5. The materials placed in the layers shall be of the proper moisture content to obtain the prescribed compaction.

6. Wetting or drying of the material to secure a uniform moisture content throughout the layer may be required.

7. Generally, to obtain compaction, water content shall be between 1 percent over optimum to 2 percent under optimum.

B. Compaction

1. Rolling operations shall be continued until the embankment is compacted to the density as specified in the subsection 3.11 above entitled Method of Compaction.

2. Any areas inaccessible to rollers shall be compacted by mechanical tampers.

3. In the construction of embankments, starting layers shall be placed in the deepest portion of the fill, and as placement progresses, layers shall be constructed approximately horizontal, maintaining drainage and keying layers into adjoining slopes.

4. The compaction equipment shall be of such design, weight and quantity as to obtain the required density.

3.15 GRADING

A. After the completion of all fill and backfill operations, the Contractor shall grade the site to be consistent, in general, with pre-construction conditions, unless otherwise specified herein. Additional fill may be added in some areas, as necessary, to promote appropriate site drainage and to mitigate surface water runoff from off-site locations onto the site, to the extent practicable.

B. Finish grading shall not be done until the installation of all underground utilities/structures has been completed (if necessary).

3.16 EXISTING FACILITIES

A. General

1. Some of the existing subsurface facilities likely to be encountered during construction of the work, or located in such close proximity to the work to be done as to require special precautions and methods for their protection are indicated on the Contract Drawings.

2. These facilities may include buildings, septic tanks, sewers, leachfields, drains, water mains, conduits and their appurtenances.

3. However, sizes, locations, and heights or depths indicated are only approximately correct and the Contractor shall verify the locations of these facilities and conduct his operations with caution and satisfy himself/herself as to the accuracy of the information given.

4. The Contractor shall not claim nor shall he/she be entitled to receive compensation for damages sustained by reason of the inaccuracy of the information given or by reason of his failure to properly maintain and support such structures.

5. There may be other subsurface facilities, the existence and/or location of which are not known, such as individual water and gas services, electrical conduits, telephone, storm drains, septic tanks, leachfields, etc.

6. The Contractor shall consult with the appropriate utility companies and the property owner and shall determine, prior to construction, the location and depth of any such facilities that may exist in the area to be excavated.

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

B. Notification and Protection Procedures

1. Except where superseded by state or local regulations, or in the absence of any application regulations, the Contractor shall, at a minimum, include the following procedures in his operations:

a. Prior to Excavating

1. Determine correct field location of all underground facilities within the work area.

2. Notify owners of nearby underground facilities when excavating or blasting is to take place, allowing them reasonable time to institute precautionary procedures or preventive measures which they deem necessary for protection of their facilities.

3. In cooperation with owners of nearby facilities, provide temporary support and protection of those underground facilities which may be especially vulnerable to damage by virtue of their physical condition or location, or those which could create hazardous conditions if damaged.

b. Immediately notify any owner of any damage to his/her underground facilities resulting from the Contractor's operations, and arrange for repairs to be made as soon as possible, as coordinated with the owners of the damaged facilities and as reviewed with NMPC's Representative.

c. In case of an electrical short, or escape of gas or hazardous fluids (resulting from damage to an underground facility), immediately notify the Fire Department and all persons who might be endangered and assist in evacuation of people from the area.

C. Support of Existing Facilities

1. Existing facilities encountered within an excavated area shall be adequately supported, blocked and/or braced in a manner approved by the facility owner and NMPC or NMPC's Representative.

2. If required by the owner of such facility, such supports shall be left in place to the extent required. Backfilling and compaction under and around the facilities shall be accomplished with extreme caution so as not to disturb or damage the facility or its supports, and so as to prevent future settlement and possible rupture of the facilities.

3. Existing facilities removed by the Contractor in lieu of support of such facilities shall be replaced at the Contractor's cost.

MATERIALS AND PERFORMANCE – SECTION 02220

EARTHWORK

D. Relocation of Existing Facilities (Except as Otherwise Provided)

1. Should the location or position of any gas or water pipe, public or private sewer or drain, conduit or other structure be such as, in the opinion of NMPC's Representative, to require its removal, realignment or change, such alteration shall be without the cost to the Contractor for the work of removal, realignment, or change only; however, such structure shall be uncovered and supported or sustained by the Contractor at his own cost and expense before such removal or before and after such realignment or changes, as constituting part of his contract.

2. The Contractor shall not become entitled to claim any damages or extra compensation for or on account of the presence of such structures or on account of any delay due to removal or rearrangement of the same, but the Contractor shall be entitled to such an extension of time for the completion of the work as NMPC's Representative shall decide that the work has been delayed by the removal, realignment or change of such obstruction.

E. New York State Requirements

1. The Contractor shall comply with the applicable requirements of Industrial Code Rule 53 issued by the New York State Department of Labor (as amended), entitled "Construction, Excavation and Demolition Operations At or Near Underground Facilities."

F. Pad/Protect Existing Paved Areas and Road Surfaces

1. If Contractor supervised, owned and/or operated tracked excavating machines are used on, near or over existing paved areas and/or road surfaces, then planking or other appropriate padding must be utilized by the Contractor to distribute the load over a large section of pavement.

2. All paved areas and/or road surfaces that are damaged or destroyed due to the Contractor's actions shall be properly and promptly restored. All such restoration shall be carried out to the satisfaction of NMPC and/or NMPC's Representative and at no cost to NMPC.

- END OF SECTION –

MATERIALS AND PERFORMANCE – SECTION 02260

SEDIMENT AND EROSION CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all operations necessary for the construction and maintenance of temporary sediment and erosion control structures.

B. Related Work Specified Elsewhere

1. Earthwork (M&P Specification Section 02220)
2. Topsoil and Seeding (M&P Specification Section 02821)

C. Project Conditions

1. Earthmoving activities in the project area shall be conducted in such a manner as to prevent accelerated erosion and the resulting sedimentation.

2. The Contractor shall install temporary erosion control structures as necessary to prevent accelerated erosion and sedimentation.

D. Applicable Codes, Standards, and Specifications

1. *New York Guidelines for Urban Sediment and Erosion Control (United States Department of Agriculture* - Soil Conservation Service, October 1991)

2. American Society for Testing and Materials (ASTM)

E. General Methodology

1. Erosion control structures installation shall consider all factors which contribute to erosion and sedimentation including, but not limited to, the following:

   a. Topographic features of the project area.

   b. Proposed alteration of the area.

   c. Amount of run-off from the project area.

   d. Staging of earth moving activities.

   e. Temporary control measures and facilities for use during earthmoving.

MATERIALS AND PERFORMANCE – SECTION 02260

SEDIMENT AND EROSION CONTROL

F. Submittals

1. The Contractor shall submit to NMPC/NMPC's Representative for review, specifications for all silt fencing, and other erosion control material prior to construction.

2. The Contractor shall include an erosion control procedures in their Site Management Plan for NMPC/NMPC's Representatives' review prior to construction.

PART 2 - PRODUCTS

2.01 DESCRIPTION

A. Temporary Silt Fence

1. Silt fence fabric shall be a woven geotextile meeting the geotextile survivability requirements of AASHTO M 288-96 Class 1 or Class 2 with a minimum permeability of 0.2 Sec^{-1} as tested by Method ASTM D4991 and a maximum AOS of 0.25 mm as tested by ASTM D4751.

2. Fence posts shall be a minimum of 54 inches long. Steel posts will be standard T, L or C sections weighing no less than 1.3 pound per linear foot.

3. Wire fence shall be a minimum of 14.5 gage with a maximum 6 inch mesh opening.

B. Staked Straw Bales

1. Shall be sound with bale ties intact.

2. Shall be anchored in place with two re-bars, steel pickets, or 2" x 2" wooden stakes driven 18 inches into the ground.

3. Bottom of bale shall be buried a minimum of 4 inches below grade.

C. Erosion Control Mat

1. Erosion control mat shall be a 100 percent coconut fiber matrix sewn between two UV stabilized polymer nets. Acceptable products shall be North American Green C-125, or equivalent.

2. The maximum permissible shear stress shall be 2.25 lbs/ft^2.

3. The Manning's coefficient shall range from 0.014 to 0.022 for depths from 0 to 2 feet.

4. Erosion control mat shall be stapled at a rate of 3.5 staples per square yard.

PART 3 - EXECUTION

3.01 CONSTRUCTION SEQUENCE - EROSION CONTROL MEASURES

A. Construction of temporary erosion control measures along the perimeter of areas under construction shall be completed immediately following site clearing and prior to site work.

B. All temporary erosion control measures shall be maintained throughout the course of the site construction activities.

C. NMPC's Representative may order additional sediment and erosion controls to be installed. The Contractor shall comply with the NMPC Representative's request and immediately install the required controls.

3.02 CONSTRUCTION METHODS

A. At a minimum, the Contractor shall install and maintain silt fence and/or haybales around all major construction efforts, along the site perimeter, and adjacent to the quarry pond, as necessary, to provide sufficient erosion and sedimentation control. Silt fence shall be installed in accordance with manufacturer's instructions. Hay bales shall be staked as specified herein.

B. On slopes, the Contractor shall provide protection against washouts by a method approved by NMPC's Representative.

- END OF SECTION –

MATERIALS AND PERFORMANCE – SECTION 02270

GEOTEXTILE

PART 1 - GENERAL

1.01 DESCRIPTION

A. All supervision, labor, materials, equipment and services necessary for furnishing and installing the geotextile fabric required for completion of the work, as specified in the Contract Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. AMOCO 2006 or an approved equivalent.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Site Preparation

1. Site shall be cleared of all sharp objects, tree stumps, and large stones.

B. Fabric Placement

1. Laid in the direction of construction traffic.

2. All edges shall overlap 3 feet.

3. Aggregate shall be as specified in the Contract Drawings and M&P Specification Section 02205 entitled Fill Materials.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 02821

TOPSOIL AND SEEDING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Work Specified

1. The furnishing of topsoil, fertilizer, seed, and mulch; the preparation of the subgrade and the placing of the topsoil, fertilizer, seed and mulch.

2. The maintenance required until acceptance.

B. Related Work Specified Elsewhere

1. Earthwork (M&P Specification Section 02220)
2. Restoration of Surfaces (M&P Specification Section 02207)

1.02 SUBMITTALS

A. The Contractor shall submit, for approval by NMPC's Representative, a written statement giving location of properties from which topsoil is to be obtained, names and addresses of owners, depth to be stripped and the crop grown during the past two years. The written statement shall include a laboratory certification of the actual gradation of the topsoil material.

B. The Contractor shall submit seed vendor's certified statement for the grass seed mixture required, stating common name, percentage by weight, and percentage of purity and germination.

C. The Contractor shall submit, for approval by NMPC's Representative, all data concerning hydroseeding equipment (if used) including all material application rates.

PART 2 - PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be unfrozen fertile, friable, natural loam, surface soil, and shall be free of subsoil, clay and clay lumps, brush, weeds, and other litter and free of roots, stumps, stones larger than 2 inches in any dimension, and other extraneous matter.

B. Topsoil shall meet the following requirements:

1. The pH of the material shall be between 5.5 and 7.6.

2. The organic content shall not be less than 2 percent or more than 20 percent.

3. Gradation:

Sieve Size	Percent Passing by Weight
2 inch	100
1 inch	85 to 100
1/4 inch	65 to 90
No. 200 mesh	20 to 80

C. The Contractor may amend natural topsoil with approved materials and by approved methods to meet the above specifications.

2.02 GRASS SEED

A. Grass seed mixture shall be fresh, clean, of current season's crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.

B. Seed Mixtures:

Common Name	By Weight	% Purity	% Germination
Timothy	30	90	90
Clover	20	90	90
Perennial Ryegrass	40	90	90
Annual Ryegrass	10	90	90

2.03 FERTILIZER

A. Fertilizer shall be of commercial stock, or neutral character, with elements derived from organic sources. It shall be a complete, prepared and packaged material and shall contain a minimum of 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash. Each bag of fertilizer shall bear the manufacturer's guaranteed statement of analysis.

2.04 MULCH

A. Mulch shall be stalks of oats, wheat, rye or other approved crops free from noxious weeds, mold, or objectionable material.

PART 3 - EXECUTION

3.01 INSTALLATION LOCATIONS FOR LANDSCAPE MATERIALS

A. All final grade surfaces to be vegetated shall receive topsoil (4 inches minimum), seeding, mulch, and fertilizer in accordance with this section.

MATERIALS AND PERFORMANCE – SECTION 02821

TOPSOIL AND SEEDING

3.02 APPLICATION PROCEDURES

A. Any irregularities in grade shall be corrected before the placement of grass seed, fertilizer, and mulch.

B. The Contractor shall proceed with the complete landscape work as rapidly as portions of the site become available, working within seasonal limitations for each kind of work required. The embankment material borrow area(s) shall be fertilized, seeded and mulched as soon as practicable after final grades are reached.

C. The fertilizer shall be applied uniformly with a mechanical spreader at the rate of 20 pounds per 1000 square feet. Following the application of the fertilizer and prior to application of the seed, the surface shall be scarified to a depth of 2 inches with a disk or other suitable method.

D. The seed mixture shall be applied uniformly upon the prepared surface with a mechanical spreader at a rate of not less than five pounds per 1000 square feet. The seed shall be raked lightly into the surface and rolled. Seeding shall be suspended when wind velocities exceed 5 miles per hour or as directed by NMPC's Representative.

E. Seeded areas shall then be covered by application of a uniform continuous 2-inch thick blanket of mulch. Excessive amounts or bunching of mulch will not be permitted. Mulch shall be left in place and allowed to disintegrate and shall be anchored as required by a method approved by NMPC's Representative. Any anchorage or mulch that has not disintegrated at time of first mowing shall be removed.

F. Following application of the mulch, the seed bed shall be moistened. A muddy soil condition will not be acceptable.

G. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory growth. Watering shall be done in such a manner as to prevent washing out of seed and damaging of cap.

H. The stand of grass resulting from the seeding shall not be considered satisfactory until accepted by NMPC's Representative. If areas are determined to be unacceptable, the remaining mulch will be removed and all areas shall be reseeded, refertilized and remulched as per the above application procedures at the Contractor's expense. Any areas that are damaged by activities of the Contractor after topsoil and seeding shall be repaired to the satisfaction of NMPC's Representative.

I. Hydroseeding may be accepted as a method of applying fertilizer, seed and mulch. The Contractor must submit all data regarding materials and application rates to NMPC's Representative for approval if the Contractor proposes hydroseeding.

MATERIALS AND PERFORMANCE – SECTION 02821

TOPSOIL AND SEEDING

3.03 MAINTENANCE

A. The Contractor shall begin the maintenance period immediately after planting of landscape materials.

B. The Contractor shall maintain grass areas, for the periods required to establish an acceptable growth, but not less than 60 days, after date of substantial completion. If seeded in the fall and not given a full 60 days of maintenance, or if not considered acceptable by NMPC's Representative at that time, the Contractor shall continue maintenance during the following spring until acceptable grass stand is established.

C. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 03400

PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

1. All supervision, labor, materials, services, and equipment necessary for installing all precast concrete construction, including related items such as subgrade preparation, anchorage, bearing pad, storage and protection of precast concrete.

1.02 QUALITY ASSURANCE

A. Manufacturer

1. The manufacturer shall be Kistner Concrete Products, Inc., or equal, having a proven background of experience and record of performance required for this project.

B. Requirements of Regulatory Agencies

1. Design, construction and installation shall meet requirements of federal, state, and local building codes.

C. Allowable Tolerances

1. Length of precast units shall be ±½ inch of length indicated on the reviewed shop drawings.

2. Width of precast concrete units: ±¼ inch.

3. Thickness of precast concrete units: ±¼ inch.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Transport and handle precast concrete structures with proper equipment to protect units from dirt and damage.

B. Store precast concrete structures to protect units from concrete with soil or ground. Store units on firm surfaces to avoid warping and cracking.

PART 2 - PRODUCT

2.01 MATERIALS

A. Pre-fabricated enclosure shall be:

- 8 feet wide, 8 feet long, 8 feet high;

- Easi-Set precast concrete buildings from Kistner Concrete Products, Inc. with red brick exterior finish;
- Equipped with a 6-foot wide, 18 gauge steel security door with tamper-proof hinges and dead bolt locks; and
- Equipped with air duct and floor penetrations as shown on Contract Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Site Preparation

1. Site shall be prepared as specified in M&P Specification Section 02220 entitled Earthwork.
2. Structure shall be placed in accordance with manufacturer's specifications.

- END OF SECTION -

MATERIALS AND PERFORMANCE – SECTION 15500

HEATING AND VENTILATION - GENERAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work of this Contract shall include and provide for all labor, tools and materials necessary for installation and proper operation of heating and ventilation system components as specified on the Contract Drawings.

1.02 QUALITY ASSURANCE

A. Laws, Permits and Inspections

1. The Contractor shall comply with all Federal, State, County, Municipal, NFPA, AGA, UL and Utility Company Laws, Ordinances, Regulations and Standards that cover the work and all work shall comply with any and all local codes.

2. The Contractor shall apply for and obtain all required non-environmental permits and inspections and shall pay for all fees applicable thereto.

1.03 JOB CONDITIONS

A. Protection From Freezing

1. During construction and until final acceptance, protect from freezing all fixtures, and equipment in building. Any damage shall be repaired or replaced at the Contractor's expense to meet the approval of NMPC's Representative.

B. Cutting and Patching

1. A heating and ventilating contractor will do all cutting and patching required for his/her work.

C. Electrical

1. All electrical wiring will be performed by an electrical contractor. The Contractor shall furnish the electrical contractor with all required wiring diagrams and a complete list of overload protection sizing for motors (if appropriate).

D. Local Conditions

1. The Contractor shall visit the site of the proposed project to ascertain existing conditions pertaining to the work. Failure to do so shall in no way relieve the Contractor of the responsibility to relocate, remove or otherwise effect a change to the existing facilities which may be necessary to complete the work.

MATERIALS AND PERFORMANCE – SECTION 15500

HEATING AND VENTILATION - GENERAL

PART 2 - EXECUTION

2.01 START-UP AND TESTING OF HVAC SYSTEMS

A. Each system shall be subject to a witnessed test consisting of a verification of temperature control systems; air flow, heating capability, system balance and overall system performance (as appropriate). Tests shall be witnessed by NMPC's Representative.

B. All costs for test equipment, materials and Contractor's manpower shall be borne by the Contractor. Successful completion of the test shall qualify the completed system. The Contractor's representative and NMPC's Representative shall be present for the duration of all testing.

- END OF SECTION –

MATERIALS AND PERFORMANCE – SECTION 16101

ELECTRICAL - GENERAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. This section shall include general requirements for all electrical work performed.

1.02 STANDARDS AND CODES

A. Where applicable, specified, and shown, the latest revisions to the following standards and codes shall be met except where more stringent requirements have been specified:

1. Local Building Codes
2. National Fire Protection Association - NFPA
3. National Electrical Code - NEC
4. Underwriters Laboratories, Inc. - UL
5. National Electrical Manufacturers Association - NEMA
6. Institute of Electrical and Electronic Engineers - IEEE
7. American Society of Testing Materials - ASTM
8. Insulated Cable Engineers Association - ICEA
9. Association of Edison Illuminating Companies - AEIC
10. American National Standard Institute - ANSI
11. Occupational Safety and Health Administration - OSHA

1.03 INSPECTION

A. All workmanship and materials shall be as specified and in accordance with the provisions of the National Electrical Code.

B. The work shall be subject to inspection by a representative of the National Board of Fire Underwriters and by the local authorities having jurisdiction, and all work shall pass such inspection.

C. The Contractor shall furnish to NMPC's Representative a certificate of compliance of the completed installation with the requirements of the National Electrical Code. This certificate shall be completed by the agency listed above.

1.04 QUALITY ASSURANCE

A. Unless otherwise specified, equipment or material of same type, used for the same purpose shall be products of same manufacturer. All material shall be new and of the latest design of manufacturer providing equipment or material.

B. Equipment and accessories not specifically described or identified by manufacturer's catalog numbers shall be manufactured in conformity with NEMA, IEEE, or other applicable technical standards and shall have neat and finished appearance.

C. Install equipment in neat and workman like manner; align, level and adjust for satisfactory operation; install so that parts are easily accessible for inspection, operation, maintenance and repair. Deviations from indicated arrangements are subject to review and approval from NMPC's Representative prior to installation.

1.05 CONTRACT DRAWINGS

A. Location Approximate

1. The locations of equipment, fixtures, outlets and similar devices shown on the Contract Drawings are approximate only.

2. The Contractor shall determine the exact locations of the equipment, outlets, box-outs, sleeves of similar items required for the coordination of electrical work with the structural, architectural, mechanical or other work.

B. Drawings Diagrammatic

1. Circuit diagrams shown on the Contract Drawings are diagrammatic and functional only and are not intended to show exact circuit layouts, number of fittings, or other installation details.

a. The Contractor shall furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting and other electrical systems shown.

2. Conduits beyond first pushbutton and control device and conduits containing lighting circuits beyond panelboards are not scheduled.

a. The number of conductors shown is not necessarily the correct number required.

b. As many conductors as are required in each case shall be installed.

c. A ground conductor shall be furnished with every electrical circuit, as specified on the Contract Drawings.

1.06 SAFETY

A. Construction Safety

1. Contractors shall furnish and place proper guards for prevention of accidents, provide all scaffolding, shielding, dust/fume protection, mechanical/electrical protection, special grounding, safety railings, barriers, or other safety features required to secure safety of life or

property. Provide and maintain sufficient lights during night hours to secure such protection.

2. Contractors shall furnish and install all necessary safety warning devices such as labels, flags, signs, etc. as required for their work.

3. Overhead work shall be done only if area below is clear of all personnel.

B. Electrical Safety

1. Any energized electrical system panel board cover, removed in processing a job, shall be replaced immediately any time the job site is to be unattended by the Contractor personnel.

2. All electrical work for providing temporary power and lighting for construction shall be in accordance with NEC and OSHA.

1.07 PROTECTED WORK

A. Hazardous Areas

1. In areas where explosion-proof work is shown or specified, all work shall meet the requirements of the NEC for Class 1 Division 1 locations.

B. Wet Locations

1. Where installed outdoors or in wet locations, all work shall meet the requirements of the NEC for wet locations.

C. Corrosive Areas

1. Where installed in corrosive atmospheres all materials and devices shall be suitable for use in intended environment.

1.08 DELIVERY, HANDLING AND STORAGE OF MATERIAL

A. General

1. Materials and equipment shall be delivered to the site of the work in their original containers, and containers shall not be opened until inspected by NMPC's Representative.

2. Electrical equipment shall at all times during construction be adequately protected against mechanical injury or damage by water.

a. If any apparatus has been damaged, such damage shall be made good by the Contractor at his own expense.

MATERIALS AND PERFORMANCE – SECTION 16101

ELECTRICAL - GENERAL

b. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried and put through such special tests as will be directed by NMPC's Representative, at the cost and expense of the Contractor, or at the discretion of NMPC's Representative shall be replaced by the Contractor at his own expense.

- END OF SECTION –

Attachment 3

Table 1 (Nature and Extent of Contamination) from the NYSDEC March 1999 Record of Decision

Table 1
Nature and Extent of Contamination

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppb)	FREQUENCY EXCEEDS SCGs	SCG (ppb)
Groundwater	Organic	Polychlorinated Biphenyls (PCBs)	ND to 0.72	2 of 45	0.1
Surface water (quarry pond)	Organic	Polychlorinated Biphenyls	0.267 to 0.315	5 of 5	0.00012
Soils (surface)	Organic	Polychlorinated Biphenyls	ND to 163,000	37 of 73	1,000
(subsurface)		Polychlorinated Biphenyls	ND to 16,000	2 of 44	10,000
Soils (surface)	Heavy Metals (0 - 6")	Arsenic	ND to 44,200	35 of 38	7,500
		Cadmium	ND to 69,000	27 of 38	1,000
		Chromium	12,000 to 198,000	38 of 38	10,000
		Lead	ND to 9,700,000	32 of 38	30,000
		Mercury	ND to 19,600	21 of 38	100
(subsurface)	(6 - 24")	Arsenic	ND to 81,000	10 of 14	7,500
		Cadmium	ND to 47,000	6 of 14	1,000
		Chromium	11,400 to 98,000	14 of 14	10,000
		Lead	ND to 36,600	8 of 14	30,000
		Mercury	ND to 830	7 of 14	100
(subsurface)	(24 - 48")	Arsenic	ND to 15,000	4 of 6	7,500
		Chromium	10,100 to 20,400	6 of 6	10,000
		Lead	ND to 52,700	1 of 6	30,000

Soils (surface)	Semivolatile Organic (0 to 6")	Benzo(a)anthracene	ND to 10,000	17 of 37	224
		Chrysene	ND to 10,000	13 of 37	400
		Benzo(b)-fluoranthene	ND to 7,500	8 of 37	1,100
		Benzo(k)-Fluoranthene	ND to 6,400	6 of 37	1,100
		Benzo(a)pyrene	ND to 7,500	22 of 37	61
		Dibenzo(a,h)-anthracene	ND to 2,100	16 of 37	14
(subsurface)	(6 to 24")	Benzo(a)anthracene	ND to 230	1 of 23	224
		Benzo(a)pyrene	ND to 190	5 of 23	61
Sediments	Organic	Polychlorinated Biphenyls (PCBs)	ND to 63,000	49 of 60	14*
Fish Tissue	Organic	Polychlorinated Biphenyls	ND to 1,700	8 of 12	100**

* Based on the Division of Fish and Wildlife sediment criteria of 1.4 ug/g oc (assuming 1% total organic carbon).
**Based on the Division of Fish and Wildlife guidance value of 0.1 ppm for the protection of "fish-eating" wildlife.