7-12004

# CONSTRUCTION QUALITY ASSURANCE PLAN

## ROSEN SITE
## CORTLAND, NEW YORK

**JUNE, 2002**

**PREPARED FOR:**

**ROSEN SITE JOINT DEFENSE GROUP**

Barton & Loguidice, P.C.
*Consulting Engineers*

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**CONSTRUCTION QUALITY ASSURANCE PLAN**
**ROSEN SITE**
**CORTLAND, NEW YORK**

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# CONSTRUCTION QUALITY ASSURANCE PLAN
# ROSEN SITE
# CORTLAND, NEW YORK

## 1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been prepared by Barton & Loguidice, P.C., Supervising Contractor for the Remedial Action (RA) at the Rosen Site located in Cortland New York, on behalf of the Rosen Site Joint Defense Group. This CQAP is an element of the Remedial Design (RD), and has been prepared in accordance with the approved RD Work Plan and the Statement of Work (SOW) associated with the Consent Decree (CD) for implementation of the Record of Decision (ROD) for the Rosen site.

The SOW describes two Remedial Work Elements (RWEs) to be performed, which are summarized as follows:

**RWE 1: Soil Excavation/Debris Relocation Cap/Cover RA**

- Excavation and re-location/disposal of soils impacted by 1,1,1-trichloroethane (TCA) above 1 mg/kg.
- Excavation and re-location/disposal of soils impacted by polychlorinated biphenyls (PCBs). Note: This task has already been completed.
- Removal and consolidation of non-hazardous debris onto the former cooling pond.
- Design and placement of a 6 NYCRR Part 360 cap over the former three acre cooling pond.
- Construction of a chain link fence around the former cooling pond following cap placement.
- Placement of a surface cover over the remaining areas of the site.
- Implementation of storm-water management improvements to protect the cap and surface cover.
- Employment of dust and volatile organic compound (VOC) control/suppression measures during construction and excavation activities.

- Implementation of an operation and maintenance (O&M) program for the constructed remedial components.
- Securing institutional controls restricting 1) groundwater usage at and downgradient of the site, 2) excavation or other on-site activities which could compromise cap/cover integrity, and 3) residential use of the property.

**RWE 2: Long-Term Monitoring RA**

- Verifying that natural attenuation is successfully addressing groundwater contamination.
- Securing institutional controls restricting 1) groundwater usage at and downgradient of the site, 2) excavation or other on-site activities which could compromise cap/cover integrity, and 3) residential use of the property.

This plan provides a detailed description of the sampling, analysis, testing and monitoring activities which will be performed during the RA phase of work at the site. This plan provides the project organization and provides the procedures for the following:

- inspection and certification of remedial construction work,
- measurement and recordkeeping during remedial construction,
- field performance and testing,
- preparation of as-built drawings and logs,
- testing to determine attainment of design specifications, and
- testing methods.

## 2.0 PROJECT MANAGEMENT

Barton & Loguidice will serve as the Supervising Engineer for the RA. Barton & Loguidice will have an on-site construction inspector to work with the Remedial Construction Contractor, and to implement this CQAP. See Figure 1 for the project team organization.

Clean Harbors will be the Remedial Construction Contractor for the RA. Clean Harbors will perform remedial construction work with its own personnel and equipment, and will subcontract labor and equipment as needed. Clean Harbors will be responsible for procurement and delivery of construction materials, such as geotextiles, common fill and drainage pipe. Clean Harbors will have an on-site construction manager who will oversee site activities and will be responsible for the scheduling of labor, equipment and delivery of materials.

The responsibilities and authorities of the Quality Assurance and Construction Inspection Personnel are as follows:

Project Advisor (RA Field Team): The Project Advisor will have overall responsibility for the performance of the QA program, will serve as Engineer of Record for the construction, and will sign and stamp the Certification Report. The Project Advisor will attend project meetings on an as-needed basis, and will be available for technical consultation.

Field Construction Inspector (RA Field Team): The Field Construction Inspector will be responsible for daily implementation of construction QA procedures at the site. If necessary, additional staff will be assigned to the Field Construction Inspector to complete QA tasks.

Construction progress meetings will be held on a regular basis at the site. These meetings will be attended by representatives of Clean Harbors, USEPA (if possible), and specialty contractors, if necessary.

The meetings will be used for the following purposes:

- assess project progress against schedule,
- coordinate contractors and work elements,
- schedule labor and equipment,
- identify scheduling conflicts,
- schedule ordering and delivery of materials,
- review testing results identify and resolve problems,
- review QA issues and design changes, if any,
- review contractual issues, and
- review health and safety issues.

Minutes of each meeting will be kept and distributed to attendees and other necessary parties (e.g. – Project Coordinator). Action items will be clearly identified, along with the responsible party for the assignment and due date.

Resumes for the RA Field Team members from Barton & Loguidice members are provided in Appendix A to this plan, in order to enable USEPA to make a full evaluation of their qualifications.

## 3.0 CONSTRUCTION INSPECTION AND TESTING

This section describes the construction elements and associated quality control measures. An additional consideration in constructing the cap over the former Cooling Pond is to maintain a profile as low as feasible in accordance with a request from USEPA. To that end, the following changes in the approved RD have been made to lower the cap profile:

- the coal bin retaining wall will be demolished and clean soils contained behind the wall will be used in cap construction, with USEPA approval,
- the gas venting layer of the cap will be a geocomposite rather than 12 inches of sand.

The sequence of construction activities is as follows:

- RAWP Approval
- Mobilization
- Site Clearing
- Debris Relocation
- Sample TCA Soil
- Grading/Contouring
- Cap Cooling Pond
- Seed Cooling Pond
- Grade Restoration Area
- Geotextile Restoration Area
- Cover Soil Restoration Area
- Final Grade/Seed
- Fence Construction
- Site Inspection
- Demobilization

### 3.1 Construction Inspection, Testing, and Certification

Assurance that the remedy is constructed in accordance with the approved design will be provided through a rigorous testing and inspection program, and a Certification Report.

This program will apply to the materials to be used in the remedial construction, as well as to the constructed and installed components of the RA. The appropriate methods of test and inspection procedures are outlined within the Technical Specifications. Material QA/QC testing summaries have been included in Table 1.

### 3.2 Subgrade Preparation

Debris (and, if needed, contaminated soil below the established cleanup levels) will be relocated to within limits of waste of the landfill from the remediation area of the site. Following debris relocation, a minimum 12-inch thick intermediate cover layer consisting of Type C Select Fill will be installed over the debris. It is contemplated that soil from behind the coal bin will also be used as intermediate cover, helping lower the overall profile of the cap. The intermediate cover will be graded to accommodate positive drainage to the contours of the subgrade grading plan. The intermediate cover will be compacted to provide a firm base to construct the landfill capping system.

Material requirements and Construction Quality Assurance / Construction Quality Control (CQA/CQC) requirements for Type C Select Fill can be reviewed in the Technical Specification Section 02226. Grain Size Analyses and minimum/maximum relative density tests will be performed on the Type C Select Fill at the specified frequencies as outlined in the Specifications.

### 3.3 Gas Venting Layer

Above the prepared subgrade, a gas-venting layer will be constructed. The gas venting layer will consist of a composite geonet (250 mil thickness), as described in Section 02237 of the Technical Specifications. A Type 1 non-woven geotextile will be installed below the gas venting layer. A minimum of 1 gas-venting riser per acre will be installed into the debris to relieve the gas collected by the gas-venting layer. Each gas vent will be installed at a depth of at least five feet into refuse and consist of 6-inch Schedule 40 perforated poly vinyl chloride (PVC) pipe below the geomembrane and 6-inch Schedule 40 solid PVC pipe above the geomembrane. The perforated pipe below the geomembrane will be installed within a stone pocket of Type D Select Fill wrapped in Type 1 Geotextile. The solid pipe will extend a minimum of 4-feet above the landfill capping system final grade and will be fitted with a gooseneck fitting and bird/insect screen. Material requirements for PVC pipe can be reviewed in Technical Specification Section 02435.

Extensive visual inspection will be performed by the Field Construction Inspector on the material entering the site for change in color, texture and any foreign debris. During inspection, the Field Construction Inspector will ensure that the gas-venting layer is free of objects that could puncture the geomembrane, and that the final surface is compacted and properly graded for installation of the geomembrane.

### 3.4 Geomembrane

A 40 mil Linear Low Density Polyethylene (LLDPE) geomembrane will be used as the barrier layer. The geomembrane will be textured on all sides for all applications. All construction and CQA/CQC requirements for the geomembrane can be found in Section 02598 of the Technical Specifications.

Prior to placement of the geomembrane, the Remedial Construction contractor will provide data and information for the geomembrane to the RA Field Team, including resin quality, sheet properties, and quality control certificate(s). This data and information will be reviewed for compliance with the approved specifications. Upon delivery of the geomembrane panels, the Field Construction Inspector will ensure that samples are collected at the specified frequency (see Table 1) and submitted to the quality assurance laboratory for testing. For each lot number of the geomembrane delivered to the site, a sample will also be taken for fingerprinting of the roll. The extra samples will be stored at room temperature out of direct sunlight for possible future testing. The delivered geomembrane panels will be visually inspected for uniformity, damage and imperfections. The panels will be stored in a manner to protect them from excessive dust, dirt, shock or other sources of damage.

The geomembrane should not be placed on soils with stones larger than 3/8". Deployment of geomembrane panels will be performed in accordance with manufacturer's instructions. The Field Construction Inspector will inspect the deployment process to ensure that the geomembrane is not damaged during placement. The geomembrane will be seamed in accordance with the approved specifications. The Field Construction Inspector will monitor and inspect the seaming work, and will ensure that sampling and testing are conducted on the proper frequency (see Table 1).

### 3.5 Lateral Drainage Layer

A lateral drainage layer will be installed directly above the geomembrane. The lateral drainage layer will consist of a composite geonet possessing a minimum transmissivity of $1 \times 10^{-4}$ $m^3$/sec-m. Material requirements and CQA/CQC requirements for composite geonet can be reviewed in the Technical Specification Section 02237. Prequalification and conformance testing will be performed on the composite geonet at the specified frequencies as outlined in the Technical Specifications.

### 3.6 Barrier Protection Layer

The barrier protection layer will be constructed above the lateral drainage layer of the capping system. The barrier protection layer will consist of a 24-inch thick layer of common fill material.

Common fill material will be well graded from fine to coarse with a minimum of 15 percent passing by weight the No. 200 sieve and possessing a maximum permeability of $1 \times 10^{-5}$ cm/sec. Cobbles and stones, if any, of any size may be used as a backfill in specific locations. The methods and procedures utilized to spread the soil material must insure that no damage is rendered to the underlying layers of the capping system. Material requirements and necessary CQA/CQC requirements can be reviewed in Technical Specification Section 02257.

### 3.7 Topsoil Layer

A 6-inch thick layer of topsoil will be installed above the barrier protection layer. This layer will be fertilized and seeded upon completion, using the following seed mixture:

| Species or Variety | Percentage by Weight |
|---|---|
| "Lancer" Perennial Pea (or Lafco Pea if Lancer is unavailable) | 40 |
| Perennial Ryegrass | 20 |
| New Zealand White Clover | 10 |
| Timothy Grass | 10 |
| Orchard Grass | 10 |
| Smooth Bromegrass | 10 |

The purpose of the topsoil layer is to establish vegetative growth over the landfill that will help with runoff and control erosion. Material requirements and all necessary CQA/CQC requirements can be reviewed in Technical Specification Sections 02484 and 02485.

### 3.8 Restoration Area Final Cover System

Following relocation of the debris and contaminated soil from the restoration area to the landfill area, the restoration area will be graded to drain according to the subgrade grading plan and a final cover system applied. The proposed final cover system consists of a Type 3 Geotextile demarcation layer covered by an 8-inch thick common fill layer and 4-inch topsoil layer. The topsoil layer will be seeded, fertilized and mulched to establish vegetative growth.

Material requirements and Construction Quality Assurance / Construction Quality Control (CQA/CQC) requirements for common fill material can be reviewed in Technical Specification Section 02257, and for topsoil in Technical Specification Section 02484.

### 3.9 Geotextiles

Geotextiles will be utilized as a separation fabric between layers of the capping system as well as for geomembrane cushioning. All necessary CQA/CQC requirements can be reviewed in the Technical Specification Section 02072.

Prior to placement of the geotextile, the Contractor will provide data and information for the geotextile to the RA Field Team, including a list of guaranteed "minimum average roll values". This data and information will be reviewed for compliance with the approved specifications. Upon delivery of the geotextile, the Field Construction Inspector will ensure that samples are collected at the specified frequency (see Table 1) and submitted to the quality assurance laboratory for testing. For each lot number of the geotextile delivered to the site, a sample will also be taken for fingerprinting of the roll. The extra samples will be stored at room temperature out of direct sunlight for possible future testing. The delivered geotextile rolls will be visually inspected for uniformity, damage and imperfections. The rolls will be stored in a manner to protect them from excessive dust, dirt, shock or other sources of damage.

Geotextile deployment will be performed in accordance with manufacturer's instructions. The Field Construction Inspector will inspect the deployment process to ensure that the geotextile is not damaged during placement. If geotextile will be seamed (in accordance with the approved specifications), the Field Construction Inspector will monitor and inspect the seaming work.

### 3.10 Drainage Ditches, Roadways and Site Facilities

The Field Construction Inspector will inspect the construction and/or improvement of roadways and drainage ditches to ensure that they are constructed according to the approved design. The Field Construction Inspector will also be responsible for inspecting other site-related construction including erosion and sediment control structures and installation of new fencing.

### 3.11 Recordkeeping and Reporting

In addition to the logs and records maintained by the Field Construction Inspector, the Field Construction Inspector will maintain a separate set of records and logs to demonstrate that the remedy was constructed according to the approved design. The records and logs that will be kept by the Field Construction Inspector include the following:

- daily log of activities,
- testing results,
- project meeting minutes,
- photographic log,
- completed chain of custody forms,
- working sketches,
- telephone conversation log,
- manufacturer's specifications and warrantees, and
- vendor submittals.

The Field Construction Inspector will be responsible for the scheduling and management of submittals from subcontractors, fabricators, etc. The scheduling of submittals will be tied to the construction schedule so that the necessary submittals are provided well in advance of the associated delivery or activity. Submittals will be logged in by the Field Construction Inspector, routed to the appropriate person for review, and the submittal will be checked off on the project schedule following approval.

Changes to the approved design that have been approved by USEPA, will be clearly recorded using a colored pencil on a single set of drawings that will be maintained by the Field Construction Inspector. These drawings will be used to prepare the final completed construction drawings at the completion of the project. A Certification Report will be prepared at the completion of the project which will contain the results of inspections and testing conducted by the Field Construction Inspector to demonstrate the construction of the remedy in accordance with the approved design. This report will include the completed construction drawings, material certifications, and construction photographs. The field-screening data from the PID will be included, when available, in all tables generated during construction-related activities.

TABLE 1

***MATERIALS QUALITY ASSURANCE / QUALITY CONTROL TESTING SUMMARY***

***SOILS AND GEOSYNTHETIC MATERIALS***

ROSEN SUPERFUND SITE

| MATERIAL | TECHNICAL SPECIFICATION SECTION | USE | QUALITY CONTROL TESTING (STOCKPILE MATERIAL TESTING)[5] | | | QUALITY ASSURANCE TESTING (IN-PLACE MATERIAL TESTING) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Frequency | Test Method | Acceptance Criteria | Frequency | Test Method | Acceptance Criteria |
| Type C Select Fill | 02226 | Intermediate Cover | Prequalfication | Grain Size Analysis (ASTM D422) | Less than 1-inch (max) | 1,000 cy in-place | Grain Size Analysis (ASTM D422) | Less than 1-inch (max) |
| | | | Prequalfication | Modified Proctor Density (ASTM D1557) | NA | One per 5000 sf / lift | In-Place Moisture Density Testing | 85% Modified Proctor Density (min) |
| Type D Select Fill | 02226 | Gas Vent Backfill & Toe Drain Pipe Backfill | Prequalfication | Grain Size Analysis (ASTM D422) | 100% Pass - 1-1/2" Sieve<br>90-100% Pass - 1" Sieve<br>0-15% Pass - 1/2" Sieve<br>0-3 % Pass - No. 200 | 1,000 cy in-place | Grain Size Analysis (ASTM D422) | 100% Pass - 1-1/2" Sieve<br>90-100% Pass - 1" Sieve<br>0-15% Pass - 1/2" Sieve<br>0-3 % Pass - No. 200 |
| | | | Prequalfication | Permeability Test (ASTM D2434) | $1.0 \times 10^{-1}$ cm/s (min) | 2,500 cy in-place | Permeability Test (ASTM D2434) | $1.0 \times 10^{-1}$ cm/s (min) |
| | | | Prequalfication | Calcium Carbonate Test (ASTM D3042) | 30% Calcium Carbonate (max) | As Requested | In-Place Moisture Density Testing | Visually Approved |
| Granular Fill | 02222 | Road Construction (NYSDOT Item 304.03) | Prequalfication | Modified Proctor Density (ASTM D1557) | NA | One per 50 cy of Material Placed | In-Place Moisture Density Testing | 90% Modified Proctor Density (min) |
| | | | Prequalfication | Grain Size Analysis (ASTM D422) | 100% Pass - 2" Sieve<br>25-60% Pass - 1/4" Sieve<br>5-40% Pass - No. 40 Sieve<br>0-10% Pass - No. 200 | | | |
| Common Fill | 02257 | Capping System Barrier Protection Layer and Restoration Area Final Cover System | Prequalfication | Grain Size Analysis (ASTM D422) | Less than 6-inch (max)<br>15% Pass No. 200 (min) | 5,000 cy in-place | Grain Size Analysis (ASTM D422) | Less than 6-inch (max)<br>15% Pass No. 200 (min) |
| | | | Prequalfication | Atterburg Limits (ASTM D4318) | NA | 5,000 cy in-place | Atterburg Limits (ASTM D4318) | NA |
| | | | Prequalfication | Modified Proctor Density (ASTM D1557) | NA | 5,000 cy in-place | Modified Proctor Density (ASTM D1557) | NA |
| | | | Prequalfication | Remolded Permeability (ASTM D5084) | $1.0 \times 10^{-1}$ cm/s (max) | 5,000 cy in-place | Remolded Permeability (ASTM D5084) (Barrier Protection Layer Only) | $1.0 \times 10^{-1}$ cm/s (max) |
| | | | | | | One per 10,000 sf/lift | In-Place Moisture Density Testing | 90% Modified Proctor Density (min) |
| Topsoil | 02484 | Topsoil Layer | Prequalfication | Organic Content | 2 - 6% | NA | NA | NA |
| | | | Prequalfication | pH | 5.0 - 8.0 | | | |

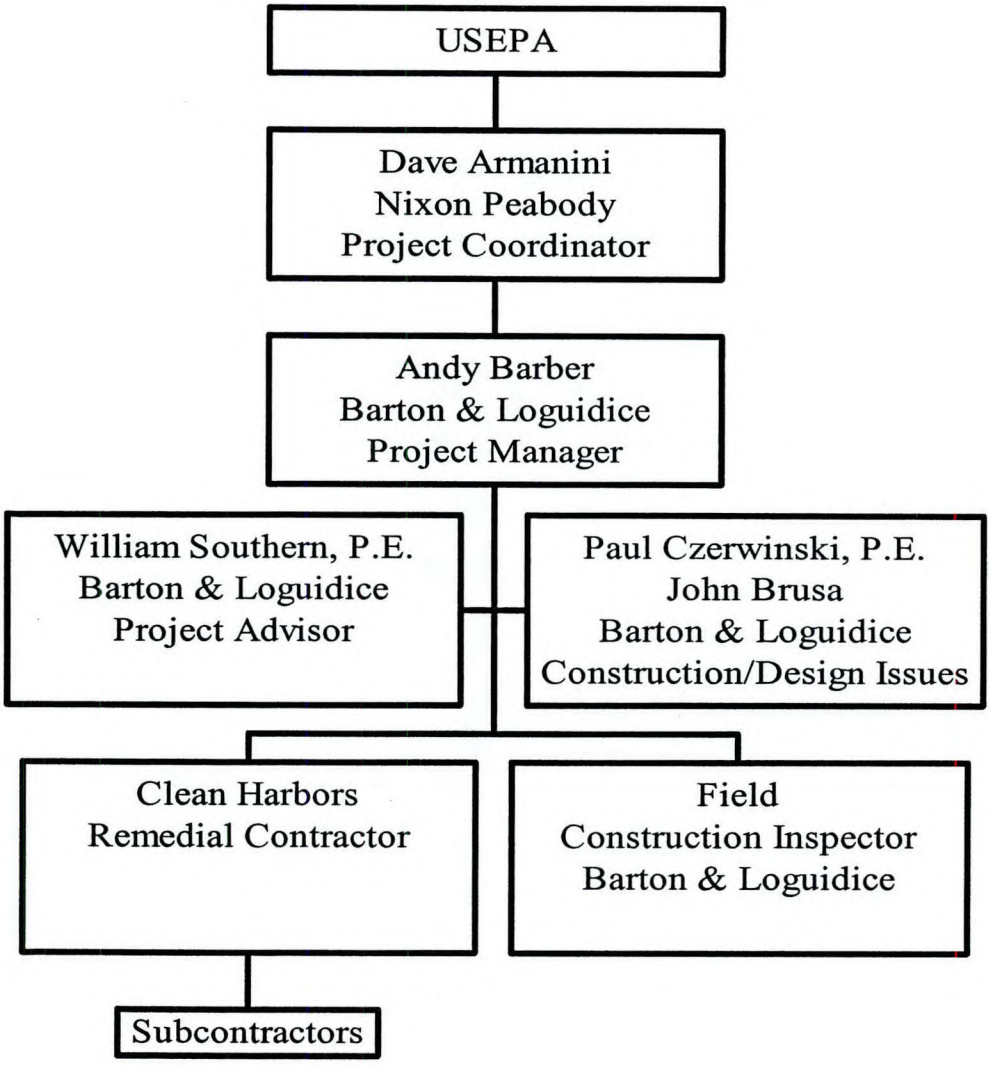
***MATERIALS QUALITY ASSURANCE / QUALITY CONTROL TESTING SUMMARY***
***SOILS AND GEOSYNTHETIC MATERIALS***
ROSEN SUPERFUND SITE

| MATERIAL | TECHNICAL SPECIFICATION SECTION | USE | QUALITY CONTROL TESTING (STOCKPILE MATERIAL TESTING)[5] | | | QUALITY ASSURANCE TESTING (IN-PLACE MATERIAL TESTING) | | |
|---|---|---|---|---|---|---|---|---|
| | | | Frequency | Test Method | Acceptance Criteria | Frequency | Test Method | Acceptance Criteria |
| Type 1, 2 & 3 Geotextiles | 02072 | Separation and Cushion Layers | NA [2] | NA [2] | NA | NA | NA | NA |
| 40 mil Textured LLDPE Geomembrane | 02598 | Barrier Layer | 100,000 sf | Density (ASTM D792/D1505) | 0.939 g/ml (max) | 100% of All Seams | Non-Destructive Air Pressure Dual Track Wedge Welds (25 psi for 3 minutes) | Pressure Drop of 3 psi (max) |
| | | | 100,000 sf | Carbon Black Content (ASTM D1603) | 2.0 - 3.0 % | | | |
| | | | 100,000 sf | Carbon Black Dispersion (ASTM D5596) | Category 1 or 2 | | Vacuum Box (5 psi Negative Pressure) | Visually Inspected |
| | | | 100,000 sf | Thickness (ASTM D5994) | 38 mil (min avg)<br>Low for 8 out of 10 = 36 mil<br>Low for any 10 = 34 mil | 500 LF of Seam | Destructive Sample Taken and Tested for: Seam Shear Strength (ASTM D4437) | 53 lb/in |
| | | | 100,000 sf | Tensile Properties (ASTM D638, Type IV) Tensile Strength at Break | 60 lbs/in (min avg) | | Peel Adhesion (ASTM D4437) | 44 lb/in and Film Tear Bond (FTB) |
| | | | | Elongation at Break | 250% | | | |
| Composite Geonet (Geocomposite) | 02237 | Lateral Drainage Layer and Gas Venting Layer | Prequalification | Performance Transmissivity (ASTM D4716) | $1.0 \times 10^{-4}$ $m^2/s$ (min) | NA | NA | NA |
| | | | Prequalification | Index Transmissivity (ASTM D4716) [3] | $1.0 \times 10^{-4}$ $m^2/s$ (min) | | | |
| | | | 100,000 sf | Geonet Core - Carbon Black (ASTM D4218) | 2% (min) | | | |
| | | | 100,000 sf | Geonet Core - Specific Gravity (ASTM D1505) | 0.935 (min) to 0.955 (max) | | | |
| | | | 100,000 sf | Geonet Core - Thickness (ASTM D5199) | 250 mil | | | |
| | | | 100,000 sf | Geonet Core - Melt Flow Index (ASTM D1238) | 1.1 g/10 min (max) | | | |
| | | | 100,000 sf | Ply Adhesion (ASTM D413) | 1.0 lb/in (min) | | | |
| | | | 100,000 sf | Index Transmissivity (ASTM D4716) [3] | $1.0 \times 10^{-4}$ $m^2/s$ (min) | | | |

NOTES:
(1) NA = Not Applicable
(2) Prequalification based on Manufacturer's Guaranteed Minimum Values and Chemical Compatibility documentation.
(3) Acceptance Criteria for Index Transimissivity based on ratio between performance testing and index testing. See Section 02237, Article 1.2.3.4
(4) Information based on Technical Specifications dated January, 2002 by Barton & Loguidice, P.C.
(5) Stockpile material testing will be repeated if the material source changes.

Barton & Loguidice, P.C.
*Consulting Engineers*

**Figure 1 - Project Management Organization**
**Rosen Site Remedial Action**



# APPENDIX A

# RESUMES

## *WILLIAM F. SOUTHERN, JR., P.E.*
**Principal**

**ENVIRONMENTAL ENGINEERING:**

- Environmental Compliance
- Project Management
- Remedial Design
- Site Characterization
- Feasibility Studies

### *PROFESSIONAL AFFILIATIONS*

**American Public Works Association**
**American Society of Civil Engineers**
**The Solid Waste Association of North America**
**National Association of County Engineers**

### *PROFESSIONAL CERTIFICATIONS*

**Hazardous Waste Operators H&S (40 hours plus 8-hour Supervisor Course)**
**NYSDEC Landfill Operator Training**
**NYS Department of Labor Asbestos Project Designer**

### *EDUCATION*

**B.S. Civil Engineering - Clarkson College of Technology, 1968**

### *PROFESSIONAL REGISTRATION*

**Registered Professional Engineer, New York, Maine, Massachusetts**

### *EXPERIENCE*

William F. Southern joined Barton & Loguidice, P.C., as a managing engineer in 1983. He is currently B&L's Principal-in-Charge of environmental compliance and solid waste management projects, and municipal infrastructure projects.

He is experienced in dealing with regulatory officials, elected officials, budgeting, economic analysis, water and sewer design, highway and bridge design, solid waste management and environmental compliance, providing expert testimony during litigation and project implementation.

Since joining B&L, Mr. Southern has directed the design of water projects, the siting, design and development of a fully permitted and operational double lined landfill; the siting, design, and permitting of an operational transfer station, green waste composting facility and a household hazardous waste collection facility; and has directed the completion of numerous feasibility studies, comprehensive plans, waste audits and waste characterization field studies, and site evaluation studies to address the solid waste management needs of public and private sector clients.

In addition, Mr. Southern was the project coordinator for the closure of the Oneida-Herkimer Solid Waste Management Authority Ash Landfill, the Hunter, Catskill, Inlet and Hope Landfills, and the Champlain Hazardous Waste Landfill. He worked closely with both local and main office NYSDEC staff to advance these closure projects.

Mr. Southern has been in charge of studies to review disposal options for sewage sludge and sludge generated by paper mills. The studies examined all sludge generating facilities within the counties including sludge from a local paper mill. The studies involved collecting data on the quality and quantity of sludge generated, a review of present management practices, a review of alternative technologies for management and the preparation of a recommendation as to how the sludges should be managed in the future.

Mr. Southern previously held the position of Deputy Commissioner of Transportation for Onondaga County for over seven years. While with Onondaga County, he was involved in review and development of comprehensive plans for land use, transportation and solid waste for Onondaga County. These projects involved the review of existing infrastructure including water, sewers, treatment plants, and highways, to

determine future needs and how to effectively use the existing infrastructure to its fullest before investing in new systems.

Mr. Southern was responsible for developing plans for the improvement of Onondaga County's 800 miles of highways and bridges. These projects ranged from the improvement of rural highways and bridges to the design of a multi-million dollar Federal Aid Urban system project. Over 15 small to medium span bridges were designed and constructed by the County while he was Deputy Commissioner.

In addition, Mr. Southern assisted the County of Onondaga in responding to litigation on all highway and bridge accident cases. His duties included reviewing accident scenes, preparation of accident surveys, review of design standards, preparation of exhibits for use in court and providing expert testimony. During his time with the County he also worked on cases involving the County Sheriff and the Building and Grounds Department.

Mr. Southern is a member of the Central New York Regional Planning and Development Board, a past member of the Planning Committee of the Syracuse Metropolitan Transportation Committee, and a past member of the Syracuse-Onondaga County Planning Agency.

## *PAUL R. CZERWINSKI, P.E.*
**Vice President**

## SOLID WASTE MANAGEMENT:

- Permitting, Design and Construction Administration
- Bid Document Preparation
- Final Closure Plans
- Closure Investigation Reports
- Landfill Closures
- Landfill Expansions

## *PROFESSIONAL AFFILIATIONS*
**National Society of Professional Engineers**
**New York State Society of Professional Engineers**
**New York State Association of Solid Waste Management**

## *PROFESSIONAL CERTIFICATIONS*
**Hazardous Waste Operations Health & Safety (Initial 40-hour Course & Refresher)**
**Landfill Operator Training (14-hour training in accordance with 6NYCRR Part 360)**

## *EDUCATION*
**B.S. Civil Engineering - Rensselaer PolytechnicInstitute, Troy, NY, 1979**

## *PROFESSIONAL REGISTRATION*
**Registered Professional Engineer, New York State**

## *EXPERIENCE*
Mr. Czerwinski has over 18 years of significant and progressive experience in project management and construction administration. His responsibilities have included supervision of design teams in preparing permitting documents, contract drawings and specifications, supervision of inspectors, interpretation of contract plans and specifications, processing of estimates, change order negotiation, and coordination between the client, regulatory agencies and the contractor.

Mr. Czerwinski served as Project Manager for permitting, design and construction administration of several MSW landfills throughout New York State. Some of the projects he has been involved with include the Bristol Hill Landfill, Oswego County; Schuyler Falls Landfills, Clinton County; Oneida County Ash Landfill; the proposed Oneida-Herkimer Solid Waste Authority Landfill; Development Authority of the North Country Landfill; Madison County West Side Landfill; Chenango County Landfill; and the City of Auburn Landfill.

Other recent solid waste projects that have been under Mr. Czerwinski=s supervision include preparation of bidding documents for the Chenango County Landfill Expansion, the preparation of a Final Closure Plan and bidding document for the Oneida County Ash Landfill Phase 2 Closure; preparation of Closure Investigation Reports and Final Closure Plans for the Towns of Hope and Inlet in Hamilton County, NY; preparation of permitting documents and bidding documents for the initial construction of the landfill and support facilities for the Development Authority of the North Country.

Mr. Czerwinski is currently serving as Project Manager for the design of the Madison County Landfill Expansion. He is also serving as the Project Manager for construction administration of the Landfill Expansion Projects for the Development Authority of the North Country and Clinton County and a landfill closure project for Felix Schoeller Technical Papers.

Other recent solid waste construction projects Mr. Czerwinski has been involved with include Oswego County Energy Recovery Facility Air Pollution Control and Boiler Retrofit, Cortland County Landfill Expansion, Chenango County Landfill Expansion, the New York Air Brake On-Site Remediation Project the City of Auburn Landfill Liner Expansion, Clinton County Solid Waste Landfill and Support Facilities, Towns of Champlain and Mooers Landfill Closures (both Class 2 Inactive Hazardous Waste Sites), Town of Ausable Closure, Bristol Hill Liner Extensions (1994 and 1996), Madison County Landfill Westside Expansion, Towns of Lysander and Elbridge Landfill Closures, Bristol Hill Landfill Leachate Storage

Ausable Closure, Bristol Hill Liner Extensions (1994 and 1996), Madison County Landfill Westside Expansion, Towns of Lysander and Elbridge Landfill Closures, Bristol Hill Landfill Leachate Storage Expansion, Webb Transfer Station, Oneida-Herkimer Household Hazardous Waste Collection Facility and the Development Authority of the North Country Regional Landfill.

In addition, Mr. Czerwinski serves as Project Manager for construction administration of other non-solid waste related projects. He is currently serving as the project manager for construction administration for the Meadow Brook Detention Basin Improvement Project for the Onondaga County Department of Drainage and Sanitation (OCDDS). Other recent projects include the Harbor Brook Detention Basin Improvement Project for OCDDS, the Town of Owasco Water Treatment Plant Improvement P roject and 12-inch water main installation, the Replacement of the Hickory Street and Farrell Road Sewage Pump Stations for OCDDS and the Improvements at the Henry Clay Sewage Pumping Station for OCDDS.

## *ANDREW J. BARBER*

**Senior Managing Environmental Scientist**

## REMEDIAL INVESTIGATION AND DESIGN:

- Soil and Groundwater Remediation
- Regulatory Compliance
- Discharge Permit Issues
- Contaminant Fate and Transport
- Quality Assurance/Quality Contrd

## *PROFESSIONAL AFFILIATIONS*

**American Chemical Society**
**Association of Ground Water Scientists and Engineers**

## *CAPABILITIES*

**Soil and Groundwater Remediation**
**Field Sampling and Analysis**
**Health and Safety**
**Analysis of Water-Quality and Geochemical Data**
**Fate and Transport of Contaminants in Soil and Groundwater Systems**
**Regulatory Analysis and Negotiation**

## *EDUCATION*

**B.S., Chemistry, Union College, 1979**

## *EXPERIENCE*

Mr. Barber joined Barton & Loguidice, P.C. in mid-1998 as a Managing Environmental Scientist. He is managing several projects currently in remedial design stages.

Mr. Barber was employed with McLaren/Hart Environmental Engineering Corp. from 1996 to mid-1998 as a Principal Environmental Scientist. He managed a variety of projects including soil and groundwater remediation, litigation support, regulatory compliance, and environmental due diligence.

Mr. Barber was employed by Geraghty & Miller from 1980-1996; his initial responsibilities included field analytical chemistry, sampling and oversight of remedial activities. As a geochemist with the firm, he has worked on numerous groundwater investigations to characterize the transport and fate of chemical contaminants. He has extensive experience in the development and implementation of subsurface investigations, monitoring plans and remedial efforts.

As a project officer, Mr. Barber has directed investigative and remedial efforts at numerous sites in the northeast. Projects have been conducted under RCRA and CERCLA, as well as under various State and local regulations, and have included property transfer assessments, discharge permit issues, underground storage tank removal, subsurface investigations, contaminated soils treatability, soil and groundwater remediation, performance monitoring, and closure plans. Activities include: negotiation with Federal, State and/or local regulatory agencies; preparation of work plans and reports; remedial strategies, management of field activities, scheduling; regulatory compliance; quality assurance/quality control, and contract administration.

Mr. Barber served as the Corporate Safety Manager for Geraghty & Miller from 1986-1990; he developed and managed the company health and safety program. This program included medical monitoring and extensive training in compliance with OSHA hazardous waste regulations. He was also responsible for the preparation, review, and implementation of site-specific health and safety plans.

In 1979, Mr. Barber was employed with an environmental services firm in Linden, New Jersey, as a member of its Hazardous Material Response Team. While there, he was directly involved with cleanup activities at several uncontrolled hazardous waste sites. His responsibilities included data and sample collection, supervision of heavy equipment operations, and classification and segregation of waste materials.

*JOHN F. BRUSA, JR., P.E.*
**Senior Project Engineer**

## SOLID WASTE MANAGEMENT:

- Landfill Engineering and Design
- Construction Administration
- Environmental Monitoring
- Landfill Gas Collection Design

## EDUCATION

**B.S. Civil and Environmental Engineering – Clarkson University, 1995**
**Dean's Certificate in Environmental Engineering - Clarkson University, 1995**

## PROFESSIONAL ADVANCEMENT

**Field Installation of Geosynthetics@, 11th GRI Conference, Geosynthetics Research Institute, 1998**
**Design of Lateral Drainage Systems for Landfills, Dr. G. N. Richardson, P.E., Albany, NY, 1999**

## PROFESSIONAL REGISTRATION

**Professional Engineer - New York, 2000**

## PROFESSIONAL CERTIFICATIONS

**Hazardous Waste Operations Health & Safety (Initial 40-hour Course with Current Refresher)**
**Landfill Operator Training (14-Hour Training in Accordance with 6 NYCRR Part 360)**

## EXPERIENCE

Mr. Brusa joined Barton & Loguidice, P.C. in July of 1995. His primary responsibilities have been associated with both solid waste and hazardous waste projects. Mr. Brusa has assisted in such programs as landfill engineering and design, construction administration and oversight, and environmental monitoring. Experience gained in these areas includes:

- detailed design of double-composite landfill liner systems and design of various landfill capping systems;
- slope stability analyses for waste containment system components including landfill liner systems, landfill capping systems, the waste mass and landfill subgrade soils;
- design of leachate collection, conveyance and storage systems for efficient and effective landfill leachate collection including leachate pump station design, gravity conveyance pipeline design, leachate transfer manhole design and leachate force main layout;
- landfill gas collection system design and installation;
- landfill surface water management system design including storm water runoff culverts, drainage structures and detention ponds;
- detailed review and construction cost estimates for various construction projects;
- construction oversight for double composite landfill liner systems and solid and hazardous landfill closure projects which included QA/QC (Quality Assurance/Quality Control) for geomembranes, geotextiles, geonets, soil liners, drainage media and storm water management structures;
- preparation of engineering reports and permit drawings for landfill facilities including detailed engineering calculations, Operation and Maintenance Manuals, QA/QC Manuals, and Contingency Plans; and
  - drill rig supervision, monitoring well installation, and groundwater monitoring.

Related educational experience includes analysis and design of landfill capping and lining systems using laboratory experiments and computer models to evaluate facilities, and the review and design of a water distribution network serving the Village of Massena, NY.