Appendix B

Soil/Fill Management Plan

MALCOLM PIRNIE

Soil/Fill Management Plan

UNION SHIP CANAL PUBLIC OPEN SPACE

PARCEL 3 OF THE BUFFALO LAKESIDE COMMERCE PARK

City of Buffalo, Erie County, New York
Site Number B-00164-9

Prepared for:

Erie County and City of Buffalo

New York State Environmental Restoration Project

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Introduction

SECTION 1

1.1 Background

The Union Ship Canal Public Open Space is a vacant industrial property located in South Buffalo. The Site encompasses approximately 20 acres (plus approximately 9 acres of canal area) of the 113-acre Buffalo Lakeside Commerce Park (BLCP).

The Site is being remediated and redeveloped under the New York State Department of Environmental Conservation (NYSDEC) Environmental Restoration (ERP) program with the NYSDEC providing 90 percent funding for canal side remediation and 100 percent funding for canal sediment remediation and ecorestoration. The current development plan for the Site is public open space. Erie County is providing matching funds under the ERP program with additional funding assistance from the New York State Department of Transportation (NYSDOT) under the New York State Transportation Enhancements Program (TEP).

1.2 Purpose

The purpose of this Soil/Fill Management Plan (S/FMP) is to provide protection of human health and the environment during and subsequent to redevelopment of the Union Ship Canal Public Open Space (Site) parcel 3 of the BLCP.

Previous studies have investigated and assessed the surface and subsurface soil/fill and groundwater in the vicinity of the Site. While significant investigation of the subsurface has occurred, the nature of subsurface investigations does not allow for 100 percent complete or accurate characterization. Therefore, it is possible that some quantity of

unsuspected subsurface soil/fill contamination may be encountered during redevelopment activities and/or after the completion of the voluntary cleanup.

During future redevelopment and infrastructure improvements or routine maintenance activities such as construction of waterlines, sewers, electric power distribution, natural gas piping, road construction, foundation construction, Site grading and other activities requiring the movement of soils within the Site, unsuspected contamination may be encountered.

This S/FMP was created to provide known Site background information and to discuss the handling procedures for subsurface contamination, if encountered. The S/FMP provides protocols during the following events for redevelopment and infrastructure improvements:

- Sampling, handling, excavation and grading of on-Site soils.
- Soil/fill acceptability of off-Site sources for on-Site backfill, subgrade fill, or cover material.
- Erosion and dust control.
- Installation of fencing and other Site access control devices.
- Deed or other land use restrictions.
- Health and safety procedures for Site construction work.

Any disturbance, excavation, grading, or other movement of soils on the Site must be conducted in accordance with this S/FMP.

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Soil/Fill Management

SECTION 2

2.1 Excavation of On-Site Soil/Fill

No excavation, grading or disturbance of the final vegetated soil cover or existing subgrade soil/fill shall be initiated prior to a minimum of three working days notification to the NYSDEC Region 9, Division of Environmental Remediation. A Professional Engineer with remedial investigation experience, representing the Site owner or developer will monitor soil/fill excavations or disturbances. The excavation activities will be conducted in accordance with the protocols detailed in Attachment I and in the sections below.

During excavation, the soil/fill will be inspected for staining and will be field screened for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). Stained soil is soil that is discolored, tinted, dyed, unnaturally mottled, or contains a sheen. Attachment II contains a Standard Operating Procedure for Soil Screening. Excavated soil/fill that is visibly stained or produces elevated PID readings (i.e., sustained 10 ppm or greater) will be considered potentially contaminated and stockpiled on-Site for further assessment. The potentially contaminated soil/fill will be stockpiled (maximum 20 cubic yard piles) on polyethylene sheeting and then sampled for reuse, treatment, or disposal. The stockpiled potentially contaminated soil/fill will also be completely covered using polyethylene sheeting to reduce the infiltration of precipitation and the entrainment of dust. Sampling and analysis will be completed in accordance with the protocols delineated in Section 2.2. Soil/fill containing one or more constituents in excess of the Soil Cleanup Objectives (SCOs) for restricted residential use per NYCRR Subpart 375.6.8(b) will be transported off-Site to a permitted waste management facility. Soil/fill awaiting analytical results or awaiting transportation will be stored on-Site under polyethylene sheeting.

Any soil/fill with a pH higher than 12.5 is considered hazardous and therefore must be properly disposed off-Site. Additionally, any soil/fill with a pH greater than 9.0 but less than 12.5 may be reused on-Site but only to fill in areas of grade below the final cover system. This soil/fill may not be used as backfill in utility trenches or to create berms or other above grade mounds. This soil/fill must also be covered with clean material.

If buried drums or underground storage tanks are encountered during soil excavation activities, excavation will cease and the NYSDEC will be immediately notified. All drums and/or underground storage tanks encountered will be evaluated and the contractor will submit a removal plan for NYSDEC approval. Appropriately trained personnel will excavate all of the drums and/or underground storage tanks while following all applicable federal, state, and local regulations. Removed drums and underground storage tanks will be properly characterized and disposed off-Site. The soil/fill surrounding the buried drums or underground storage tanks will be considered as potentially contaminated and will be stockpiled and characterized.

All excavations or disturbances must be backfilled as soon as the work allows. Backfilled excavations must be covered with suitable cover material within ten working days of backfilling or as otherwise approved by the NYSDEC.

Excavated or disturbed backfill may be used as subgrade or excavation subgrade backfill following characterization performed in accordance with Section 2.2.

2.2 Soil/Fill Sampling and Analysis Protocol

All excavated and stockpiled soil/fill with evidence of contamination will be sampled and classified for reuse or disposal. Initially, one composite soil sample and a duplicate sample will be will be collected for each 100 cubic yards of stockpiled soil. The composite sample will be collected in the manner described in the Standard Operating Procedures (SOPs) included in Attachment II from five locations within each stockpile. PID measurements will be recorded for each of the five composite sample locations, and one grab sample and one duplicate sample will be collected from the location with the highest PID measurement of the five composite locations. The composite sample will be analyzed by a NYSDOH ELAP-certified laboratory for Target Compound List (TCL)

semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs), and the metals arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver plus cyanide using current NYSDEC Analytical Services Protocols (ASP). Additionally, pH will be analyzed using SW-846 Method 9045. The grab sample will be analyzed for TCL volatile organic compounds (VOCs).

Excavated soil/fill that exhibits no evidence of contamination (staining or elevated PID measurements) will also require characterization prior to use as subgrade or excavation subgrade backfill at the Site. Characterization samples will be collected and analyzed at a frequency of not less than one sample for 2000 cubic yards of soil/fill, and a minimum of one sample will be collected for volumes less than 2000 cubic yards. The characterization samples will be collected in accordance with the protocols described above; the sampling efforts shall consist of discrete samples for VOCs and composite samples collected from five locations for the remaining analytes.

Any soil/fill that has been characterized and found to meet the restricted residential SCOs may be reused as subgrade or excavation subgrade backfill. If the analysis of the soil/fill samples reveals unacceptably high levels of any analytes (i.e., greater than one or more SCOs), additional analyses will be necessary to further classify the material for hazardous characteristics for disposal purposes. At a minimum, the duplicate sample will be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) for the particular analytes that were detected at concentrations exceeding the restricted residential SCOs. The duplicate sample may also be analyzed for RCRA Characteristics including reactivity, corrosivity, and ignitability. If the analytical results indicate that concentrations exceed the standards for either TCLP or RCRA Characteristic analysis, the material will be considered a hazardous waste and must be properly disposed off-Site at a permitted disposal facility within 90 days of excavation. Additional characterization sampling for off-Site disposal may be required by the disposal facility. To potentially reduce off-Site disposal requirements/costs, the owner or Site developer may also choose to characterize each stockpile individually.

2.3 Subgrade Material

Subgrade material used to backfill excavations or placed to increase Site grades or elevation shall meet the following criteria:

- Excavated on-Site soil/fill shall either exhibit no evidence of contamination (staining and/or elevated PID measurements) or, if evidence of contamination is present, analytical results of the soil/fill indicate that the contaminants are present at concentrations below the restricted residential SCOs.

- Off-Site borrow soils will be documented as having originated from locations having no evidence of disposal or release of hazardous, toxic or radioactive substances, wastes or petroleum products.

- Off-Site soils intended for use as Site backfill cannot otherwise be defined as a solid waste in accordance with 6NYCRR Part 360-1.2(a).

- If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use.

- Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and the metals arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver plus cyanide. The soil will be acceptable for use as backfill provided that all parameters meet the restricted residential SCOs.

- Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are borrowed from a given off-Site non-virgin soil source area and both samples of the first 1,000 cubic yards meet the restricted residential SCOs, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source, up to 5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, provided all earlier samples met the restricted residential SCOs.

2.4 Final Cover

Surface coverage over the entire Site (excluding exposed areas of the concrete pad) is required. The purpose of the surface cover is to eliminate the potential for human contact with fill material. Surface coverage will total 2 feet in thickness and will consist of clean soil with vegetative cover, asphalt or concrete paving, stone or mulch or some combination thereof.

Prior to placement of final cover, a demarcation layer between the existing soil/fill and the clean final cover material will be placed in areas that are not being paved. The demarcation layer will be InterNet ¾-inch polypropylene orange mesh (product number OD-1670).

The cover soil material shall meet the following criteria:

- Excavated on-Site soil/fill shall not be used as cover material.
- Off-Site borrow soils will be documented as having originated from locations having no evidence of disposal or release of hazardous, toxic or radioactive substances, wastes or petroleum products.
- Off-Site soils intended for use as Site cover cannot otherwise be defined as a solid waste in accordance with 6NYCRR Part 360-1.2(a).
- If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use.
- Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals plus cyanide. The soil will be acceptable for use as cover material provided that all parameters meet the NYSDEC restricted residential SCOs.

Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are borrowed from a given off-Site non-virgin soil source area and both samples of the first 1,000 cubic yards meet the NYSDEC restricted residential SCOs, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source, up to 5,000 cubic yards. For borrow sources

greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, provided all earlier samples met the restricted residential SCOs.

- Verification that the final clean cover thickness be verified and documented by surveys conducted both before and after placement of the material. The clean final cover thickness must be a minimum of 24 inches thick (except exposed areas of the concrete pad that will not receive cover).

A certificate of completion will not be issued by the NYSDEC until the clean soil cover has been seeded and vegetation has established itself. The grading and seeding of the soil cover will occur at the start of a growing season.

2.5 Erosion Controls

2.5.1 General Guidelines

When the remedial actions require the disturbance of more than one acre of land, federal and state laws[1] require that the project obtain coverage under the NYSDEC SPDES General Permit for Storm Water Discharges from Construction Activities that are classified as "Associated with Industrial Activity", Permit #GP-93-06 (Construction Storm Water General Permit). Requirements for coverage under the Construction Storm Water General Permit include the submittal of a Notice of Intent Form and the development of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP for the Site will be prepared by the Construction Contractor in accordance with "Chapter Four: the Storm Water Management and Erosion Control Plan" in Reducing Impacts of Storm Water Runoff from New Development, NYSDEC, 1992. The SWPPP will provide the following information:

- A background discussion of the scope of the construction project.
- A statement of the storm water management objectives.
- An evaluation of post-development runoff conditions.

[1] The Federal Water Pollution Control Act (as amended, 33 U.S.C. 1251 et. Seq.) and the New York State Environmental Conservation Law: Article 17, Titles 7 and 8 and Article 70.

- A description of proposed storm water control measures.
- A description of the type and frequency of maintenance activities required to support the control measure.

The SWPPP will also address issues such as erosion prevention, sedimentation control, hydraulic loading, pollutant loading, ecological protection, physical Site characteristics that impact design, and Site management planning. The SWPPP will also include a contingency plan to be implemented in the event that heavy rain events are determined to be impacting water quality in the Union Ship Canal due to closure or redevelopment activities. All descriptions of proposed features and structures at the Site includes a description of structure placement, supporting engineering data and calculations, construction scheduling, and references to established detailed design criteria.

The use of appropriate temporary erosion control measures such as silt fencing and/or hay bales will be required around all soil/fill stockpiles and unvegetated soil surfaces during redevelopment activities. These methods are described below, and Attachment III includes details for various erosion control measures that might be used during Site redevelopment activities. Stockpiles shall be graded and compacted as necessary for positive surface water runoff and dust control. Stockpiles of soil/fill will be placed a minimum of ten feet from the property boundary.

2.5.2 Temporary and Permanent Erosion Control Measures

2.5.2.1 Temporary Measures

Temporary erosion and sedimentation control measures and facilities will be employed during active construction stages. Prior to any construction activity, temporary erosion and sediment control measures shall be installed and maintained until they are no longer needed, or until such time that permanent erosion control measures are installed and effective. Additional sediment control measures may also be necessary. Structural measures, as described below, will be designed and installed to provide the required sediment and erosion control. The following temporary measures will be incorporated into construction activities:

- Silt fencing.
- Straw bales.
- Temporary vegetation/mulching.

2.5.2.1.1 Silt Fencing

Regrading and capping activities may result in sheet flow to various areas of the Site; therefore, silt fencing will be used as the primary sediment control measure. Prior to extensive clearing, grading, excavation, and placement of cover soils, silt fences will be installed along all construction perimeter areas to prevent sedimentation in low areas and drainage areas. The location and orientation of silt fencing to be used during redevelopment operations will be field determined. There may be breaks and overlaps in the silt fencing to allow construction vehicles access to the construction areas.

Intermediate silt fencing will be used upslope of perimeter areas where phased construction activities are occurring. This measure will effectively lower sheet flow velocities and reduce sediment loads to perimeter fencing. In addition, silt fencing around soil stockpiles will be employed.

As sediment collects along the silt fences, they will be cleaned to maintain desired removal performance and prevent structural failure of the fence. Removed sediment will be disposed on-Site as general fill in a designated area. The perimeter silt fences will remain in place until construction activities in the area are completed and vegetative cover or other erosion control measures are adequately established. Silt fences will be provided and installed in accordance with the details presented in Attachment III.

2.5.2.1.2 Straw Bales

Straw bales will be used to intercept sediment-laden runoff from storm water channels as needed during various phases of construction. Additional straw bale dikes may be necessary in some areas during some phases of construction.

Use of straw bales will be limited to swales and/or diversion ditches where the anticipated flow velocity will not be greater than 5 feet per second (fps). Where flows may eventually exceed 5 fps along a swale or diversion ditch, an intermediate straw bale

barrier will be installed upgradient of the final bale barrier. The intermediate bale barrier will effectively reduce flow velocities and sediment load to the final barrier.

As with the silt fencing, sediment will be removed to maintain performance and prevent overtopping or failure of the straw bale barrier. Removed sediment will be disposed of on-Site as general fill in a designated area. Sediment laden straw bales that have lost their structural integrity and/or effectiveness will be disposed of off-Site as a solid waste. Straw bale barriers will remain in place until construction activities contributing sediment to the barrier are complete and vegetative cover or other erosion control measures are adequately established. Straw bales will be provided and installed in accordance with the details presented in Attachment III.

2.5.2.1.3 Temporary Vegetation and Mulching

As a result of phased construction and split construction schedule, portions of the Site may be left in intermediate/incomplete conditions. Intermediate areas may include rough graded areas awaiting finer grading or areas awaiting topsoil placement. Intermediate areas where activities will not resume for a period in excess of two weeks shall be seeded with a quick germinating variety of grass or covered with a layer of straw mulch.

The temporary cover will act to stabilize the soil and reduce erosion. As construction progresses, areas containing temporary vegetation or straw mulch can be covered without removal of the temporary vegetation or mulch.

2.5.2.2 Permanent Control Measures

Permanent erosion control measures and facilities will be incorporated during cover construction and during Site redevelopment for long-term erosion protection. Permanent measures and facilities will be installed as early as possible during construction phases. Parking and building systems associated with redevelopment shall not include dry wells or other subsurface injections/disposal piping or facilities.

2.5.2.2.1 Design Features

The remedial construction activities will involve the installation of cover system including asphalt, concrete, or clean fill over the entire Site. Permanent erosion control measures incorporate a combination of design features to limit overall erosion and sediment problems to practical design limits, and the placement of permanent facilities during Site restoration for long term erosion protection. The soil cover system will be designed based on the following criteria:

- Maximum slope of 33% (3H: 1 V) to limit erosion.
- Minimize the potential contact with, and migration of, waste fill.
- Provide a medium for the growth of vegetation to control erosion.

Design features incorporated into the construction plans to control erosion will include limiting steep slopes, routing runoff to surface water collection channels, limiting flow velocities in the collection channels to the extent practical, and lining collection channels, where appropriate. In areas where flow will be concentrated (i.e.; collection channels) the channel slopes and configuration will be designed to maintain channel stability.

2.5.2.2.2 Construction Features

Any final slopes greater than 33 percent will be reinforced or have a demarcation layer under the clean cover to indicate if erosion has extended into the subgrade. Following the placement of final cover soils over regraded areas, a revegetation program will be implemented to establish permanent vegetation. Vegetation serves to reduce erosion, enhance evapotranspiration, and improve runoff water quality. The areas to be grassed will be seeded in stages as construction in is completed with 70 lbs./acre of seed conforming to the mix included in 3.2.1 of the Remedial Work Plan. In addition to the above seed mixture, mulch, mulch blankets, or synthetic fabric will be placed to prevent erosion during turf establishment. Mulch will be placed on all slopes less than 15% and a mulch blanket on all slopes greater than 15%. Synthetic erosion control fabric will be placed in drainage ditches and swales. As an aid to turf establishment, seeded areas will be fertilized with a starter fertilizer.

2.6 Dust Controls

The surface of unvegetated or disturbed soil/fill areas will be wetted at all times with water or other dust suppressive agents to control dust during construction. There shall be no visible dust generated during redevelopment activities. Any subgrade material left exposed during extended interim periods (greater than 90 days) prior to placement of final cover shall be covered with a temporary cover system (i.e., tarps, spray type cover system, etc.) or planted with vegetation to control fugitive dust to the extent practicable. Particulate monitoring will be performed along the downwind occupied perimeter of parcels during subgrade excavation, grading, and handling activities in accordance with the Community Air Monitoring Plan further detailed in Section 4.2. Weekly submittal of all air/dust monitoring collected during intrusive construction activities (i.e., when soil/fill is being excavated and/or graded) to the NYSDEC is required.

Dust suppression techniques will be employed at the Site in accordance with NYSDEC TAGM 4031 (Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites). This TAGM describes guidance for dust monitoring, and includes a list of effective dust suppression techniques. As per TAGM 4031, dust suppression techniques that may be used at the Site include applying water on roadways, wetting equipment, spraying water on buckets during excavation and dumping, hauling materials in properly covered or watertight containers, covering excavated areas and material after excavation activity ceases, establishing vegetative cover immediately after placement of cover soil, and reducing the excavation size and/or number of excavations

2.7 Fencing and Access Control

Access to soil/fill on parcels adjacent to occupied on- or off-Site parcels must be controlled until final cover is placed to prevent direct contact with subgrade materials. To better control Site access, obvious access points will be gated. "No Trespassing" signs will be posted at the perimeter of the Site. The entire Site will be completely covered with clean fill or vegetated via hydroseeding to limit dust generation.

2.8 Property Use Limitations

The use of the property will be restricted through deed restrictions in an environmental easement.

2.9 Notification and Reporting Requirements

The following minimum notification and reporting requirements shall be followed by the property owner prior to and following Site development, as appropriate:

- The NYSDEC and NYSDOH will be notified that subgrade activities are being initiated a minimum of five working days in advance of construction.
- A construction certification report stamped by a New York State licensed Professional Engineer will be prepared and submitted to the NYSDEC and NYSDOH within 90 days after development of each parcel or subparcel. At a minimum, the report will include:
- An area map showing the parcel or subparcel that was developed and the property's tax map number.
- A topographic map of the developed property showing actual building locations and dimensions, roads, parking areas, utility locations, berms, fences, property lines, sidewalks, green areas, contours and other pertinent improvements and features. The topographic map will be stamped by a New York State licensed surveyor.
- Plans showing areas and depth of fill removal.
- Copies of daily inspection reports.
- Description of erosion control measures.
- A text narrative describing the excavation activities performed, health and safety monitoring performed (both Site specified and Community Air Monitoring), quantities and locations of soil/fill excavated, disposal locations for the soil/fill, soil sampling locations and results, a description of any problems encountered, location and acceptability test results for backfill sources, and other pertinent information necessary to document that the Site activities were carried out properly.

- Plans showing before and after survey elevations on a 100-foot grid system to document the thickness of the clean soil cover system.
- A certification that all work was performed in conformance with the S/FMP.

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Quality Assurance and Quality Control (QA/QC)

SECTION 3

3.1 Analytical Methods

All characterization samples collected during redevelopment activities will be analyzed using EPA-approved analytical methods using the most recent edition of the EPA's "Test Methods for Evaluating Solid Waste" (SW-846). Methods for Chemical Analysis of Water and Wastes "(EPA 600/4-79-020), Standard Methods for Examination of Waste and Wastewater" (prepared and published jointly by the American Public Health Association, American Waterworks Association and Water Pollution Control Federation).

3.2 Laboratory

The laboratory proposed to perform the analyses will be certified through the New York State Department of Health Environmental Laboratory Approval Program (ELAP) to perform Contract Laboratory Program (CLP) analysis and Solid Waste and Hazardous Waste Analytical testing on all media to be sampled during this investigation. The laboratory will maintain this certification for the duration of the project.

3.3 Data Submittal

The laboratory will perform the analysis of samples in accordance with the most recent NYSDEC Analytical Services Protocol (ASP). Analytical data will be submitted in complete ASP Category B data packs including documentation of laboratory QA/QC procedures that will provide legally defensible data in a court of law. If requested, the Category B data packs will be submitted to the NYSDEC.

Procedures for chain of custody, laboratory instrumentation calibration, laboratory analyses, reporting of data, internal quality control, and corrective actions shall be followed as per SW-846 and as per the laboratory's Quality Assurance Plan. Where appropriate, trip blanks, field blanks, field duplicates, and matrix spike, matrix spike duplicate shall be performed at a rate of 10% and will be used to assess the quality of the data. The laboratory's in-house QA/QC limits will be utilized whenever they are more stringent than those suggested by the EPA methods.

3.4 Data Usability Summary Reports

After receipt of analytical results, the data package will be sent to a qualified, third party, data validation specialist for evaluation. A Data Usability Summary Report (DUSR) will be prepared. The DUSR will provide a determination of whether or not the data meets the project specific criteria for data quality and data use.

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Health and Safety Procedures for Intrusive or Maintenance Activities

SECTION 4

4.1 Construction Personnel Protection

Contractors engaged in subsurface construction or maintenance activities (e.g., foundation and utility workers) will be required to implement appropriate health and safety procedures. These procedures will involve, at a minimum, donning adequate personal protective equipment, performing appropriate air monitoring, and implementing other engineering controls as necessary to mitigate potential ingestion, inhalation and contact with residual constituents in the soils. A Site-specific, activity-specific health and safety plan will be prepared for the Site by the Construction Contractor (Contactor). Recommended health and safety procedures include the following:

- While conducting invasive work at the Site, the Contractor should provide working conditions on each operation that shall be as safe and healthful as the nature of that operation permits. The Contractor shall comply with all New York State Department of Labor regulations and published recommendations and regulations promulgated under the Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and with laws, rules, and regulations of other authorities having jurisdiction. Compliance with governmental requirements is mandated by law and considered only a minimum level of safety performance. The Contractor shall ensure that all work is performed in accordance with recognized safe work practices.

- The Contractor is responsible for the safety of the Contractor's employees, the public and all other persons at or about the Site of the work. The Contractor is solely responsible for the adequacy and safety of all construction methods, materials, equipment and the safe prosecution of the work.

- The Contractor shall stop work whenever a work procedure or a condition at a work Site is deemed unsafe by the safety professional or his trained safety representative(s).

- The Contractor shall employ a properly qualified safety professional whose duties shall be to initiate, review and implement measures for the protection of health and prevention of accidents. The Contractor shall also employ safety representative(s) whose duties, working under the direct supervision of the safety professional, shall include the implementation the safety program for the work at the Site.

- Recognition as a safety professional shall be based on a minimum of certification by the Board of Certified Safety Professionals as a Certified Safety Professional and 5 years of professional safety management experience in the types of construction and conditions expected to be encountered on the Site.

- The safety representative(s) who will work under the direction of the safety professional will have appropriate qualifications. The required qualifications shall include a minimum of: five years of relevant construction experience, two years of which were exclusively in construction safety management; successful completion of a 30-hour OSHA Construction Safety and Health training course; 40-hour training as per 29 CFR 1926.65, Hazardous Waste Operations and Emergency Response; and, if confined space entry is required, training as per 29 CFR 1910.146, Permit-Required Confined Spaces.

- The safety professional shall visit and audit all work areas as often as necessary but at least once each week and shall be available for consultation whenever necessary.

- The safety representative(s) must be at the job Site full-time (a minimum of 8 hours per working day) whenever work is in progress. When multiple shift work is in progress more than one safety representative may be required.

- The safety professional and his safety representative(s) shall be responsible for ensuring Contractor compliance with governing laws, rules and regulations as well as of good safety practice.

- The safety staff shall maintain and keep available safety records, up-to-date copies of all pertinent safety rules and regulations, Material Safety Data Sheets, and the Contractors' Site specific health and safety plans (HASPs) and the Site emergency response plan with emergency and telephone contacts for supportive actions.

- The responsible safety professional shall sign and seal the Contractor's written Site-specific HASP and the Plan shall be available to workers on Site. The Contractor shall provide copies of the HASP to the Contractors' insurer, if required.

- The safety professional and/or his trained safety representative(s) shall as a minimum:

  - Schedule and conduct safety meetings and safety training programs as required by law, the health and safety plan, and good safety practice. A specific schedule of dates of these meetings and an outline of materials to be covered shall be provided with the health and safety plan. All employees shall be instructed on the recognition of hazards, observance of precautions, of the contents of the health and safety plan and the use of protective and emergency equipment.

  - Determine that operators of specific equipment are qualified by training and/or experience before they are allowed to operate such equipment.

  - Develop and implement emergency response procedures. Post the name, address and hours of the nearest medical doctor, name and address of nearby clinics and hospitals, and the telephone numbers of the appropriate ambulance service, fire, and the police department.

  - Post all appropriate notices regarding safety and health regulations at locations that afford maximum exposure to all personnel at the job Site.

  - Post appropriate instructions and warning signs in regard to all hazardous areas or conditions that cannot be eliminated. Identification of these areas shall be based on experience, on Site surveillance, and severity of hazard. Such signs shall not be used in place of appropriate workplace controls.

  - Ascertain by personal inspection that all safety rules and regulations are enforced. Make inspections at least once a shift to ensure that all machines, tools and equipment are in a safe operating condition; and that all work areas are free of hazards. Take necessary and timely corrective actions to eliminate all unsafe acts and/or conditions, and submit to the Engineer each day a copy of his findings on the inspection check list report forms established in the health and safety plan.

- Provide safety training and orientation to authorized visitors to ensure their safety while occupying the job Site.

- Perform all related tasks necessary to achieve the highest degree of safety that the nature of the work permits.

- The Contractor shall have proper safety and rescue equipment, adequately maintained and readily available, for foreseeable contingencies. This equipment may include such applicable items as: proper fire extinguishers, first aid supplies, safety ropes and harnesses, stretchers, water safety devices, oxygen breathing apparatus, resuscitators, gas detectors, oxygen deficiency indicators, combustible gas detectors, etc. This equipment should be kept in protected areas and checked at scheduled intervals. A log shall be maintained indicating who checked the equipment, when it was checked, and that it was acceptable. This equipment log shall be updated monthly and be submitted with the monthly report. Equipment that requires calibration shall have copies of dated calibration certificates on Site. Substitute safety and rescue equipment must be provided while primary equipment is being serviced or calibrated.

- All personnel employed by the Contractor or his subcontractors or any visitors whenever entering the job Site, shall be required to wear appropriate personal protection equipment required for that area. The Contractor may remove from the Site any person who fails to comply with this or any other safety requirement.

- Because water with elevated pH may act as a skin irritant, care must be taken to inhibit dermal contact when handling any groundwater at the Site. Actions to inhibit contact with groundwater may include the use of latex or other waterproof gloves by on-Site workers.

4.2 Community Air Monitoring Program

Ambient air monitoring will be conducted on a real-time basis during all subsurface construction activities using a minimum of a photoionization detector and a dust meter. Battery charge level for each instrument will be checked at the beginning and end of each day. The instruments will be calibrated at a frequency recommended by the manufacturer. All air monitoring readings will be recorded in a logbook and will be

available for review by the NYSDEC and New York State Department of Health (NYSDOH).

Baseline conditions will be measured at proposed intrusive activity locations prior to commencement of operations. Air quality within the work zone will be monitored in accordance with the Site-specific health and safety plan created by the Site developer or contractor. In addition to monitoring the work area for worker health and safety, volatile organic compounds will be monitored at the downwind perimeter of the work area every hour. If downwind perimeter organic vapor levels exceed five parts per million (ppm) above the upwind work area perimeter concentrations, the Vapor Emission Response Plan will be implemented.

As described in Section 2.6, appropriate dust suppression techniques will be employed at all times during Site redevelopment activities. Using a dust meter, particulates will be continuously monitored immediately downwind in the work area and integrated over a period not to exceed 15 minutes. If the downwind particulate level is more than 150 ug/m^3, then upwind (background) levels must be measured immediately. If the downwind levels are more than 100 ug/m^3 above background, additional dust suppression measures must be taken.

Weekly submittal of all air/dust monitoring data collected during intrusive construction activities (i.e., when soil/fill is being excavated and/or graded) to the NYSDEC is required.

4.2.1 Vapor Emission Response Plan

If the downwind area perimeter air concentrations of organic vapors exceed the upwind work area perimeter concentration by 5 ppm but less than 25 ppm, the following actions will be taken:

- Every 30 minutes monitor the perimeter work area location.
- Every 30 minutes monitor the organic vapor concentration 200 feet downwind of the work area perimeter or half the distance to the nearest receptor, whichever is

less. If this reading exceeds the perimeter work area upwind organic vapor concentration by 5 ppm, all work must halt and monitoring increased to every 15 minutes. If, at any time, this reading exceeds the perimeter work area upwind concentration by 10 ppm, the Major Vapor Emissions Response Plan will be initiated.

- If organic vapor levels 200 feet downwind of the perimeter work area or half the distance to the nearest downwind receptor, whichever is less, exceeds by 5 ppm the work area perimeter upwind concentration persistently, then air quality monitoring must be performed within 20 feet of the nearest downwind receptor (20-foot zone). If the readings in the 20-foot zone exceed the perimeter work area upwind concentration by 5 ppm for more than 30 minutes, then the Major Vapor Emissions Response Plan will be implemented.

- Work activities can resume only after the downwind 200 foot reading and the 20-foot zone reading are less than 5 ppm above the perimeter work area upwind concentration. In addition, the downwind perimeter work area concentration must be less than 25 ppm above the perimeter work area upwind concentration.

4.2.2 Major Vapor Emission Response Plan

If the downwind work area perimeter organic vapor concentration exceeds the upwind work area perimeter concentration by more than 25 ppm, then the Major Vapor Emission Response Plan will be activated. Upon activation, the following activities will be undertaken:

1. All work will halt.

2. All Emergency Response Contacts as listed in the Health and Safety Plan will be contacted.

3. The NYSDEC, NYSDOH, and the Erie County Health Department will be notified and advised of the situation.

4. The local police and fire department authorities will immediately be contacted by the Safety Officer and advised of the situation.

5. Frequent air monitoring will be conducted at 30-minute intervals within the 20-Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Safety Officer and work may resume.

MALCOLM PIRNIE

Excavation and Handling of Potentially Contaminated Soil/Fill

ATTACHMENT

I

EXCAVATION AND HANDLING OF POTENTIALLY CONTAMINATED SOIL/FILL

PART 1 – GENERAL (NOT APPLICABLE)

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 -EXECUTION

3.1 INSPECTION

A. Provide NYSDEC with sufficient notice and with means to examine the areas and conditions under which excavating, filling, and grading are occurring.

3.2 SITE PREPARATION

A. Clear all areas to be excavated of all trees, brush, roots, stumps, logs, wood and other materials and debris. All contaminated waste materials shall be removed from site and properly disposed. Burning will not be permitted unless permitted by the appropriate authorities.

B. If cover material was previously placed in the area to be excavated, the cover material may be stripped from the surface and stockpiled separately for reuse.

3.3 TEST PITS

A. CONTRACTOR may, if necessary, excavate and backfill, in advance of construction, test pits to determine conditions or location of existing facilities. The test pit operations will be conducted in accordance with the excavation procedures outlined below.

3.4 EXCAVATION

A. Perform all excavation required to complete the work as necessary. Excavations shall include earth, sand, clay, gravel, hardpan, boulders not requiring drilling and blasting for removal, decomposed rock, pavements, rubbish and all other materials within the excavation limits.

B. All work shall be completed in accordance with all air quality standards as determined by applicable federal, state, and local regulations.

C. Excavations for structures and utilities shall be open excavations. Provide excavation protection system(s) required by ordinances, codes, law and regulations to prevent injury to workmen and to prevent damage to new and existing structures or

pipelines. Unless shown or specified otherwise, protection system(s) shall be utilized under the following conditions.

1. Excavation Less Than 5 Feet Deep: Excavations in stable rock or in soil conditions where there is no potential for a cave-in may be made with vertical sides. Under all other conditions, excavations shall be sloped and benched, shielded, or shored and braced.
1. Excavations More Than 5 Feet Deep: Excavations in stable rock may be made with vertical sides. Under all other conditions, excavations shall be sloped and benched, shielded or shored and braced.
2. All excavations or disturbances must be covered using appropriate cover material within 10 working days of backfilling or as otherwise approved by the NYSDEC.

D. Pumping of water from excavations, if necessary, shall be done in such a manner to prevent the carrying away of particulates, soil/fill, or unsolidified concrete materials, and to prevent damage to the existing subgrade.
   1. Water from the excavations will be disposed properly in accordance with all applicable regulations in such a manner as not to endanger public health, property, or any portion of the work under construction or completed.
   2. In areas of high pH, the pH of the water in excavations will be measured using a field pH meter. Based on the groundwater analytical results, water in the excavations may be discharged to the ground surface unless staining or elevated PID measurements are observed in the excavation, a sheen is present on the water surface or if pH is less than 6.5 or greater than 8.5. If any of these conditions exist, the water pumped from the excavations will be containerized or may be discharged to the Buffalo Sewer Authority under a discharge permit if the water quality falls within the conditions of the permit. If the water quality is such that the permit requirements will be exceeded, the groundwater removed from the excavation will be containerized and sampled. Containerized water not meeting the Surface Water and Groundwater Quality Standards set forth in 6 NYCRR Part 703.5 will be transported off-site for proper disposal.

E. Utility Trench Preparation:
   1. No more than 200 feet of trench may be opened in advance of utility laying.
   2. Trench width shall be minimized to greatest extent practical but shall conform to the following:
      a. Sufficient to provide room for installing, jointing and inspecting utilities.
      b. Enlargements at pipe joints may be made if required.
      c. Sufficient for shoring and bracing, or shielding and dewatering.
      d. Sufficient to allow thorough compaction of backfill adjacent to bottom half of utility.
      e. Do not use excavating equipment that requires the trench to be excavated to excessive width or depth.

F. Field Screening of Excavated Materials:
   1. The soil/fill removed during excavation will be inspected for staining and will be field screened for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID).
   2. Excavated soil/fill with no evidence of contamination (no staining or elevated PID measurements) may be used as subgrade or excavation subgrade backfill. However, soils with high pH (8.5 to 12.5) will not be used as backfill in utility trenches or as subsurface material in the construction of berms.
   3. Excavated soil/fill that is visibly stained or produces elevated PID readings (i.e., sustained 10 ppm or greater) will be considered potentially contaminated soil/fill. Potentially contaminated soil/fill will be stockpiled on polyethylene sheeting and then sampled for reuse, treatment or disposal.
      a. Sampling and analysis of soil/fill exhibiting staining and/or elevated PID measurements will be completed in accordance with the protocols delineated in the Soil/Fill Management Plan (S/FMP). Sampling and analysis will also be completed in accordance with the requirements of the disposal facility at which the soil/fill with concentrations of contaminants above the soil cleanup objectives (SCOs) for restricted commercial use (per NYCRR subpart 375-6.8(b)) will be disposed.
      b. Soil/fill containing one or more constituents in excess of SCOs in the S/FMP will be transported off-site to a permitted waste management facility.
      c. Excavated or disturbed soil/fill that has been analyzed and found to meet SCOs may be used as subgrade or excavation subgrade backfill.

G. Material Storage:
   1. Stockpile on-site soil/fill with no evidence of contamination (no staining or elevated PID measurements) in approved areas in approximately 50 cubic yard piles, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
      a. Locate and retain soil materials away from edge of excavations.
      b. Dispose of excess soil material and waste materials appropriately.
   2. Stockpile on-site soil/fill with evidence of contamination (staining and/or elevated PID measurements) in approved areas in approximately 50 cubic yard piles, until sample analysis is completed. Place, grade and shape stockpiles for proper drainage. Ensure effective weather proofing of potentially contaminate soil stockpiles.
      a. Locate and retain soil materials away from edge of excavations.
      b. The stockpiled soil/fill will be placed on top of and be completely covered using polyethylene sheeting with a minimum thickness of 8-mil to reduce the infiltration of precipitation and the entrainment of dust. A berm wall shall be constructed around the stockpile using uncontaminated material covered with the same sheeting as the stockpiled material. The stockpile area shall be protected from stormwater runoff. Edges of the sheeting shall overlap a minimum of two feet and duct tape shall be applied along all seams to prevent movement of sheeting and infiltration of precipitation

into the stockpiled soil. Non-soil weights (e.g. tires) may be necessary to inhibit movement of the cover sheeting by wind.

H. Sample Collection and Analysis:
   1. Collect a minimum of one composite sample, and one duplicate sample using five grab samples per 100 cubic yards of potentially contaminated soil as described in the Soil/Fill Management Plan. The characterization samples should be collected from stockpiled potentially contaminated soil/fill within five days of excavation.
   2. Engage the services of a NYSDOH ELAP certified analytical laboratory to analyze samples in order to determine the proper handling and disposal of potentially contaminated soil/fill material as listed below.
   3. Required Analyses:
      a. Target Compound List (TCL) Volatile Organic Compounds (VOCs) by New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP-00).
      b. TCL Semivolatile Organic Compounds (SVOCs) by NYSDEC ASP-00.
      c. TCL pesticides and polychlorinated benzenes (PCBs) by NYSDEC ASP-00).
      d. Target Analyte List (TAL) metals and cyanide by NYSDEC ASP.
      e. pH by SW-846 Method 9045.
   4. If contaminants are present at concentrations above the SCOs, additional analysis will be required by the disposal facility and will likely include:
      a. Toxicity Leaching Characteristic Procedure (TCLP)
      b. RCRA Characteristics (Ignitability, Corrosivity, and Reactivity).

3.5 LOADING AND TRANSPORTING

A. Furnish all labor, materials, equipment, and incidentals required to load and transport all contaminated soil/fill from the site.

B. Notify the NYSDEC in writing when loading of contaminated soil/fill will occur and include the name and location of the disposal facility to be used. Submit to the NYSDEC, if requested, a full description of the disposal facility, licenses, permits, and compliance status.

C. Do not load and transport contaminated soil and debris until receipt of approval from the disposal facility that the contaminated soil and debris will be disposed in.

D. Conduct all loading and transportation activities in accordance with all applicable federal, state, and local regulations, including but not limited to United States Department of Transportation and USEPA regulations 40 CFR 172-179.

E. Conduct all loading activities to minimize the formation of dust.

F. Obtain and comply with the required permits and authorization for transportation of contaminated soil and debris in accordance with State and local jurisdictions. The contaminated soil and debris shall be transported by a licensed waste hauler.

G. All trucks transporting contaminated soil and debris for off-site disposal shall be lined, covered, and secured in accordance with all federal, State, and local regulations. Any liner that cannot be decontaminated shall be disposed of with the contaminated soil and debris. Trucks used for transportation of contaminated soil and debris shall travel on authorized roads in accordance with all federal, state and local regulations.

H. Contaminated soil and debris shall be transported for disposal in containers that are watertight. Leaking containers shall be unloaded at the site and any leaked liquids cleaned up as spills.

I. Contaminated soil and debris transport containers shall be covered to prevent release of dust and particulates and exposure of the contaminated soil and debris to precipitation.

J. Employ a temporary transport vehicle pad for vehicle loading operations to control and contain contaminated soil and debris spillage.

K. Inspect and clean loaded transport vehicle tires and undercarriage to remove any adhering contaminated soil and debris prior to vehicle departure from the site.

3.6 DISPOSAL OF EXCAVATED MATERIALS

A. Soil/Fill with concentrations of contaminants above the SCOs will be disposed off-site within 90 days of excavation at an appropriate, permitted disposal facility.

B. Prepare all applications for waste disposal at appropriate disposal facilities and waste transportation and disposal manifests and any other documents necessary for the off-site disposal of contaminated soil/fill material. Submit waste transportation and disposal documentation to the NYSDEC, if requested.

C. Prepare a waste transportation and disposal manifest, and all other documents required for waste shipment, for each load of waste material that is transported from the site.

D. Maintain a waste disposal log on-site containing pertinent waste disposal information. If requested, the NYSDEC on-site representative may review the log.

3.7 SOIL/FILL COVER SYSTEM

A. Backfill all excavations as promptly as work permits.

B. Replace cover material within 10 days of backfilling excavations. The cover material shall be consistent with and will be placed in accordance with the Remedial Work Plan.

C. If working conditions require the excavation to remain open for a period greater than ten days, plastic or metal sheeting will be used to cover the entire or portions of the excavation during periods of inactivity.

++ END OF SECTION ++

MALCOLM PIRNIE

Standard Operating Procedures

ATTACHMENT II

Appendix ____: Item ____ - ____COMPOSITE SAMPLE PROCEDURE FOR NON-VOLATILE ORGANICS ANALYSIS

Applicability: _____ Revision No.: _____Date:

Prepared By: _____Date: _____ Approved By: _____ Date: _____

1.0 INTRODUCTION

This guideline addresses the procedure to be used when soil samples are to be composited in the field.

2.0 METHODOLOGY

1. Transfer equal portions of soil from individual split-spoon samples to a large precleaned stainless steel (or Pyrex glass) mixing bowl.

2. Thoroughly mix (homogenize) and break up the soil using a stainless steel scoop or trowel.

3. Spread the composite sample evenly on a stainless steel tray and quarter the sample.

4. Discard alternate (i.e. diagonal) quarters and, using a small stainless steel scoop or spatula, collect equal portions of subsample from the remaining two (2) quarters until the amount required for the composite sample is acquired. Transfer these subsamples to a precleaned stainless steel (or glass Pyrex) mixing bowl and re-mix.

5. Transfer the composite sample to an appropriate precleaned jars provided by the laboratory and label. Store any excess sample from the stainless steel tray in separate, precleaned, sample containers, and submit to the laboratory for holding in case additional analysis is necessary.

6. Decontaminate all stainless steel (or glass Pyrex) trays, spoons, spatulas, and bowls in accordance with the sampling equipment decontamination procedure provided.

Appendix ____: Item ____ - ____SCREENING OF SOIL/FILL SAMPLES FOR ORGANIC VAPORS

Applicability: GENERAL____ Revision No.: _____ Date: _____

Prepared By: PIM Date: _____ Approved By:_____ Date:

1.0 INTRODUCTION

This guideline presents a method for screening soil samples. During soil/fill excavation activities, a photoionization detection (PID) or flame ionization detector (FID) will be used to monitor the excavated soils. The monitoring results provide criteria for sampling of soil potentially impacted by volatile organic substances.

2.0 METHODOLOGY

1. During excavation, the excavated soil will be examined for visually contaminated (stained) soils. If present, these areas will be sampled first. If no staining is observed, collect samples from each stockpile at random locations.

2. Place the sample in a labeled wide-mouthed glass jar. Seal the jar with aluminum foil and a screw top cap.

    a. Keep these samples at as near to 70°F as possible.
    b. Check head space of each sample for any organic vapor present by inserting the probe of the PID through the aluminum foil seal.
    c. The soil sample from each excavation location will be noted where VOA's were detected and removal of the contaminated soil will be coordinated per project requirements.

3.0 EQUIPMENT REQUIREMENTS

- 40 ml. precleaned and prelabeled glass VOA vials with teflon-lined septum caps.
- Ice and ice chest.
- Wide mouthed glass jars with screw caps
- Aluminum foil.
- Photoionization detector.

MALCOLM PIRNIE

ATTACHMENT

III

Erosion Control Details

STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition

A temporary barrier of straw or similar material used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a bale dike is to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes are to be used for no more than three (3) months.

Conditions Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainage way above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed these limits:

Constructed Slope	Percent Slope	Slope Length (feet)
2:1	50	25
2 -1/2:1	40	50
3:1	33	75
3-1/2:1	30	100
4:1	25	125

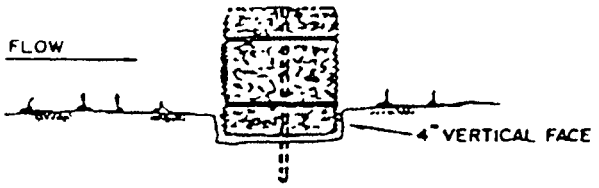
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage area in this instance shall be less than one acre and the length of slope above the dike shall be less than 200 feet.

Design Criteria

A design is not required. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 4.3 on page 4.10 or details.

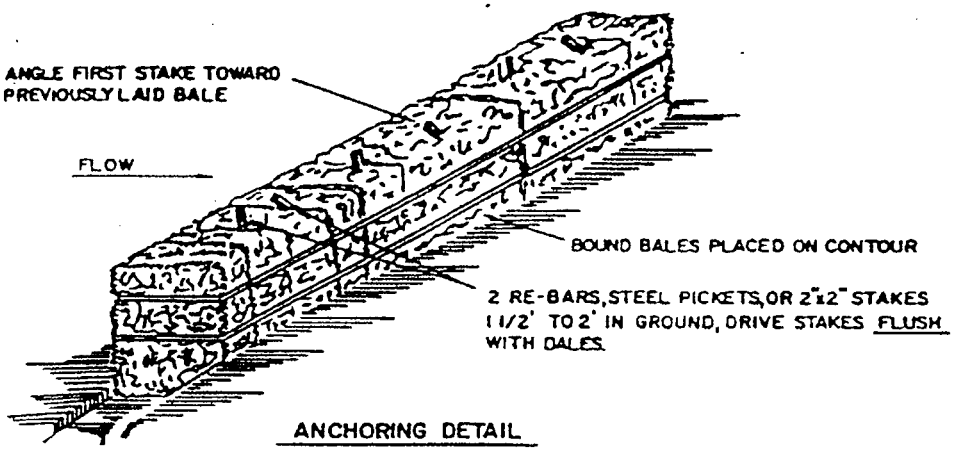
Figure 4.3
Straw Bale Dike Details



BEDDING DETAIL

STANDARD SYMBOL

SBD — DRAINAGE AREA NO MORE THAN 1/4 ac. PER 100 FEET OF STRAW BALE DIKE FOR SLOPES LESS THAN 25%



ANCHORING DETAIL

CONSTRUCTION SPECIFICATIONS

1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF (4) INCHES, AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	STRAW BALE DIKE	STANDARD DRAWING SBD-1

STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition

A temporary barrier of geotextile fabric (filter cloth) used to intercept sediment laden runoff from small drainage areas of disturbed soil.

Purpose

The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment load. Limits imposed by ultraviolet stability of the fabric will dictate the maximum period the silt fence may be used.

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope lengths contributing runoff to a silt fence are:

Slope Steepness	Maximum Slope Length (Ft)
2:1	50
3:1	75
4:1	125
5:1	175
Flatter than 5:1	200

2. Maximum drainage area for overland flow to a silt fence shall not exceed 1/2 acre per 100 feet of fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier.

Design Criteria

Design computations are not required. All silt fences shall be placed as close to the area as possible, and the area below the fence must be undisturbed or stabilized.

A detail of the silt fence shall be shown on the plan, and contain the following minimum requirements:

1. The type, size, and spacing of fence posts.
2. The size of woven wire support fences. (OPTIONAL)
3. The type of filter cloth used.
4. The method of anchoring the filter cloth.
5. The method of fastening the filter cloth to the fencing support.

Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. See Figure 4.4 on page 4.12 for details.

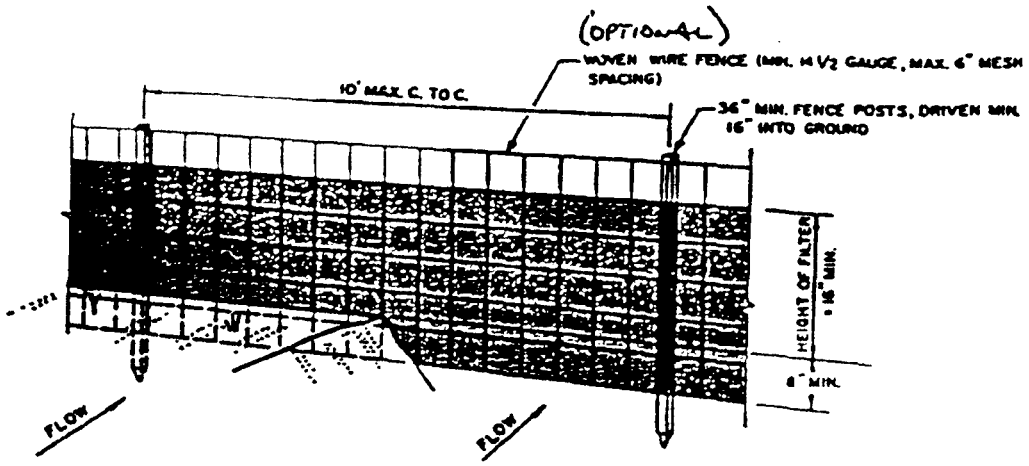
Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance. Statewide acceptability shall depend on in field and/or laboratory observations and evaluations.

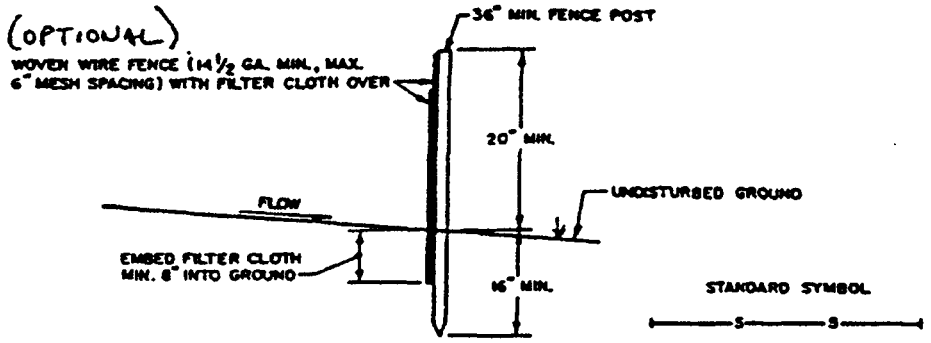
Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	90	ASTM D1682
Elongation at Failure (%)	50	ASTM D1682
Mullen Burst Strength (PSI)	190	ASTM D3786
Puncture Strength (lbs)	40	ASTM D751 (modified)
Slurry Flow Rate (gal/min/sf)	0.3	
Equivalent Opening Sizw	40-80	US Std Sieve CW-02215
Ultraviolet Radiation Stability (%)	90	ASTM G-26

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.0 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot.
3. Wire Fence (for fabricated units): Wire fencing shall be a minimum 14-1/2 gage with a maximum 6 in. mesh opening, or as approved. (OPTIONAL)
4. Prefabricated Units: Envirofence or approved equal may be used in lieu of the above method providing the unit is installed per manufacturer's instructions.

Figure 4.4
Silt Fence Details



PERSPECTIVE VIEW



SECTION

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

(OPTIONAL)

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD

FENCE: WOVEN WIRE, 14½ GA. (OPTIONAL) 6" MAX. MESH OPENING

FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL

PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	SILT FENCE	STANDARD DRAWING SF-1

STANDARD AND SPECIFICATION FOR TEMPORARY SWALE

Definition

A temporary excavated drainage way.

Purpose

The purpose of a temporary swale is to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment trapping device.

Conditions Where Practice Applies

Temporary Swales are constructed:

1. To divert flows from a disturbed area.
2. Intermittently across disturbed areas to shorten overland flow distances.
3. To direct sediment laden water along the base of slopes to a trapping device.
4. To transport offsite flows across disturbed areas such as rights-of-way.

Swales collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 4.5 on page 4.14 for details.

	Swale A <5 Ac	Swale B 5-10 Ac
Drainage Area		
Bottom Width of Flow Channel	4 ft	6 ft
Depth of Flow Channel	1 ft	1 ft
Side Slopes	2:1 or Flatter	2:1 or Flatter
Grade	0.5% Min. 20% Max.	0.5% Min. 20% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specifications for Waterways on page 4.91.

Stabilization

Stabilization of the swale shall be completed within 10 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

		FLOW CHANNEL	
Type of Treatment	Channel Grade	A ≤5 Ac	B 5-10 Ac
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with Jute or Excelsior, Sod, or lined with 2 in. stone
3	5.1-8.0%	Seed and cover with Jute or Excelsior, Sod line with 2 in. stone	Line with 4-8 in. stone or Recycled Concrete Equivalent
4	8.1-20%	Line with 4-8 in. stone or Recycled Concrete Equivalent[1]	Engineering Design

In highly erodible soils, as defined by local approving agency, refer to the next higher slope grade for type of stabilization.

[1] Recycled Concrete Equivalent shall be concrete broken into the required size, and shall contain no steel reinforcement.

Outlet

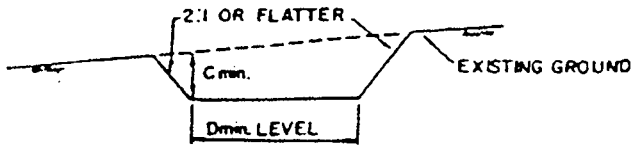
Swale shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the swale is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet condition.

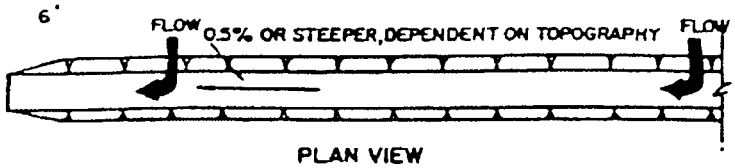
If swale is used to divert flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 4.5
Temporary Swale Detail



CROSS SECTION

	SWALE A	SWALE B
C	1'	1'
D	4'	6'



PLAN VIEW

STANDARD SYMBOL
A-2 B-3

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY SWALES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED ON CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE SWALE.
8. STABILIZATION SHALL BE AS PER THE CHART BELOW:

FLOW CHANNEL STABILIZATION

TYPE OF TREATMENT	CHANNEL GRADE	A (5 AC OR LESS)	B (5 AC - 10 AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED USING JUTE OR EXCELSIOR
3	5.1-8.0%	SEED WITH JUTE OR EXCELSIOR; SOD	LINED RIP-RAP 4-8" RECYCLED CONCRETE EQUIVALENT
4	8.1-20%	LINED 4-8" RIP-RAP	ENGINEERED DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	TEMPORARY SWALE	STANDARD DRAWING TS-1

STANDARD AND SPECIFICATIONS FOR PERIMETER DIKE/SWALE

Definition

A temporary ridge of soil excavated from an adjoining swale located along the perimeter of the site or disturbed area.

Purpose

The purpose of a perimeter dike/swale is to prevent off site storm runoff from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

Conditions Where Practice Applies

Perimeter dike/swale is constructed to divert flows from entering a disturbed area, or along tops of slopes to prevent flows from eroding the slope, or along base of slopes to direct sediment laden flows to a trapping device.

The perimeter dike/swale shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 4.16 on page 4.34 for details.

The perimeter dike/swale shall not be constructed outside the property lines without obtaining legal easements from effected adjacent property owners. A design is not required for perimeter dike/swale. The following criteria shall be used:

Drainage area - Less than 2 acres (for drainage areas larger than 2 acres but less than 10 acres see earth dike; for drainage areas larger than 10 acres, see standard and specifications for diversion).

Height - 18 inches minimum from bottom of swale to top of dike evenly divided between dike height and swale depth.

Bottom width of dike - 2 feet minimum.

Width of swale - 2 feet minimum.

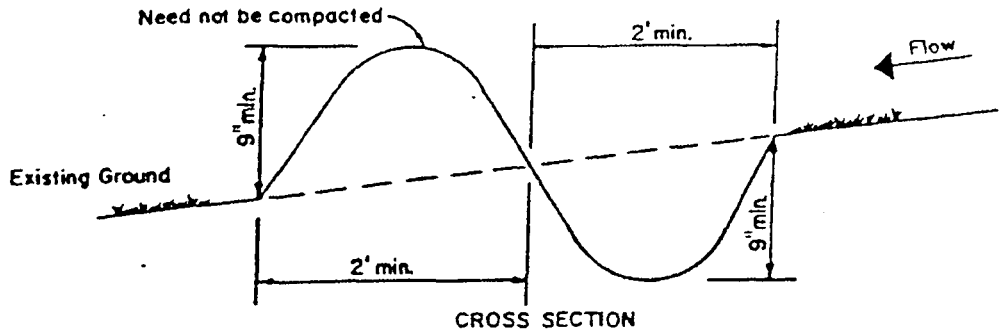
Grade - Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 20 percent.

Stabilization - The disturbed area of the dike and swale shall be stabilized within 10 days of installation, in accordance with the standard and specifications for seed and straw mulch or straw mulch only if not in the seeding season.

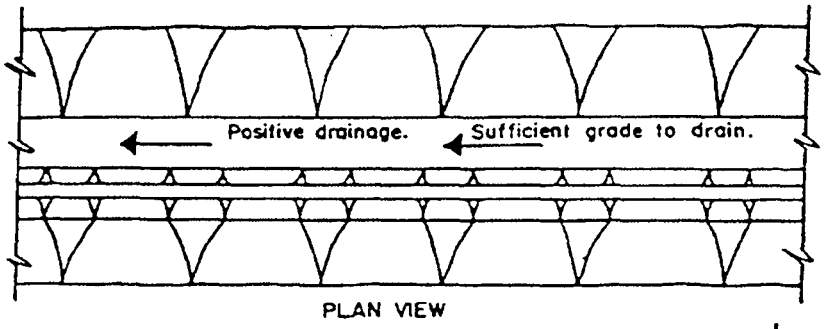
Outlet

1. Perimeter dike/swale shall have an outlet that functions with a minimum of erosion.
2. Diverted runoff from a protected or stabilized upland area shall outlet directly onto an undisturbed stabilized area.
3. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment trap, sediment basin, or to an area protected by any of these practices.
4. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 4.16
Perimeter Swale Dike Detail



CROSS SECTION



PLAN VIEW

STANDARD SYMBOL

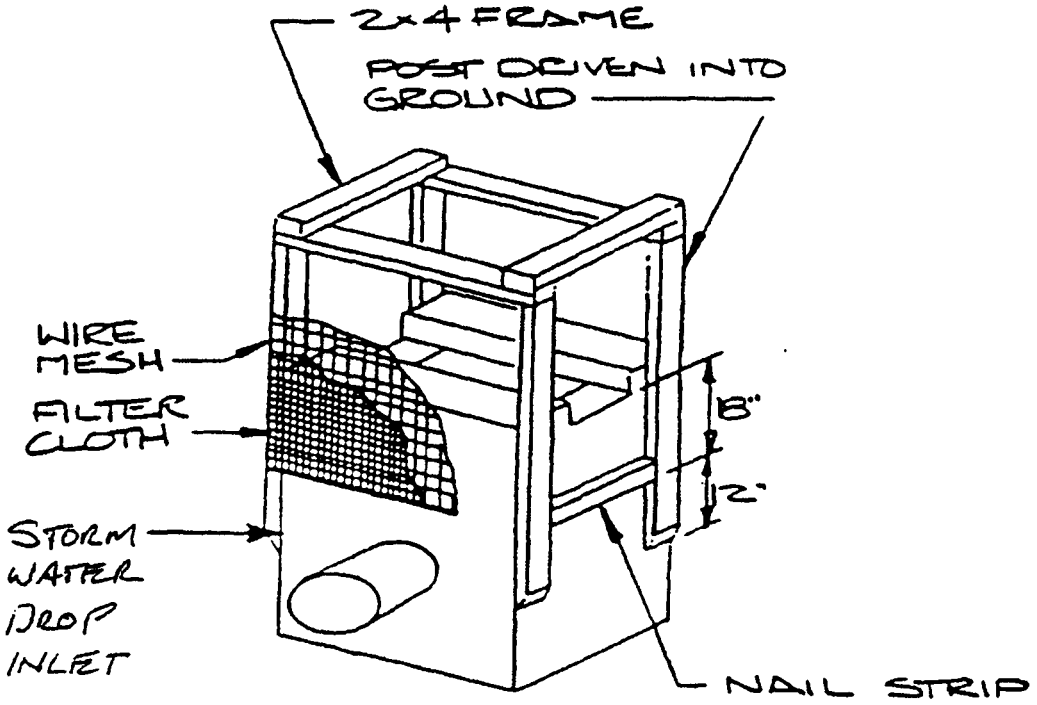
CONSTRUCTION SPECIFICATIONS

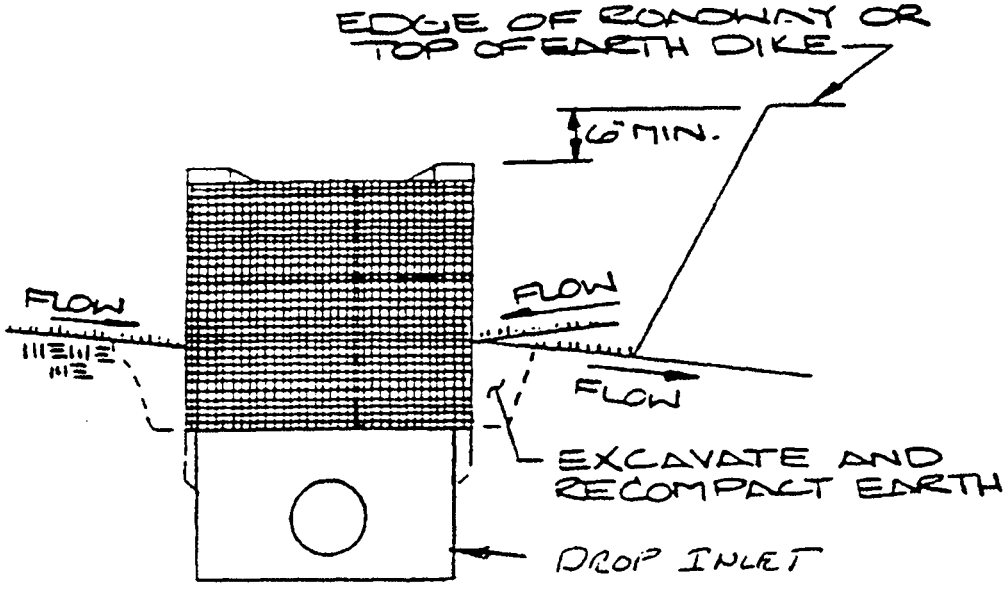
1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTRUBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSION VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SEED AND STRAW MULCH, AND SHALL BE DONE WITHIN 10 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

Max. Drainage Area Limit: 2 Acres

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PERIMETER DIKE/SWALE	Standard Drawing PDS-1

SEDIMENT TRAP FOR DROP INLETS





MALCOLM PIRNIE

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July 17, 2009

Efrat S. Forgette, P.E.
Division of Solid and Hazardous Materials
New York State Department of Environmental Conservation
270 Michigan Ave.
Buffalo, New York 14203-2999

Re: Petition of Amendment to Beneficial Use Determination (BUD) # 660-9-15
Erie County Water Authority – Sturgeon Point Treatment Plant Residuals

Dear Ms. Forget:

On behalf of the Erie County Water Authority (ECWA) and Buffalo Urban Development Corporation (BUDC), Malcolm Pirnie, Inc. offers this petition to amend Beneficial Use Determination (BUD) # 660-9-15 which allows the use of water treatment plant residuals from the ECWA's Sturgeon Point water treatment plant as top cover and non-structural fill at brownfield sites within the area of the South Buffalo Redevelopment Plan. BUD #660-9-15 was approved by the Department on November 15, 2001 based on a Petition submitted on May 31, 2000 with additional supporting information submitted on August 30, 2000 and November 17, 2000 (See Attachment A). Under the provisions of the previously approved BUD, the residuals are to be mixed with clean soil to form "residuals-amended soil" for the beneficial uses mentioned above.

ECWA and BUDC now wish to implement the BUD in support of construction of a green-space passive park at Parcel 3 of the Buffalo Lakeside Commerce Park (BLCP). The material proposed for use, the proposed use, and the proposed area of use is the same as that provided in the BUD petition submitted on May 31, 2000 as modified by the submissions of August 30, 2000 and November 17, 2000. The BUD material will not be used in the planned wetland embayment area. Certain details of the currently proposed use vary from the approved BUD, thus necessitating this petition for amendment. These variables include:

1. Site of Destination
2. Stockpile Setbacks
3. Mix Ratio
4. Final Depth of Residuals Amended Soil
5. Analytical Comparison Criteria
6. Sampling

Each of these variables is described in more detail below:

1. **Site of Destination** – The approved BUD specifies that the residuals will be moved to and used at brownfield sites within the 1400 acre South Buffalo Redevelopment Project which is bounded by

the Buffalo River to the north, Hopkins Street to the east, Ridge Road to the south, and Lake Erie to the west with the first area planned for cover use being the former railroad yard of the Hanna Furnace Site. This petition applies to Parcel 3 of the former Hanna Furnace Site (now known as the Buffalo Lakeside Commerce Park). Parcel 3 is a horseshoe-shaped parcel of land that extends approximately 200 feet from the north, east, and south edges of the Union Ship Canal. The western boundary of Parcel 3 abuts Commerce Street south of the canal and Fuhrmann Blvd. at the north side of the canal. The total area of Parcel 3 (not including the water-filled canal) is approximately 20 acres, see Figure 1.

2. **Stockpile Setbacks** – The approved BUD specifies minimum horizontal separation distances between the residuals that will need to be temporarily stockpiled on the development site and various sensitive items. These include:

   a. Property lines (50')
   b. Residences or places of business (1,500')
   c. Potable water wells (200')
   d. Surface water bodies (200')
   e. Drainage swales (25')

   Because Parcel 3 is only 200 feet wide on either side of the canal, this petition proposes a reduced minimum setback to surface water bodies of 50 feet. Also, because of the proximity of Parcel 3 to the relatively new business occupants of the Buffalo Lakeside Commerce Park, a revised setback to places of business of 200 feet is proposed.

3. **Mix Ratio** – The previously approved BUD specifies that the residuals-amended soil be mixed at a dry weight proportion of 60% clean soil and 40% residuals. This mix ratio was derived from loading calculations based on analytical results of three samples of the residuals (SP-1, SP-2, and SP-3) collected in January 2000. These samples were analyzed for a list of ten metals and nine other parameters relevant to water treatment, see Attachment A.

   Since the January 2000 sampling event, the residuals were sampled on three occasions for a total of nine additional samples in support of subsequent BUD applications and/or BUD amendments This include:

   - In July 2001 (SP-1 and SP-2) analyzed for a list of 20 metals, PCBs, pesticides, semivolatile organic compounds, and radiochemistry.
   - July 2004 (SB-1, SB-2, and SB-3) analyzed for VOCs, SVOCs, pesticides, PCBs, TAL metals, cyanide, and other parameters relevant to water treatment.
   - In April 2009 (RS-1 to RS-4) analyzed for arsenic only as pre-approved by the Department.

At the request of the Department, the 2009 samples were collected from residuals that were deposited in the residuals holding area after the previous sampling event of 2004. These samples were collected from four discrete locations in the southwestern corner of Lagoon #4 from a depth of approximately 1 foot below the surface. The physical characteristics of the residuals were consistent with those reported during previous sampling of the material. The 2009 samples were analyzed for arsenic only because arsenic has consistently been the only analyte found in the residuals at concentrations above current soil cleanup objectives (SCOs) for restricted residential use. The SCO for arsenic is 16 mg/kg. New in 2006, these SCOs will be used to evaluate the suitability of the residuals-amended soil during the implementation of this amended BUD.

Using analytical data from all 12 residuals samples collected and comparisons to the SCOs, a mix ratio of 1/3 residuals 2/3 clean soil is expected to achieve acceptable concentrations of all sampled analytes while providing a more efficient rate of consumption of the residuals. The average arsenic concentration of the 12 residuals samples collected to date is 20.5 mg/kg. Data summary tables for all four sampling events are provided in Attachment A. Analytical data of four samples of clean soils used for cover material at the Certainteed and Cobey sites show an average arsenic concentration of 4.9 mg/kg, See Attachment B. These clean soils were taken from sources in the Towns of Orchard Park and West Seneca. If these samples are assumed to be representative of local clean soil, then the proposed 1/3 to 2/3 mixed residuals amended soil would be expected to contain an acceptable concentration of arsenic of approximately 10.1 mg/kg. If, based on confirmatory sample results, the 1/3 to 2/3 mix ratio does not reduce the arsenic concentration to below 16 mg/kg, then the residuals amended soil will be placed back on the residuals stock pile for further mixing with clean soil or it will be removed from the Site for proper disposal. . A requirement will be included in the construction specifications that clean soil (to be used for on-site blending with residuals) contains no more than 7.0 mg/kg of arsenic.

4 **Final Depth of Residuals Amended Soil** – The approved BUD allows for the upper 1 foot of site cover to be residuals-amended soil and specifies recommended mulch materials and seed mix for vegetative cover on this residuals-amended soil cover. Since the remedy for Parcel 3 includes a 2-foot cover of clean soil and not a 1-foot cover, this petition proposes the deeper 1.5 foot of the 2-foot cover be made up of the residuals-amended soil and that the upper 0.5 foot of the 2-foot cover be 100% clean soil with no treatment plant residuals. This proposed, more conservative, cover system is described in order of placement below:

a. Placement of an orange mesh demarcation layer directly on the graded site soil/fill.

b. Placement of Lift 1: approximately 8 inches of loose treatment plant residuals (approximately 6 inches when later compacted) (average arsenic content of 20.5 mg/kg).

c. Placement of Lift 2: Approximately 8 inches of loose documented clean soil (approximately 6 inches when later compacted), (arsenic content $\leq$7 mg/kg).

d. Mixing of lift 1 and 2 using the disking method.

e. Placement of lift 3: Approximately 8 inches of loose documented clean soil) approximately 6 inches when later compacted0, (arsenic content ≤ 7 mg/kg) to create the residuals-amended soil layer. Total thickness being a minimum of 18 inches (after compaction) of residuals-amended soil between the site soil/fill and the top-soil.

f. Confirmation sampling of residuals amended soil for arsenic (per item 6 below).

g. Assuming confirmation samples contain less than 16 mg/kg of arsenic, the residuals-amended soil will be compacted to a total of approximately 18-inchs. If the residuals-amended soil contains greater than 16 mg/kg of arsenic. Those areas of exceedences will be placed back on the residuals stockpile for further mixing with clean soil or will be removed from the site for proper disposal.

h. Placement and compaction of Lift 4, clean topsoil, to a minimum 6-inch compacted thickness.

i. Total resulting clean soil cover = 2-foot minimum thickness.

j. Seed and mulch per specifications of the approved BUD.

5**Analytical Comparison Criteria** – Section 3.2.2 of the approved BUD details the required characteristics of both components of the residuals-amended soil (clean soil and WTP residuals). The required characteristics for the clean soil (TAGM 4046) and the WTP residuals (SSALs) have been replaced by restricted residential soil cleanup objectives from "Allowable Constituent Levels for Imported Fill or Soil," provided as Appendix 5A of draft DER-10 (March 2008).

Sampling – Sampling of off-site clean soil will be performed at the source location prior to transport, stockpiling, and placement as site cover, as required in the approved soil/fill management plan for Parcel 3. The soil/fill management plan specifies sampling clean soil for the full TCL/TAL list of organics and inorganics at a sliding frequency depending on the volume to be used on site. The residuals have already been characterized as part of the various BUD applications/amendments and no additional characterization is considered necessary as part of the soil/fill management plan. Tables 1 to 4 in Attachment A provide data summaries of the four residuals sampling events completed to date.

Since both the residuals and clean soil brought to the site will have already been fully characterized, post-blending confirmation/characterization sampling will focus primarily on total arsenic.

Confirmation Sampling for Arsenic - A sampling frequency of the blended residuals-amended soil of one (5-point) composite sample for every 80 cubic yards of residuals placed is proposed up to the first 4000 CY of residuals. After the first 4000 CY of residuals has been blended, one (5-point) composite will be collected every 160 cubic yards of residuals up to the second 4000 CY. After the second 4000 CY has been placed, blended and sampled, one (5-point) composite sample will be collected every 320 cubic yards of residuals up to the next 8000 CY. Therefore, sampling

of the planned 16,000 CY of residuals will require sampling for arsenic a minimum of 100 times.

Confirmation Sampling for Full TCL/TAL - Sampling for full TCL/TAL (VOCs, SVOCs, PCBs, pesticides, TAL metals, and cyanide) will be performed at a similar but lesser frequency as that of arsenic. One (5-point) composite sample will be collected for every 2000 cubic yards of residuals placed and blended, up to the first 4000 CY of residuals. After the first 4000 CY, one (5-point) composite will be collected for every 4000 CY of residuals placed and blended, up to the next 4000 CY. After the first 8000 CY, one 5-point composite will be collected for every 8000 CY. All four composite samples will be analyzed for Full TCL/TAL.

For both sampling scenarios described above, the planned frequency reduction is conditional on analytical results being below the allowable constituent levels for imported fill or soil (Appendix 5A of Draft DER-10). If one or more analyte is detected at a concentration above its respective allowable level, then the initial frequency of 1 per 80 CY for arsenic and 1 per 2000 CY for full TCL/TAL will apply.

Prior to implementation of full scale soil placement operations, a test patch will be set up to create a reduced-scale version of the residuals-amended soil placement, blending, and sampling operations to verify successful blending protocols. A quarter scale test patch is proposed at approximately 80 foot x 80 foot square. On this test patch, the proposed cover system will be placed, blended until apparently homogenous using the disking method, and sampled as described in part 4 above.

The ECWA and BUDC wish to implement approved BUD # 660-9-15 with the above modifications for the mutual benefit of ECWA, BUDC, the environment, and the taxpayers of Buffalo, Erie County, and New York State. Thank you for your consideration of this petition for amendment. A timely response from the Department would be greatly appreciated as park construction is planned this construction season.

If you have any questions or comments, please call me at 667-6607.

New York State Department of
Environmental Conservation
July 17, 2009

MALCOLM PIRNIE, INC.

Kent R. McManus, PE
Vice President
Board Certified Environmental Engineer

City of Buffalo

Peter Merlo, PE
City Engineer
Department of Public Works, Streets & Parks

Attachments

cc: ECWA - W. Dust, R. Niederpruem
ECWA - D. Seider
BUDC - P. Cammarata, D. Stebbins
NYSDEC - D. Locey
Malcolm Pirnie, Inc. - M. Lenz, T. Whetham

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ECWA-Sturgeon Point Treatment Plant Residuals
Petition of Amendment to Beneficial Use Determination #660-9-15

Attachment A

Analytical Summary Tables

MALCOLM PIRNIE

TABLE 1

SUMMARY OF ANALYTICAL RESULTS –RESIDUALS SAMPLNG EVENT 1

GENERAL CHEMISTY AND METALS

ECWA – STURGEON POINT WATER TREATMENT PLANT

Parameter	Units	Sample Number			NYSDEC Part 375-6 SCO (Restricted Residential Use)
		SP1	SP2	SP3	
GENERAL CHEMISTRY					
pH	s.u.	7.23	7.33	7.49	NA
Total Solids	%	34.7	45	60.8	NA
Total Volatile Solids	%	15.4	13.9	4.48	NA
Total Kjeldahl Nitrogen	mg/kg	3,240	2,490	2,080	NA
Ammonia Nitrogen	mg/kg	59.4	47.6	20.9	NA
Nitrate	mg/kg	16.4	2.42	6.04	NA
Total Phosphorus	mg/kg	904	599	458	NA
Total Potassium	mg/kg	3,260	2,280	1,440	NA
$CaCO_3$ Equivalence	*	12.8	24.7	57.4	NA
METALS					
Arsenic	mg/kg	41	25	16	16
Cadmium	mg/kg	2.3	1.2	0.99	4.3
Chromium	mg/kg	37.9	28	26.5	110
Copper	mg/kg	53	39.9	52.2	270
Lead	mg/kg	52.2	25.4	25.6	400
Mercury	mg/kg	0.071	0.059	0.043	0.81
Molybdenum	mg/kg	3	2	2	NA
Nickel	mg/kg	58.6	39	36.8	310
Selenium	mg/kg	1	ND	ND	180
Zinc	mg/kg	162	117	91.7	10000

Samples collected JANUARY, 2000.

Notes: * tons of $CaCO_3$/1,000 tons of material

NA Not Available

ECWA Sturgeon Point WTP Sample Locations: SP1=Lagoon No. 2, SP2 and SP3=Residuals Storage Area

TABLE 2

SUMMARY OF ANALYTICAL RESULTS - RESIDUALS SAMPLING EVENT 2

SVOCS, PESTICIDES, PCBS, METALS, AND RADIOCHEMISTY

ECWA STURGEON POINT WATER TREATMENT PLANT

STURGEON POINT

	SAMPLE NUMBER		
Sample No.	SP-1	SP-2	NYSDEC Part 375-6 SCOs (2) Restricted Residential
PARAMETER[1]			
SEMIVOLATILE ORGANIC COMPOUNDS (mg/kg)			
Bis-2-ethylhexyl phthalate	0.120 J	0.250 J	NA
TOTAL SVOCs	-	-	NA
PESTICIDES (ug/kg)			
PESTICIDES (Mg/kg)	ND	ND	-
PCB (Mg/kg)			
PCB (ug/kg)	ND	ND	1
TOTAL PCBs (surface 0-1')	-	-	1
METALS (mg/kg)			
Total Solids (%)	40.2	37.3	NA
Aluminum	34800	37300	NA
Arsenic	19	23	16
Barium	84.6	97.9	400
Beryllium	0.574 B	0.688 B	72
Cadmium	1.95	1.26	4.3
Calcium	22300	12400	NA
Chromium	17.3	20.3	110
Cobalt	7.59 B	9.8 B	NA
Copper	38.6	41.8	270
Iron	19600	24300	NA
Lead	16	19	400
Magnesium	6220	6300	NA
Manganese	1960	1810	2,000
Nickel	34.9	37.9	310
Potassium	1640	2140	NA
Silver	1.45 B	ND	180
Sodium	148 B	165 B	NA
Thallium	1 B	0.94 B	NA
Vanadium	17.7	21.2	NA
Zinc	81.7	91	10,000
RADIOCHEMISTRY[3, 4] (pCi/g)			

TABLE 2

SUMMARY OF ANALYTICAL RESULTS - RESIDUALS SAMPLING EVENT 2

SVOCS, PESTICIDES, PCBS, METALS, AND RADIOCHEMISTY

ECWA STURGEON POINT WATER TREATMENT PLANT

STURGEON POINT

	SAMPLE NUMBER		
Sample No.	SP-1	SP-2	NYSDEC Part 375-6 SCOs (2) Restricted Residential
PARAMETER[1]			
RADIOCHEMISTRY[3, 4] (pCi/g) (continued)			
Radium-226	2.1 +/- 1.1	-	NA
Lead-214	0.81 +/- 0.33	-	NA
Bismuth-214	0.69 +/- 0.18	-	NA
Lead-210	2.2+/-9.1	-	NA
Polonium-210	0.89 +/- 0.37	-	NA
Thorium-232	0.74 +/- 0.3	-	NA
Actinium-228	0.9 +/- 0.17	-	NA
Thorium-228	0.74 +/- 0.34	-	NA
Radium-224	0.85 +/- 1.2	-	NA
Lead-212	0.59 +/- 0.15	-	NA
Thallium-208	0.27+/-0.08	-	NA
Uranium-235	0.074 +/- 0.15	-	NA
Uranium-235/236	0.18 +/- 0.12	-	NA
Thorium-231	0.21 +/- 0.46	-	NA
Protactinium-231	0.79 +/- 1.1	-	NA
Thorium-227	0.2 +/- 0.23	-	NA
Francium-223	-0.0065 +/- 0.17	-	NA
Radium-223	0.043 +/- 0.12	-	NA
Lead-211	-0.063 +/- 0.57	-	NA
Bismuth-211	2.3 +/- 6.4	-	NA

Notes:

Samples collected July 24, 2001.

(1) Only those parameters having a value above the laboratory detection limit, and found at a minimum of one location are shown.

(2) Soil Cleanup Objectives for restricted residential use - NYCRR Part 375-6.8

(4) NYSDEC Regulations Part 380 limit doses from radionuclides above background.

B - Analyte was detected in method or trip blank.

J - result estimated below quantitation limit.

TABLE 3
ERIE COUNTY WATER AUTHORITY
SUMMARY OF ANALYTICAL RESULTS - RESIDUALS SAMPLING EVENT 3
GENERAL CHEMISRY, PESTICIDES, PCBs, VOCs, AND SVOCs
ECWA - STURGEON POINT WATER TREATMENT PLANT

SAMPLE LOCATION DATE SAMPLED	UNITS	SB-1 7/29/2004	SB-2 7/29/2004	SB-3 7/29/2004	NYSDEC Part 375-6 SCO (Restricted residential)
GENERAL CHEMISTRY					
% VOLATILE SOLIDS	%	13.4	10.6	13.5	NA
PERCENT SOLIDS	%	54.4	59.6	51.3	NA
pH		7.32	7.2	7.06	NA
TOTAL ORGANIC CARBON	MG/KG	45900		43800	NA
NITRATE NITROGEN	MG/KG				NA
TOTAL ALKALINITY	MG/KG	4040	5920	6240	NA
AMMONIA	MG/KG	14.3	12.8	30.4	NA
TOTAL KJELDAHL NITROGEN	MG/KG	2170	2520	2650	NA
TOTAL PHOSPHORUS	MG/KG	616	599	626	NA
METALS					
ALUMINUM	MG/KG	29800	32000	31400	NA
ANTIMONY	MG/KG				NA
ARSENIC	MG/KG	18 J	18.3	19.5	16
BARIUM	MG/KG	81.4	85.1	94	400
BERYLLIUM	MG/KG				72
CADMIUM	MG/KG				4.3
CALCIUM	MG/KG	32200	18800	19700	NA
CHROMIUM	MG/KG	27.2	29.4	28.1	110
COBALT	MG/KG	9.34	9.8	11.3	NA
COPPER	MG/KG	52	49.3	47	270
CYANIDE (TOTAL)	MG/KG				27
IRON	MG/KG	20600	22000	25300	NA
LEAD	MG/KG	18.3	18.6	20.9	400
MAGNESIUM	MG/KG	7020	6460	6920	NA
MANGANESE	MG/KG	1130	883	1080	2000
MERCURY	MG/KG				0.81
MOLYBDENUM	MG/KG				NA
NICKEL	MG/KG	29.8	31	34.5	310
POTASSIUM	MG/KG	2260	2200	2670	NA
SELENIUM	MG/KG				180
SILVER	MG/KG				180
SODIUM	MG/KG	379	356	431	NA
THALLIUM	MG/KG				NA
VANADIUM	MG/KG	22.8	22.8	25.5	NA
ZINC	MG/KG	86.8	95.3	108	10000
PESTICIDES					
ALPHA BHC	MG/KG			0.0086	0.48
BETA-BHC	MG/KG	0.0051			0.36
PCBs					
No PCBs Detected	MG/KG				1
VOCs					
2-BUTANONE (MEK)	MG/KG	0.070 J	0.018 J		100
4-METHYL-2-PENTANONE (MIBK)	MG/KG				NA
ACETONE	MG/KG	0.081 J	0.25 J	0.35 J	100
CHLOROFORM	MG/KG			0.021 J	49
SVOCs					
3+4-METHYLPHENOL	MG/KG	0.16 J	0.23 J	0.32 J	NA
BIS(2-ETHYLHEXYL)PHTHALATE	MG/KG	0.11 J	0.095 J	0.13 J	NA

Only those analytes or compounds having a positive detection, and detected at a minimum of one location are shown.
Blank cells indicate that the compound was not detected.
NS - Not sampled
NA - Not available
MG/KG - milligrams per kilogram
J - Estimated concentration, negative bias suggested due to sample matrix.
B - Compound also detected in blank sample

TABLE 4
ERIE COUNTY WATER AUTHORITY
SUMMARY OF ANALYTICAL RESULTS - RESIDUALS SAMPLING EVENT 4
TOTAL ARSENIC
ECWA-STURGEON POINT WATER TREATMENT PLANT

			April 2, 2009 Sampling				
SAMPLE LOCATION	**UNITS**	**METHOD**	**RS-1**	**RS-2**	**RS-3**	**RS-4**	**NYSDEC SCO**
DATE SAMPLED	>	>	**4/2/2009**	**4/2/2009**	**4/2/2009**	**4/2/2009**	**Restricted Residential SCO**
ARSENIC	MG/KG	6010B	14	13	8.2	8.5	16

Notes:
1. Yellow shading indicates exceedance to RSCO Restricted Residential

ECWA-Sturgeon Point Treatment Plant Residuals
Petition of Amendment to Beneficial Use Determination #660-9-15

Attachment B

Clean Soil Data-Cobey Site

MALCOLM PIRNIE

MALCOLM PIRNIE

REMEDIAL ACTION REPORT
COBEY, LLC SITE

Buffalo Lakeside Commerce Park
Buffalo, New York
Site Number C915202

Prepared for:

THE KROG CORP

NOVEMBER 2006

Submitted by:
Malcolm Pirnie, Inc.
40 Centre Drive
Orchard Park, NY 14127

3.2 Final Cover

As a prerequisite for occupancy, the entire Site was covered with a final cover system, as required in the Remedial Action Work Plan. This cover system was installed to eliminate the potential for human contact with the soil/fill material. Final cover at the Site consists of concrete in the form of the slab on grade building foundation and sidewalks, asphalt roads and parking areas, and clean soil with vegetation in grassed greenspace areas as required by the S/FMP.

The cover material at the site consists of barrier layer that may include a combination of one or more of the following protective layers:

- a minimum of 12-inches of clean soil;
- four inches of asphalt;
- four inches of concrete with a minimum gravel subbase thickness of six inches placed in newly paved areas of the Site.

3.2.1 Soil Cover Materials

Soil cover materials were brought to the Cobey Site from four different sources. These include:

- Buffalo Crushed Stone
- Gernatt Stone Products
- Cobham Road development site – Orchard Park
- North Americare business park - West Seneca

Crushed stone from Buffalo Crushed Stone's Wehrle Drive location was used as sub-base for the building slab foundation. Two samples (Composite #1 and Composite #2) were collected in July of 2002 and characterized for use at the Certainteed Site, like the Cobey Site, is located in the Buffalo Lakeside Commerce Park. Results of this characterization were acceptable for use as sub-base at the Certainteed Site and are also acceptable for that use at the Cobey Site. Table 3-3 provides a summary of analytical results and Appendix E contains the raw data as provided by the laboratory.

Cursched stone from Gernatt was used as clean backfill for new utility trenches. This material was sampled (Screened Gravel Round #1A) in May of 2004 and was determined to be acceptable for the intended use as backfill. Table 3-3 provides a summary of analytical results and Appendix E contains the raw data as provided by the laboratory.

Clean soil cover material was obtained from an expanding professional park on Cobham Road in Orchard Park. Four samples of this soil source were collected for analysis. The first two samples (CVS03, CVS-4) were collected in 2004 for use at the Certianteed Site. The second two samples (Cobham Rd 01192006, and Cobham Rd 02092006) were collected in 2006. Results of the analyses indicated that the soil was acceptable for use a site cover material. Prior to placement of the 1-foot soil cover, a demarcation layer was placed so that future excavation or other breaches of the cover would be more clearly recognized. The demarcation layer is made of a bright orange colored polypropylene mesh material. Table 3-3 provides a summary of analytical results and Appendix E contains the raw data a provided from the laboratory.

Top soil was obtained from a business park in West Seneca, New York called North Americare Park for the final cover at the Cobey Site. This material was sampled on August 31, 2006 (sample # CVS-083106). Results of the analysis indicated that the soil was suitable for use as top soil at the site. Table 3-3 provides a summary of analytical results and Appendix E contains the raw data a provided from the laboratory.

Table 3-1
Cobey, LLC Site
Buffalo, New York

Summary of Soil/Fill Management Samples

Sample No.	Sample Source	Date Sampled	ANALYSES PERFORMED							
			TCL VOCs	TCL SVOCs	PCBs	TCL Pesticides	TAL METALS	CYANIDE	pH	TCLP (2)
On Site Soil Material										
SFM-01	Drill cuttings from on site caisson boring	3/9/06	X	X	X	X	X(1)	X	X	
Soils- 1	Sample collected below steel vessel	4/24/06	X	X	X	X	X(1)	X	X	
Spoils-1	Construction soils pile	4/24/06							X	
Spoils- 2	Construction soils pile	4/24/06							X	
Spoils- 3	Construction soils pile	4/24/06							X	
Spoils- 4	Construction soils pile	4/24/06							X	
Soils- 2	Vessel soil sample	4/26/06	X	X	X	X	X(1)	X	X	
VFS-01 (2)	Disposal facility TCLP sample	6/13/06							X	X
Off Site Soil Material										
Composite #1 (3)	Buffalo Crushed Stone Crushed stone used for cement slab sub-base	7/8/02	X	X	X	X	X			
Composite #2	Buffalo Crushed StoneCrushed stone used for cement slab sub-base	7/8/02	X	X	X	X	X			
Screened Gravel Rnd #1a	Buffalo Crushed Stone Crushed stone for utility trench backfill	5/28/04	X	X	X	X	X			
CVS-3	Off site source (#15 Cobham Rd)of virgin soil material	12/17/04	X	X	X	X	X			
CVS-4	Off site source (#15 Cobham Rd)of virgin soil material	12/28/04	X	X	X	X	X			
Cobham Rd 01192006	Off site source (#15 Cobham Rd)of virgin soil material	1/19/06	X	X	X	X	X	X		
Cobham Rd 02092006 (4)	Off site source (#15 Cobham Rd)of virgin soil material	2/9/06		X			X			
CVS-083106	Off site source (Virgin Soil From North American Park, West Seneca, NY)	8/31/06	X	X	X	X	X			

Notes:

1) SSAL metals as specified in SFMP including: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver

2) Soil sample collected from steel vessel submitted for TCLP and RCRA characterization parameters

3) Soil sample collected for radionuclides and parameters shown

4) Re-analysis of 01192006 sample

MALCOLM PIRNIE

TABLE 3-3

SUMMARY OF ANALYTICAL RESULTS
OFF-SITE SOIL SAMPLING
KROG - COREY SITE

PARAMETER[1]	NYSDEC TAGM VALUES[2]	EASTERN U.S. BACKGROUND RANGE[2]	SITE-SPECIFIC ACTION LEVEL	Composite #1 7/1/02	Composite #2 7/1/02	Gerwen Gravel #1A 5/28/04	CVS - 3 12/17/2004	CVS - 4 12/28/2004	Cobham Rd 1/19/2005	Cobham Rd 1/9/2006	CVS 8/31/2006
VOLATILE ORGANIC COMPOUNDS (ug/kg)											
Acetone	200	-	-							-	
Chloroethane									R		
Bromomethane	-								R	-	
Chloromethane											
Carbon Disulfide	2,700	-	-							-	
cis-1,2-Dichloroethene	-										
Chloroform	300	-	-							-	
2-Butanone	300	-	-							-	
Trichloroethene	700	-	-							-	
Benzene	60	-	-							-	
Cyclohexane										-	2 J
2-Hexanone	-	-	-							-	
Methylcyclohexane	-										
4-Methyl-2-pentanone	1000	-	-							-	
Methylene Chloride	100	-	-	4	5					-	
Tetrachloroethene	1400	-	-							-	
1,1,2,2-Tetrachloroethane	600	-	-							-	
Toluene	1,500	-	-							-	
Ethylbenzene	5,500	-	-							-	
Isopropylbenzene										-	
Styrene										-	
Xylenes	1,199	-	-							-	
TICs	-	-	-			3.9				-	10 BJN
Total VOCs	-	-	10,000[4]	4	5	3.9	ND	ND	0.0	-	12.0
SEMIVOLATILE ORGANIC COMPOUNDS (ug/kg)											
4-Methylphenol	900	-	50,000								29 J
2-Methylnaphthalene	36,400	-	50,000						19 J		
Acenaphthene	50,000	-	50,000						21 J		
Dibenzofuran	6,200	-	50,000								
Fluorene	50000	-	50,000						30 J		
Phenanthrene	50,000	-	50,000					360			
Anthracene	50,000	-	50,000						47 J		
Carbazole	-	-	50,000						38 J		
Fluoranthene	50,000	-	50,000					700	440		46 J
Pyrene	50,000	-	50,000					690	350 J		35 J
Benzo(a)anthracene	224	-	50,000						150 J		23 J
Chrysene	400	-	50,000						180 J		
Bis(2-Ethylhexyl)phthalate	50,000	-	50,000			391					
Benzo(b)fluoranthene	1,100	-	50,000						220 J		30 J
Benzo(k)fluoranthene	1,100	-	50,000						77 J		
Benzo(a)pyrene	61	-	50,000						160 J		22 J
Indeno(1,2,3-cd)pyrene	3,200	-	50,000						109 J		
Dibenzo(a,h)anthracene	14	-	50,000						29 J		
Benzo(ghi)perylene	50,000	-	50,000						110 J		
N-nitrosodiphenylamine	-		50,000								
Total SVOCs	-	-	500,000[3,4]	ND	ND	391	ND	1,750	1,916	0	166
PESTICIDES / PCBs (ug/kg)											
Aldrin	41	-	-							-	
Endrin	100	-	-							-	2.7 J
Dieldrin	44	-	-							-	1.4 J
Endosulfan II	900	-	-							-	
4,4'-DDD	2900	-	-					6.4		-	1.1 J
4,4'-DDE	2100	-	-					20.0	17.0 J	-	2.0 J
4,4'-DDT	2100	-	-					19	10 J	-	2.2 J
alpha-Chlordane	540	-	-							-	
gamma-Chlordane	540	-	-							-	
Heptachlor epoxide	20	-	-							-	1.1 J
Methoxychlor	-	-	-							-	2.2 J
Aroclor 1242	1,000	-	-							-	
Aroclor 1254	1,000	-	-							-	
Aroclor 1260	1,000	-	-							-	
Total Pesticides	10,000	-	10,000[5]	ND	ND	ND	ND	1795.4	27.0	-	12.7
Total PCBs (detection limit 1)	10,000	-	10,000	ND	ND	85.1	ND	ND	ND	-	ND
RCRA METALS (mg/kg)											
Arsenic	7.5 or SB	3 - 12	50	ND	ND		3.42	3.06	6.5	-	6.6
Barium	300 or SB	15 - 600	500	ND	ND	12.1	41.80	54.6	45.7	-	61
Cadmium	(10)	0.1 - 1	20	ND	ND		0.59	0.56	0.28	-	0.29
Chromium	(50)	1.5 - 40	200	ND	ND		12.80	13.9	111 J	13.5	13.4
Lead	(1000)	4 - 500	1,000	ND	ND		13.70	11.6	18.6	-	22.1
Mercury	0.1	0.001 - 0.2	1	ND	ND		0.023	0.035	0.046	-	0.067
Cyanide	1.40[5]	-	20				ND	ND	ND	-	ND
RCRA CHARACTERISTICS											
Corrosivity (pH)	-	-	9.0 - 12.5, >12.5[6]							-	6.92
Ignitability		-	9.0 - 12.5, >12.5[6]							-	

Notes

(1) Only those parameters detected in at least one sample are shown. Concentrations of "non-detect" are not included, and are shown as blank.

(2) Soil Cleanup Guidelines and Eastern U.S. Background Range from NYSDEC TAGM 4046 (1/24/94). Values in parentheses are NYSDEC revised values for nonresidential sites but have not yet been incorporated into TAGM 4046.

(3) In addition to the SSAL of 500,000 ug/kg for total concentrations of SVOCs, the SSAL for each individual SVOC is 50,000 ug/kg.

(4) Total concentration is the sum of concentrations of Target Compound List (TCL) compounds plus estimated concentrations of Tentatively Identified Compounds (TICs).

(5) USEPA Region 3 Soil Screening Level for cyanide.

(6) Any soil/fill with a pH higher than 12.5 is considered hazardous. Any soil/fill with a pH greater than 9.0 but less than 12.5 may be reused onsite but only to fill in areas below grade. This soil may not be used as backfill in utility trenches or to create berms or other above grade mounds.

Values that are highlighted are above their applicable SSAL value.

Values that are bold and *italic* are above their applicable TAGM or Background value.

J = Estimated.

B = Also found in the sample blank.

R = Indicates a value estimated or not reported due to the presence of interferences.

- = Soil cleanup guideline, background range, or SSAL not available.

Created By JH on 05/10/06
Checked By BB on 05/10/06

D. Locey

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2915
Phone: (716) 851-7220 • **FAX:** (716) 851-7226
Website: www.dec.ny.gov

Alexander B. Grannis
Commissioner

July 30, 2009

Mr. Kent R. McManus, P.E.
Vice President
Malcolm Pirnie, Inc.
50 Fountain Plaza, Suite 600
Buffalo, New York 14202

Dear Mr. McManus:

ECWA Plant Residuals use at the Buffalo Lakeside Commerce Park
Amendment to BUD # 660-9-15

I am writing in response to your July 17, 2009 letter to me amending the current Beneficial Use Determination (BUD) # 660-9-15 for the use of waster treatment plant residuals from Erie County Water Authority's Sturgeon Point Plant as top cover. The proposed use of these residuals is at Parcel 3 of the Buffalo Lakeside Commerce Park.

Malcolm Pirnie submitted a Beneficial Use Determination (BUD) petition to the Department on behalf of Erie County Water Authority (ECWA) dated May 31, 2000. Additional information in support of this petition was submitted to the Department on August 30, 2000, November 17, 2000 and November 6, 2001. The ECWA BUD petition proposes to blend water treatment plant (WTP) residuals from the Sturgeon Point WTP with off-site soil that will be used for top cover at Parcel 3 of the Buffalo Lakeside Commerce Park, the former Hanna Furnace site.

Based upon our review of the petition and the supporting information, the Department has determined that the proposed blending of the water treatment plant residuals from the Sturgeon Point WTP with off-site soil for use as top cover material at the Buffalo Lakeside Commerce Park constitutes a beneficial use. For the purpose of this BUD, the WTP residuals cease to be a solid waste when they leave the Sturgeon Point WTP. This BUD determination is subject to the following conditions:

1. This approval is limited to the use of Sturgeon Point WTP residuals at Parcel 3 at the Buffalo Lakeside Commerce Park in the City of Buffalo.

2. The previous BUD submittal specifies that the "residuals-amended soil will be utilized at a dry weight proportion of 60 % clean off-site soil material to 40 % WTP residuals" (page 9 of the May 2000 submittal).

3. The remedy for the site includes a 2-foot cover of soil. The residuals amended soil will constitute the deeper 1.5 feet, while the upper 0.5 feet will be clean soil with no residuals. This cover system is described in detail in the July 17, 2009 letter.

4. Testing of the water treatment residuals shall be in accordance with the BUD petition.

5. An annual report must be submitted to the Department at the following addresses by March 1 of each year. The report shall contain the information identified in Section 5 of the BUD petition.

Mr. Mark Hans
Regional Solid Materials Engineer
NYSDEC
270 Michigan Avenue
Buffalo, New Yotk 14203

Mr. Tom Lynch
NYSDEC
Division of Solid & Hazardous Materials
Beneficial Use Section, 9th Floor
625 Broadway
Albany, New York 12233-7253

6. The Department reserves the right to modify, suspend, or revoke this BUD determination at any time, should conditions warrant. This determination does not exempt the ECWA from any other applicable Local, State, or Federal requirements.

Should you have any questions, please call me at (716) 851-7220.

Sincerely,

Efrat Scharf Forgette, P.E.
Environmental Engineer II

ESF:dcg
forgette\mcmanus-jul1.ltr

cc: Mr. Mark Hans, P.E., Regional Solid Materials Engineer
Mr. Dave Locey, Division of Remediation, NYS DEC
Mr. Tom Lynch, NYSDEC, Chief, Beneficial Use Section (Code 7253)
Mr. Peter Merlo, P.E. City Engineer, City of Buffalo