1.0 INTRODUCTION

1.1 SITE DESCRIPTION

The Site is located west of Tannery Road, between Routes 49 and 69, in the western portion of the City of Rome, Oneida County, New York (Figure 1). The Site is bordered on the north by the abandoned New York Central Railroad right-of-way, on the east by the Oneida-Herkimer County Ash Landfill and on the south and west by wetlands.

The existing landfill footprint occupies approximately 57 acres, with a maximum height of approximately 45 feet above surrounding grade and a maximum depth of approximately 10 feet below surrounding grade. The average refuse depth across the 57 acre landfill area is estimated to be 25 feet.

Closure of the City of Rome Landfill was initiated in August, 1996 and was completed in September, 1997. Closure activities conducted by Rifenburg Construction Inc. included waste relocation within the foot-print of the landfill, capping with a geomembrane cover system, installation of a slurry wall around the landfill, installation of four recovery wells and three monitoring wells including a pumping test, and wetlands mitigation.

The Site is located in a low lying area at the northeastern edge of a wetland designated as V-2, in an area known as the Rome Sand Plains. The Site geologic stratigraphy consists of approximately 80 feet of fine grained sediments, deposited by glacial and glaciolacustrine processes, overlying bedrock shale. The two uppermost stratigraphic units are the most critical with respect to the Site setting and consist of approximately 8 to 27 feet of medium to fine aeolian and lacustrine sands, overlying a gray brown lacustrine silt unit, which ranges in thickness from 17 to 52 feet. The landfill is situated within the upper lacustrine sand unit. Surface water drains from the Site in an easterly and southerly direction, where it ultimately discharges to Canada Creek, located approximately 500 feet east of Tannery Road.

Groundwater is present in the unconsolidated deposits at the Site under watertable conditions. Predominate groundwater flow in the Site vicinity is horizontal flow in the lacustrine sand unit. Groundwater flows in an easterly direction in the sand unit until it discharges to the local surface water drainage system and ultimately to Canada Creek. Groundwater in the vicinity of the Site is used by private residents as a potable water supply. Residents located near the Site, along Tannery Road, formerly used both shallow (unconsolidated) and deep (bedrock) wells as potable water supplies. In 1996, all homes on Tannery Road near the landfill were connected to the City of Rome's municipal water system.

1.2 SITE HISTORY

The Site was reportedly used as a disposal area since the 1950s, with active disposal operations terminating in 1985. Wastes disposed of at the Site were generally industrial and commercial solid wastes. In addition, it has been reported that several industrial waste streams were disposed of at the

Site. The landfill was capped with soil in several stages between 1982 and 1985, in accordance with the provisions of a previous NYSDEC Consent Order for Site closure.

Site investigations were initiated in 1980 when DUNN Corporation performed a groundwater evaluation, for the NYSDEC. Based on the analytical results from groundwater samples collected from the three wells installed as part of this evaluation, it was concluded that the Site was in compliance with the Resource Conservation and Recovery Act (RCRA) criteria for groundwater quality, as defined by 40 CFR Part 257.3-4.

In 1983-1984, NUS Corporation performed a Preliminary Assessment (PA) and a Site Inspection (SI) of the Site for the USEPA, consisting of sampling of groundwater, surface water and soil/sediment. The results of these investigations revealed phenolic compounds at concentrations exceeding the surface water quality standards as set forth in 6 NYCRR Part 703. Based on these results, the results of additional site sampling conducted by the NYSDEC, and the previous disposal of industrial wastes at the Site, it was added to the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites (Site Number 6-33-012) as a classification "2" site, pursuant to the requirements of Article 27, Title 13 - Inactive Hazardous Waste Disposal Sites, of the New York State Environmental Conservation Law. The City of Rome entered into the Consent Order with the NYSDEC on February 3, 1992, which required the City to perform a Remedial Investigation/Feasibility Study (RI/FS) and, if appropriate, Remedial Design and Implementation, in accordance with the Consent Order schedule.

The RI was initiated by DUNN in early 1993 in accordance with the NYSDEC-approved January 1993 RI/FS Work Plan. The RI fieldwork was completed by DUNN through 1993 and consisted of detailed sampling and analysis of surface water, groundwater, soil, sediment and air media. The RI also included a qualitative human health evaluation (HHE) and a habitat-based fish and wildlife impact analysis. The final RI report was submitted to the NYSDEC in May 1994 and was approved by the NYSDEC on June 22, 1994.

The RI groundwater sampling results indicate that groundwater in the lacustrine sand unit adjacent to the landfill contains chemical constituents which exceed their respective NYSDEC Class GA Groundwater Standards. The results of the RI residential well sampling program indicate compliance with all New York State Department of Health drinking water standards with the exception of iron, manganese and thallium in certain wells. The RI Report indicates that these exceedances may be attributable to sources other than the landfill. The RI Report also indicates that surface water drainage from the site along the western and northern landfill perimeters exhibits constituent concentrations above their respective NYSDEC surface water standards. The RI sediment sampling results indicate that impacts to local sediments from the landfill are limited to low levels of volatile organic compounds detected in one wetland sample.

The qualitative HHE completed for the RI indicates that the existing site conditions would be expected to provide two current exposure pathways which may pose potential human health concerns: the current and future use of groundwater by area residents and potential exposure to contaminated surface water discharges. The human health hazards related to current groundwater ingestion and use (based on residential well data) are expected to be primarily attributed to the non-carcinogenic properties of iron, manganese and sodium. Direct contact with contaminated surface

water discharges from the site may pose a potential health risk due to elevated levels of non-carcinogenic inorganics (primarily iron and manganese). No significant human health risks are expected to be posed by the anticipated limited exposure to the wetland sediments. The fish and wildlife impact analysis completed for the RI indicates that the ecosystems associated with the wetlands and Canada Creek have not been significantly impacted by the site.

The FS Report was completed by DUNN in 1994, with the final FS Report being submitted to NYSDEC in December 1994. The FS Report identified five Remedial Action Objectives for the recommended Remedial Action Plan. They are as follows:

- Prevent ingestion of groundwater containing site-related contaminants of concern at concentrations which exceed the Class GA groundwater standards;
- Prevent migration of contaminants of concern from the landfill that could result in groundwater concentrations above the Class GA groundwater standards and surface water concentrations above New York State surface water standards;
- Restore the groundwater to concentrations that meet the Class GA groundwater standards for site-related contaminants of concern;
- Prevent direct contact with waste material for wildlife and humans; and
- Provide protection and mitigation of adjacent wetlands.

Following submittal of the final FS Report, the NYSDEC issued a proposed Remedial Action Plan (PRAP) in February 1995, indicating their preferred alternative for the Site Remedial Action Plan. A public meeting was held at the Rome City Hall on February 9, 1995, to solicit public comment on the RI/FS Report, the PRAP and the preferred site remedial alternatives. Subsequently, on the basis of the complete Site administrative record, the NYSDEC issued a ROD on March 30, 1995, specifying the required Site Remedial Action Plan.

1.3 PURPOSE AND SCOPE

This comprehensive post-closure operation, monitoring and maintenance plan (OM&M Plan) has been prepared to provide basic information needed to effectively monitor and maintain the City of Rome Landfill and leachate management facility for the entire post-closure period. In conformance with 6 NYCRR Part 360-2.15(k), components of this OM&M Plan include:

- a description of the leachate management system, landfill gas control, and cover system operation and maintenance requirements;
- a description of the type, location, collection procedures and sample preservation methodology, and record keeping and reporting requirements for all environmental sampling and monitoring activities; and,
- a description of the types, location and frequency of all other facility monitoring and maintenance activities.

1.4 ORGANIZATION

The following personnel and organizations will initially perform the tasks detailed in this plan.

City of Rome - wastewater plant personnel	Operation and maintenance of pumping systems, alarm response, weekly monitoring.
Consultant (to be determined)	Water level monitoring, groundwater sampling, gas monitoring, reporting, technical support.
Analytical Lab (to be determined)	Chemical analysis of monitoring samples.
Specialty subcontractors (as needed)	Well service, fence repair, cover repair.

1.5 EQUIPMENT AND MANUFACTURERS' INFORMATION

Equipment literature provided in Appendix E for:

- Wiring diagrams for the Local Control Panel and the Meter Panel.
- Recovery well pump manual (Grundfos SP4).
- Recovery pump Control Unit (Siemens LOGO) programming manual.
- Flow Meters (Hersey Turbine meters).
- Gas igniter (flare) manual.
- Specification sheets for major control panel components.
- Autodialer instruction manual.

Suppliers of major components are listed below:

COMPONENT	RECOMMENDED SUPPLIER	TELEPHONE
Gas vent flares	Landfill Technology, W. Sand Lake, NY	518-674-8694
Grundfos well pumps	Rolffe Industries, Clifton Park, NY	518-383-2244
Electrical Panel/components	R.L. Stone, Latham, NY	518-782-7900
Wells	O'Rourke Groundwater Developing, Adams, NY	315-232-2110
Flow Meters	Lawrence-Angus Controls, Buffalo, NY	716-839-4422

2.0 FACILITY OPERATION AND MAINTENANCE

A leachate management system was constructed to mitigate the transport of contaminants from the landfill and to control leachate outbreaks that could adversely affect the landfill cover, adjacent wetlands, or threaten surface water quality. A description of the leachate management system and it's operation and maintenance requirements are provided in the following sections.

There leachate management system consists of two primary components: leachate collection and conveyance; and subsurface barriers. The leachate collection and conveyance system consists of four recovery wells which pump water from beneath the landfill and discharge to a City of Rome a gravity sewer line that was extended to the edge of the landfill. The subsurface barrier consists of a soil bentonite slurry wall and a section of sheet piling adjacent to the Oneida-Herkimer (Ash) Landfill. The subsurface barriers require no direct monitoring or maintenance procedures and will not be addressed further in this plan.

2.1 GROUNDWATER COLLECTION AND CONVEYANCE

Leachate from the landfill is collected within four 6-inch diameter recovery wells and pumped to the Meter Pit, which is located at the top of the landfill. In the meter pit recovery well lines are manifolded together and drain by gravity to City of Rome sanitary sewer lines. Recovery well logs and the results of initial well yield testing are included in Appendix F.

2.1.1 Recovery Wells

Four groundwater recovery wells were installed through the landfill. The wells are 6-inch diameter casing with stainless steel screens set in the sand underlying the landfill waste. The recovery wells range in depth from 58-ft to 62-ft and were installed by Atlantic Testing under the landfill closure contract in 1997. Each well is equipped with a 4-inch Grundfos stainless steel submersible well pump. Well RW-2 is equipped with a 1/2-Hp pump and RW-1, 3, and 4 are equipped with 1/3-Hp pumps. The pumps are set approximately 2-ft off of the base of the wells, and are supported with cables and the discharge piping.

The pumps are controlled by a Low Water Sensor switch which signals a programmable pump controller in the Local Control Panel, at the Meter Pit. The Low Water Sensor is set inside a 1-inch PVC stilling pipe in the well. When the Low Water Sensor fails to detect water, the controller shuts down the pump for a set time and then tries to restart the pump. If the pump fails to restart due to lack of water or a mechanical fault, the controller signals the an auto-dialer of a fault condition.

The delay time setting before re-start is adjustable at the individual control units. The pumping rate from the recovery wells can be throttled by adjusting the gate valves on the individual well lines in the meter pit. In the event the gate valves fail pre-maturely, ball valves may be substituted for throttling flow. The setting of these gate valves and the Low Water Sensor re-start delay time may need to be adjusted periodically as water levels and well yields decline in order to allow uninterrupted operation of the pumps. Pumps should not be programmed to re-start more frequently than every 10 minutes to prevent excessive cycling of the motors.

Well discharge piping in the well extends upward from the pump and connects to a conventional pitless adapter installed in the 6-in well. On the outside of the well casing, the pitless connects to a 1-inch Schedule 80 PVC discharge pipe that leads to the Meter Pit. The pitless units and the discharge piping are installed beneath the cover membrane at the base of the gas vent layer. The discharge lines are buried at approximately 4-ft depth and are further protected from frost by 1-inch styrofoam board.

2.1.2 Meter Pit and Discharge

Piping from the individual recovery wells are joined together in the Meter Pit. A gate valve, flow meter, and check valve are installed in each recovery well line in the Pit prior to the lines joining in a common manifold. The manifold drains through a 3-inch Sch 80 PVC gravity line to a City of Rome manhole located adjacent to the landfill. The turbine type flow meters each has a register which records flow pumped from the individual wells. For convenience, the flow meters are wired to signal a totallizing display located at the Metering Panel near the site entrance on Tannery Road. The Meter Pit is equipped with a heater and with sensors to signal the autodialer in the event of flooding or low temperature in the Meter Pit.

Approximately 800-ft of City sewer line (8-inch diameter SDR 26 PVC) was constructed on-site as part of the closure to convey leachate to a pump station located near Tannery Road. The pump station was installed as part of the site remediation under a separate contract in 1996-97 by Syracuse Constructors, Inc. Leachate from the pump station is pumped by duplex grinder pumps to the City of Rome wastewater treatment plant.

2.1.3 Control and operating systems

Control of the leachate pumping system is through the Local Control Panel located adjacent to the meter pit. Well pumps are operated through four independent controllers installed in the Local Control Panel. The pumps will run according to a sequence field programmed into the controllers. The controllers may be set to operate pumps as either:

1. Scheduled pumping - Pumps may be set to cycle for set time periods (automatic over-ride is still provided by the Low Water Sensor) so as to yield a sufficient volume of water to drawdown or maintain water beneath the landfill; or
2. Continuous pumping - Pumps may be set to run continuously with automatic shut-down and re-start upon tripping of the Low Water Sensor.

Wells were initially set in 1997 to run on a continuous basis. As water levels drop and yields decline, wells may not always have sufficient water to re-start. In that event, it may be necessary to increase the re-start delay between cycles, throttle the pump discharge, or to switch to scheduled pumping. Prior to significantly reducing the rate of pumping, it should be verified that reduced flow is not simply a result of well clogging that could be remedied by well cleaning.

An electrical disconnect switch is provided at each well to allow power to be shut down for service of the wells. Power should be shut off prior to servicing any electrical parts or putting conductive tools or monitoring equipment into the well where it may come in contact with wiring.

A Meter Panel is located near the site entrance on Tannery Road to allow determination of pump operating status, alarm conditions, and meter readings. This panel is installed to allow observations to be made without having to go onto the landfill. Since the turbine meter register and the Meter Panel display collect data from the flow meters in a different manner, some minor discrepancies between the two sets of numbers is acceptable. The registers on the flow meters should be used primarily as a check on the accuracy of the flow total values displayed at the Meter Panel.

2.2 CONTROL OF LEACHATE OUTBREAKS

The leachate recovery wells and collection system were designed to prevent leachate outbreaks and to mitigate leachate migration. During the early stages of recovery well pumping, the influence of the wells on the groundwater levels below the landfill may be variable. Over time however, leachate levels will be depressed to elevations well below the top of the slurry wall to provide an inward hydraulic gradient and control of leachate migration. Liquid levels in the recovery wells and nearby monitoring wells will be measured monthly during routine monitoring events.

During routine monthly monitoring, the perimeter of the landfill will be inspected for any surficial leachate seeps, particularly in the two areas where seeps were observed during landfill closure in the summer of 1997. Seeps will be sampled at the same frequency and for the same parameters as described for the groundwater monitoring program. Leachate indicator parameters may serve as a useful means of determining whether seepage is leachate, shallow seepage from above the membrane, or a combination of the two. VOC and metals data will be compared to surface water quality standards (6 NYCRR Part 703) and, if those standards are exceeded, the following steps will be taken:

1. NYSDEC will be notified of any new outbreaks of leachate.
2. The City will assess the flowrate of the seepage, the extent to which the seep has or may enter surface waters, the likelihood that surface water quality criteria will be exceeded, and proposed mitigative measures if such are required. The most obvious mitigative measure is temporary control/containment of the seep and disposal at the wastewater plant with other leachate generated from the landfill.
3. Within 30 days of receipt of data indicating an exceedence, the City will report to NYSDEC on the results of the assessment undertaken above.
4. The City will undertake mitigative measures in 14-days following NYSDEC approval.

2.3 LANDFILL GAS MANAGEMENT

Landfill gas is passively vented though 44 gas risers installed in the cover system. At seven of the vents, high levels of hydrogen sulfide gas were found after landfill closure. Since these vents may have been contributing to off-site odors, gas igniters were installed on these seven vents in November 1997.

2.3.1 Gas vents

The gas vent risers are 6-inch PVC piping that were installed in a pocket of coarse stone placed in the waste and connected to the gas venting sand layer (immediately beneath the geomembrane). The riser pipes are attached to the membrane by a flexible boot. Therefore the risers have some flexibility to allow for shifting as the landfill settles over time. In the event risers are damaged during mowing or by vandalism, the damaged pipe should be cut off and replaced with a new riser of equal construction. If the event damage extends below grade, topsoil and barrier soil may be hand excavated to facilitate repair provided soils are replaced and the geomembrane is not damaged in the process. If the vent is damaged to the extent that damage to the membrane is suspected, the cover soils may be hand excavated to allow inspection of the membrane for tears. Any repairs to the membrane should be done according to procedures described in Section 2.4 of this plan.

2.3.2 Gas igniters (flares)

Flares were installed in November 1997 on Gas Vent No's 7, 8, 10, 11, 12, 13, and 15. The LTI Model CF-5 flares were installed by cutting off the existing riser pipe, installing a standard flange connection, and bolting the flare unit onto the riser. Guy wires and insulation are also installed on the units. The flares operate off a solar cell battery which fires a conventional spark plug to essentially give continuous ignition. The flares require only annual maintenance. Every fall, the spark plug should be replaced and the flame arrester screen should be replaced. Replacement parts are available from Landfill Technology, W. Sand Lake, NY 12196, phone 518-674-8694.

2.4 COVER SYSTEM AND RELATED COMPONENTS

The cover system was installed primarily to prevent the downward percolation of water through waste in the landfill and the production of leachate. Without a cover system and active groundwater pumping, rainfall infiltration through the landfill would ultimately "fill up" the area inside the slurry wall and result in leachate outbreaks. Therefore, maintenance of an intact cover system is important to the long-term integrity of the closure.

2.4.1 Final cover

The landfill cover system consists of a 12-in thick gas vent (sand) layer, 40-mil LLDPE geomembrane, a 24-inch layer of soil (the barrier protection layer), and 6-in of topsoil. The thicknesses listed above are minimum dimensions an the cover is slightly thicker at some points.

During the growing season, vegetation should be mowed on a as needed basis depending on growth rates. At a minimum two mowings per year will typically be required. The purpose of mowing is to prevent deep-rooted woody plants from becoming established and overtaking the short-rooted grasses. Deep-rooted plants could endanger the flexible membrane barrier layer of the final cover system, causing penetration and ultimately leaks. In the event that the vegetative cover is observed to have become inadequate, reseeding and mulching may be needed.

In the event the cover is damaged by erosion, animal burrows, or other occurrences, cover soils may be replaced and re-seeded to prevent erosion. If the geomembrane itself is torn or damaged, a qualified installer should be retained to make repairs. The membrane was originally installed by Chenango Contracting of Johnson City, New York.

2.4.2 Surface water drainage

The surface water management system consists of a drainage swale which encircles the landfill midway down the slope and stone lined down chutes which drain water from the swale to the toe of the slope.

In the event that swales, ditches or other drainage structures are found to be damaged or obstructed, repairs must be made and obstructions removed in a timely manner to prevent erosion from proceeding further. Washouts, excessive erosion, and gullies will be repaired by regrading the areas to provide positive drainage in patterns consistent with the original design and re-vegetated. Ditches having excessive sediment deposits or debris (i.e., 8-inches depth or greater) will be cleaned to provide positive drainage. If necessary, dislodged rip-rap will be either replaced or placed back in its original location.

2.5 MONITORING WELLS

Groundwater monitoring wells are installed on and around the landfill to allow collection of samplers for chemical analysis and to allow monitoring of groundwater levels. Chemical analysis will be performed to determine residual impacts to groundwater from the site as well as to identify any new contamination which might occur. Groundwater level data will be analyzed over time to demonstrate that the active pumping system and slurry/sheet pile wall is hydraulically containing the landfill. When hydraulic control has been demonstrated with a reasonable degree of certainty, NYSDEC approval will be sought to shut down the pumping systems. In the event pumping systems are shut down, groundwater sampling and water level monitoring will still be needed, although at a reduced frequency.

Over time, a number of problems can develop with monitoring wells that affect their usefulness. The most common problems and repairs are as follow:

1. Concrete apron breaks up - The concrete apron is typically less than 12-in thick and serves to prevent erosion along the casing. If the concrete deteriorates or washes out such that it no longer serves that function it should be replaced. To replace the apron, break up and remove the existing concrete if deteriorated, hand excavate 12-in further down along the steel and place 6-in of bentonite pellets (well drillers "Hole-Plug" or a similar product) and place concrete to form an apron to drain water away from the well casing. If surface water run off is eroding around the well, it may be necessary to place an apron of coarse stone around the well or build the area up slightly to shed run-off water.

2. PVC pipe sticks out of steel pipe - As the landfill settles, the steel protective casing occasionally settles while the PVC casing remains stationary . If the PVC stick-up is such

that the steel cover cannot be latched, the well needs to be repaired. The PVC can be cut down to allow the cover to seal. In doing so, accurately measure the height of PVC removed since the rim of the PVC serves as the reference point for groundwater level measurements. The cut-off must be recorded and the "Measure Point" elevation corrected for use in all future water level data calculations for the well.

3. Well filled with silt - Over time, recovery wells may accumulate excessive amounts of silt. If more than half the screen is submerged in silt cleaning should be undertaken. Silt may be removed by adding water and compressed air to the well and surging the silt up and out of the well, by pumping from the well, or other means. A well drilling contractor should be retained to complete the well cleaning.

If the well is found to have irreparable damage which has rendered it dysfunctional, and if the well is still necessary for monitoring, a new well of similar construction and depth will be installed in the immediate vicinity of the old well.

2.6 HEALTH AND SAFETY

The principal hazards associated with O&M include:

- Inhalation of hydrogen sulfide gas from the gas vents.
- Combustion and burn hazards related to the landfill gas and flares.
- Electrical shock during service of pumps or panels.
- Equipment and vehicle related hazards during mowing and plowing.
- Trip and fall hazards

Although the leachate pump station is not addressed by this O&M Plan, it should be noted that confined space entry procedures need to be employed for entry to the pits. Health and Safety Plan is attached as Appendix H.

3.0 FACILITY INSPECTION AND MONITORING

This section addresses inspection and monitoring that will be performed to identify maintenance needs and verify that the landfill is maintained in a good condition. A schedule of facility inspection and maintenance activities is provided on Table 1. Information collected during field inspections will be recorded on the Site Inspection Record Form. The Site Inspection Record Forms will include the date and time of inspection, the name of the inspector, the nature of the inspection or maintenance, and the conditions observed or repairs made during the visit.

3.1 Groundwater Collection and Leachate Control

Routine monitoring and maintenance procedures for the groundwater collection and leachate control system are discussed below.

3.1.1 Weekly Activities

On a weekly basis, the site should be visited and the following inspection items completed.

- Record Flow Meter Total readings off the Meter Panel display.
- Compare flow total readings to those from the previous week to verify that all pumps are cycling.
- Record hour meter readings for the two pumps at the pump station
- Note and address any alarm conditions.
- Check the gate at the edge of the landfill to verify that it is locked.

A log form is provided in Appendix A for the weekly inspections.

3.1.2 Monthly Activities

The following tasks and inspection activities should be performed on a monthly basis. A checklist type inspection record form is provided in Appendix A to record the following maintenance activities and data collected:

- Inspect the condition and operation of all pumps including the four submersible recovery well pumps, metering pit equipment, and pump station effluent pump.
- Inspect the condition of the four recovery wells.
- Inspect the condition of the leachate collection manholes and the pump station.
- Inspect the condition of the recovery well metering pit including water alarm and autodialer.
- Inspect the condition of the recovery well, metering pit, and pump station control panels.
- Inspect the condition of the flow meter and associated appurtenances located in the metering pit and pump station manhole.
- Inspect the perimeter of the landfill for evidence of seeps or leachate outbreaks.
- Inspect the condition of the element heater and low temperature alarm located in the metering pit (October through April only).

- Record the volume of leachate removed from each recovery well by obtaining flow meter readings from totalizers in the metering pit.
- Record the volume of leachate pumped from the pump station by obtaining flow meter readings from the totalizer in the control panel.
- Record the volume of leachate discharged to sanitary sewer since previous inspection.

3.2 GAS VENTING SYSTEM

The gas venting system will be inspected quarterly during the post-closure period. Inspections will include:

- Determine if the vents are intact, undisturbed, and that the opening of the vent is not obstructed.
- Monitor and record hydrogen sulfide levels in the gas at the vent opening.
- Condition of the igniters

3.3 LANDFILL COVER

Inspections of the landfill cover will be conducted monthly for the first year to identify any irregular settlement, cracking, excessive erosion, washout, animal burrows, or other disturbances which may affect the integrity or line and grade of the final cover system. The inspection will attempt to identify any signs of sloughing of the slope surface, bulging at toes of slopes, tension cracks at tops of slopes, and other conditions that may indicate slope instability. Spots of bare ground or melted snow in the winter should also be noted as these may be indicative of landfill gas migration resulting from problems with the geomembrane.

If areas of instability are identified, the NYSDEC will be notified and remedial measures will be evaluated. Significant problems with the landfill cover or landfill slope may need to be corrected by regrading, placing additional cover material, or repairing geomembrane as necessary. Due to the mild slope of the final cover, it is unlikely that anything other than localized gradual settlement will occur. While it is not possible to address every slope failure scenario, the general response would be as follows:

- Notify NYSDEC.
- Evaluate conditions which led to the failure and corrective measures with the design engineer (Rust).
- Obtain NYSDEC approval of corrective measures.
- Repair slopes, membrane, and other components as needed.

The schedule by which the above was completed would depend on the magnitude of the problem and the potential for additional damage to occur prior to completing corrective measures.

On-site access roads will be maintained in a passable condition. As shown on the engineering plans, all access roads will have gravel surfaces. Inspections of the access roads will occur monthly during

routine monitoring. Erosion and ruts in the roads which could lead to erosion or vehicles being stuck should be noted and addressed by grading or placing additional stone.

A chain link fence with locking gates has been installed around the perimeter of the landfill and leachate management facility. The use of the access roads will be restricted by locked gates and only town maintenance personnel and other authorized persons will be permitted on-site. The perimeter fence and gates will be inspected monthly, for breaks in the fence and to ensure that gates are working properly. The fence and gates will be repaired as needed to provide continuous access control for the entire site.

3.4 SURFACE WATER DRAINAGE

The surface water management system will be inspected quarterly for conditions that would restrict flow, such as:

- Washouts, gullies or erosion.
- Excessive sediment or debris in ditches.
- Dislodged rip-rap.

NYSDEC will be notified of any of the above problems relative to the surface water management system.

3.5 MONITORING WELLS

Groundwater monitoring wells will be inspected quarterly during routine monitoring events. The components will be inspected for damage, to ensure that it is intact and undisturbed, that the screens are not clogged, and that sediment has not built up at the base of the well. The recharge rates after purging will be a reasonable indicator of the well's condition. If the screens are found to be clogged, the well will be redeveloped. Well cleaning and maintenance procedures are provided in Appendix G. Wells will be sampled according to the schedule in Section 4 of this Plan.

4.0 ENVIRONMENTAL MONITORING PLAN

Annual baseline and quarterly routine post-closure monitoring will be performed at selected groundwater monitoring wells and surface water points to evaluate the effectiveness of the landfill cover and leachate management system. Monitoring procedures will be consistent with those required for closed landfills under 6 NYCRR Part 360-2.15(k)(4). Monitoring will include sampling and analysis of groundwater and surface water, and collection of groundwater level measurements. Baseline and routine monitoring will be performed for a minimum of five years after which the monitoring plan will be reevaluated and revised, as necessary.

The following sections provide the sampling locations, methodology, and record keeping and reporting requirements for baseline and routine monitoring. The procedures for collecting water level measurements are detailed in Appendix B. The procedures for monitoring well purging and for the collection groundwater samples are detailed in Appendix C. All sampling data will be recorded on the Site Inspection Record Forms.

The groundwater monitoring program will include up gradient well MW-9S and down gradient wells MW-1S, MW-3S, MW-4S, MW-5S, MW-7D, Wells MW-2S and PZ-1 will used as water level piezometers only.

Leachate samples will be obtained from monitoring wells MW-10 and MW-12, which are screened just below the waste mass in the lacustrine sand. These wells will be sampled at the same frequency and for the same parameters as described for the groundwater monitoring program. All three landfill wells will also be monitored quarterly for water levels to evaluate the effectiveness of the slurry wall and the leachate management system.

4.1 ANNUAL BASELINE MONITORING

Approximate Time of Sampling:	Offset one quarter each year to account for seasonal variations.
Sampling Locations:	MW-1S, MW-3S, MW-4S, MW-5S, MW-7D, MW-9S, MW-10, MW-12.
Sampling Methodology:	Appendix C (groundwater), Appendix D (Equipment Decon)
Laboratory:	ELAP laboratory designated by the City of Rome.
Sample Analysis:	Part 360 Baseline List - Refer To Table 2
Groundwater Level Measuring Points:	Sample locations above and MW-2S, PZ-1, MW-11.
Groundwater Level Measurement:	Appendix B
Record Keeping Requirements:	All well purging data, field analysis results, water level measurements, and observations should be recorded in a dedicated field notebook. Chain-of-custody documents must be completed for all samples shipped to a laboratory.
Reporting Requirements:	All field and laboratory data will be compiled and distributed to the City of Rome and the NYSDEC.

4.2 QUARTERLY ROUTINE MONITORING

Approximate Time of Sampling:	Once per quarter for the one year of post-closure monitoring unless otherwise dictated by monitoring data.
Sampling Locations:	MW-1S, MW-3S, MW-4S, MW-5S, MW-7D, MW-9S, MW-10, MW-12.
Sampling Methodology:	Appendix C (groundwater), Appendix D (Equipment Decon)
Laboratory:	Send samples to the ELAP laboratory designated by the City of Rome.
Sample Analysis:	Part 360 Routine List - Refer To Table 3
Groundwater Level Measuring Points:	Sample locations above and MW-2S, PZ-1.
Groundwater Level Measurement:	Appendix B
Record Keeping Requirements:	All well purging data, field analysis results, water level measurements, and observations should be recorded in a dedicated field notebook. Chain-of-custody documents must be completed for all samples shipped to a laboratory.
Reporting Requirements:	All field and laboratory data will be compiled and distributed to the City of Rome and the NYSDEC.

5.0 RECORD KEEPING AND REPORTING

5.1 INSPECTION RECORDS

Site Inspection Record Forms of all inspection and maintenance activities will be retained by the City of Rome for at least seven years after the date of each inspection or maintenance event. The records will indicate the date and time of inspection, the name of the inspector, the nature of the inspection or maintenance, and the conditions observed or repairs made.

5.2 ANNUAL REPORT

An annual report summarizing activities at the landfill will be submitted to

> Mr. Gerald J. Rider, Jr., P.E., Chief Operation and Maintenance Section, Department of Environmental Remediation, NYSDEC, 50 Wolf Road, Albany, NY 12233.
>
> Mr. Darrell Sweredoski, NYSDEC, 317 Washington Street, Watertown, New York, 13601.

The report will describe:

- The results of all groundwater and leachate quality data monitoring.
- The amount of groundwater and leachate collected from the recovery wells.
- Water level monitoring data and contours for representative dates.
- Significant maintenance or repair issues and their resolution.
- Any deviations from the approved O&M procedures and reasons for the change.

New York State Department of Environmental Conservation
Division of Environmental Remediation
Bureau of Hazardous Site Control, 11th Floor
625 Broadway, Albany, NY 12233-7014
Phone: (518) 402-9564 • **FAX:** (518) 402-9557
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

May 12, 2003

Ed Fahrenkopf
Delaware Engineering. P.C.
28 Madison Avenue Extension
Albany, NY 12203

Dear Mr. Fahrenkopf,

Thank you for submitting plots of groundwater contamination levels at the Tannery Road Landfill as part of the 2002 Annual Report for this site. After reviewing the groundwater sampling data and graphs we have a few questions about some of this information presented, as well as a few recommendations to make future graphs more consistent with NYS DEC's standards. We ask that you please email a response to these questions to sxlasdin@gw.dec.state.ny.us.

the tables

1) On Table 1 in the December 2002 report: although leachate indicators are clearly labeled as (mg/L), it is unclear what measurement units are represented by the NYSDEC GW Standards, other than "GV", or Guidance Value. Is Guidance Value also measured in mg/L? In the future, please label the NYS DEC GW Standard Column more clearly. Also, please note that NYS DEC represents analytical groundwater results in ug/L or ppb. We ask that you please follow this format as well.

2) Certain analytes, such as total phenols, bromide, lead, magnesium, and manganese, were not included in the groundwater plots, despite the fact that they were shown to exceed NYS DEC Groundwater Standards in at least one well. Although it is explained in the report that some of these analytes, such as phenols, may be present at the site due to background occurrence which is unrelated to the conditions at the site, Delaware Engineering admits that phenolitic compounds "may potentially be landfill related". It is recommended that this issue be investigated further. Also, in the future, please plot all contaminants of concern shown to exceed the Groundwater Standard, or provide a reasonable explanation of why certain analytes were not graphed.

3) According to our records, additional contaminants are suspected at the site including the following:

Metals:	VOCs/SVOCs:
Arsenic	benzene
Barium	2-butanone (MEK)
Boron	Carbon Disulfide
Copper	chlorobenzene
Lead	1,2-dichloroethane
Nickel	4-methyl phenol
Zinc	tolune
	Xylenes
	chloroethane
	ethylbenzene

None of these compounds are tested for currently, and it strongly recommended that they be added to the list of analytes.

4) It is recommended that a brief explanation of what the Mann-Kendall Trend Analysis Chart is for those individuals who are not familiar with this type of analysis. In particular, fields such as "%NDs" and "S Value" need to be clarified to make the table more understandable.

5) In regards to the Time-Series Plots submitted by Delaware Engineering, it is recommended that a line indicating the NYS DEC Groundwater Standard for each analyte be added to each respective plot as a reference. Also, footnotes of any sampling abnormalities, i.e. dates in which particular wells were not sampled, should also be added to the plots.

If you have any questions or comments, please contact me at (518)402-9645 or via email at kxreiche@gw.dec.state.ny.us.

Sincerely,

Krista Reichert
Environmental Engineering Technician
Division of Environmental Remediation

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